



**Teck Coal Limited**  
Water Quality Management  
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+1 250 425 8086 Tel **Technical Report Overview**  
www.teck.com

**Report:** 2021 Annual Report: Elk Valley Regional and Site-Specific Groundwater Monitoring Programs

**Overview:** This report presents the 2021 results of the regional groundwater monitoring program and the site-specific programs at Fording River Operations, Greenhills Operations, Line Creek Operations, Elkview Operations, and Coal Mountain mine required under Sections 8.2 and 9.4 of Permit 107517. This report summarizes the results of groundwater quality and quantity in 2021 and compares them to relevant screening values and historical data. It also compares groundwater chemistry to nearby surface water chemistry to understand groundwater transport pathways and groundwater/surface water interaction.

This report was prepared for Teck by SNC-Lavalin Inc.

#### **For More Information**

If you have questions regarding this report, please:

- Phone toll-free to 1.855.806.6854
- Email [feedbackteckcoal@teck.com](mailto:feedbackteckcoal@teck.com)

Future studies will be made available at [teck.com/elkvalley](https://teck.com/elkvalley).



**SNC • LAVALIN**

# 2021 Annual Report: Elk Valley Regional and Site-Specific Groundwater Monitoring Programs

Fording River Operations

Greenhills Operations

Line Creek Operations

Elkview Operations

Coal Mountain mine

Regional Groundwater Monitoring Program

**VOLUME IV OF IV**

Prepared for:

Teck Coal Limited

March 29, 2022

Internal Ref: 635544 › Final



# Appendix XIII

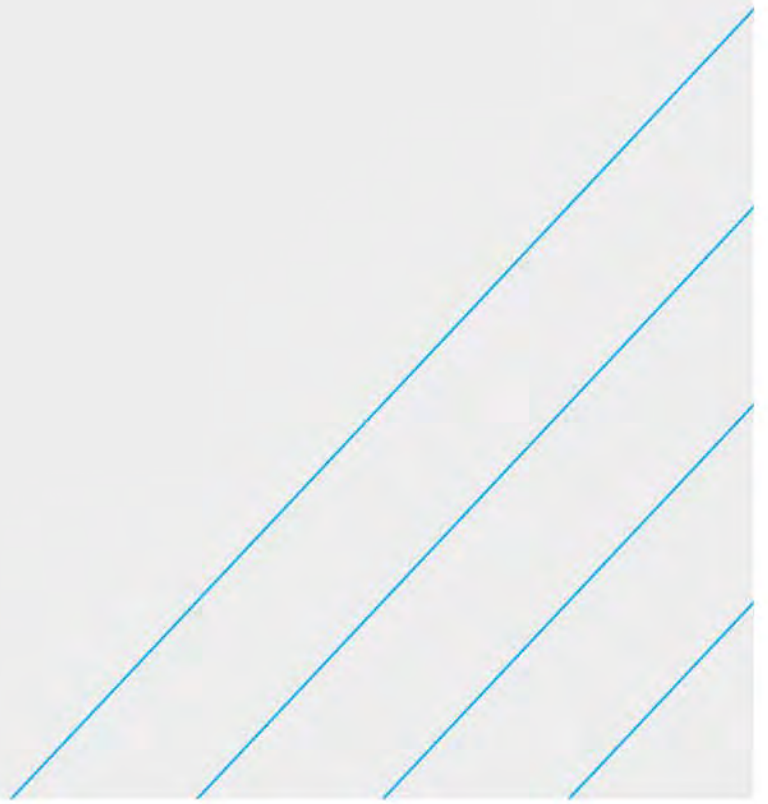
## Certificates of Analysis 2021 SSGMP and RGMP Report

- › Background Groundwater Monitoring
- › Fording River Operations
- › Greenhills Operations
- › Line Creek Operations
- › Elkview Operations
- › Coal Mountain mine



# Certificates of Analysis 2021 SSGMP and RGMP Report

- › Background Groundwater Monitoring





TECK COAL LIMITED (GREENHILLS)  
ATTN: Jeremy Enns  
BOX 5000  
Elkford BC V0B1H0

Date Received: 28-JAN-21  
Report Date: 21-JAN-22 11:31 (MT)  
Version: FINAL REV. 3

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2552580  
Project P.O. #: VPO00739453  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: 2020-01-27-WG  
Legal Site Desc:

Comments: 19-NOV-21: Bicarbonate , Carbonate, and Hydroxide results reported.

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2552580-1 GH_MW_BG1C_WG_2021-01-04_NP							
Sampled By: AF/JF on 27-JAN-21 @ 12:55							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	371		5.0	mg/L		29-JAN-21	R5360145
Carbonate (CO3)	<5.0		5.0	mg/L		29-JAN-21	R5360145
Dissolved Organic Carbon	2.24		0.50	mg/L		03-FEB-21	R5362597
Hydroxide (OH)	<5.0		5.0	mg/L		29-JAN-21	R5360145
Total Kjeldahl Nitrogen	0.149		0.050	mg/L		30-JAN-21	R5360065
Mercury (Hg)-Total	0.00072		0.00050	ug/L		30-JAN-21	R5360111
Total Organic Carbon	2.92		0.50	mg/L		03-FEB-21	R5362597
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	29-JAN-21	30-JAN-21	R5360084
Dissolved Metals Filtration Location	FIELD					29-JAN-21	R5359791
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	30-JAN-21	30-JAN-21	R5359943
Dissolved Mercury Filtration Location	FIELD					30-JAN-21	R5359935
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					29-JAN-21	R5359791
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	29-JAN-21	30-JAN-21	R5360084
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	29-JAN-21	30-JAN-21	R5360084
Arsenic (As)-Dissolved	0.00113		0.00010	mg/L	29-JAN-21	30-JAN-21	R5360084
Barium (Ba)-Dissolved	0.234		0.00010	mg/L	29-JAN-21	30-JAN-21	R5360084
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	29-JAN-21	30-JAN-21	R5360084
Boron (B)-Dissolved	0.014		0.010	mg/L	29-JAN-21	30-JAN-21	R5360084
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	29-JAN-21	30-JAN-21	R5360084
Calcium (Ca)-Dissolved	84.8		0.050	mg/L	29-JAN-21	30-JAN-21	R5360084
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	29-JAN-21	30-JAN-21	R5360084
Cobalt (Co)-Dissolved	1.83		0.10	ug/L	29-JAN-21	30-JAN-21	R5360084
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	29-JAN-21	30-JAN-21	R5360084
Iron (Fe)-Dissolved	3.01		0.010	mg/L	29-JAN-21	30-JAN-21	R5360084
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	29-JAN-21	30-JAN-21	R5360084
Lithium (Li)-Dissolved	0.0045		0.0010	mg/L	29-JAN-21	30-JAN-21	R5360084
Magnesium (Mg)-Dissolved	27.8		0.10	mg/L	29-JAN-21	30-JAN-21	R5360084
Manganese (Mn)-Dissolved	0.152		0.00010	mg/L	29-JAN-21	30-JAN-21	R5360084
Molybdenum (Mo)-Dissolved	0.00366		0.000050	mg/L	29-JAN-21	30-JAN-21	R5360084
Nickel (Ni)-Dissolved	0.00392		0.00050	mg/L	29-JAN-21	30-JAN-21	R5360084
Potassium (K)-Dissolved	1.32		0.050	mg/L	29-JAN-21	30-JAN-21	R5360084
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	29-JAN-21	30-JAN-21	R5360084
Silicon (Si)-Dissolved	3.25		0.050	mg/L	29-JAN-21	30-JAN-21	R5360084
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	29-JAN-21	30-JAN-21	R5360084
Sodium (Na)-Dissolved	11.4		0.050	mg/L	29-JAN-21	30-JAN-21	R5360084
Strontium (Sr)-Dissolved	0.192		0.00020	mg/L	29-JAN-21	30-JAN-21	R5360084
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	29-JAN-21	30-JAN-21	R5360084
Tin (Sn)-Dissolved	0.00011		0.00010	mg/L	29-JAN-21	30-JAN-21	R5360084
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	29-JAN-21	30-JAN-21	R5360084
Uranium (U)-Dissolved	0.000729		0.000010	mg/L	29-JAN-21	30-JAN-21	R5360084
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	29-JAN-21	30-JAN-21	R5360084
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	29-JAN-21	30-JAN-21	R5360084
<b>Hardness</b>							
Hardness (as CaCO3)	326		0.50	mg/L		01-FEB-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		29-JAN-21	R5360198

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2552580-1 GH_MW_BG1C_WG_2021-01-04_NP							
Sampled By: AF/JF on 27-JAN-21 @ 12:55							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.143		0.0030	mg/L		29-JAN-21	R5360198
Antimony (Sb)-Total	0.00015		0.00010	mg/L		29-JAN-21	R5360198
Arsenic (As)-Total	0.00128		0.00010	mg/L		29-JAN-21	R5360198
Barium (Ba)-Total	0.192		0.00010	mg/L		29-JAN-21	R5360198
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		29-JAN-21	R5360198
Boron (B)-Total	0.015		0.010	mg/L		29-JAN-21	R5360198
Cadmium (Cd)-Total	0.0305		0.0050	ug/L		29-JAN-21	R5360198
Calcium (Ca)-Total	81.5		0.050	mg/L		29-JAN-21	R5360198
Chromium (Cr)-Total	0.00022		0.00010	mg/L		29-JAN-21	R5360198
Cobalt (Co)-Total	1.93		0.10	ug/L		29-JAN-21	R5360198
Copper (Cu)-Total	0.00059		0.00050	mg/L		29-JAN-21	R5360198
Iron (Fe)-Total	3.44		0.010	mg/L		29-JAN-21	R5360198
Lead (Pb)-Total	0.000291		0.000050	mg/L		29-JAN-21	R5360198
Lithium (Li)-Total	0.0051		0.0010	mg/L		29-JAN-21	R5360198
Magnesium (Mg)-Total	26.8		0.10	mg/L		29-JAN-21	R5360198
Manganese (Mn)-Total	0.158		0.00010	mg/L		29-JAN-21	R5360198
Molybdenum (Mo)-Total	0.00369		0.000050	mg/L		29-JAN-21	R5360198
Nickel (Ni)-Total	0.00439		0.00050	mg/L		29-JAN-21	R5360198
Potassium (K)-Total	1.27		0.050	mg/L		29-JAN-21	R5360198
Selenium (Se)-Total	<0.050		0.050	ug/L		29-JAN-21	R5360198
Silicon (Si)-Total	3.82		0.10	mg/L		29-JAN-21	R5360198
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-JAN-21	R5360198
Sodium (Na)-Total	11.0		0.050	mg/L		29-JAN-21	R5360198
Strontium (Sr)-Total	0.188		0.00020	mg/L		29-JAN-21	R5360198
Thallium (Tl)-Total	0.000016		0.000010	mg/L		29-JAN-21	R5360198
Tin (Sn)-Total	0.00017		0.00010	mg/L		29-JAN-21	R5360198
Titanium (Ti)-Total	<0.010		0.010	mg/L		29-JAN-21	R5360198
Uranium (U)-Total	0.000764		0.000010	mg/L		29-JAN-21	R5360198
Vanadium (V)-Total	0.00075		0.00050	mg/L		29-JAN-21	R5360198
Zinc (Zn)-Total	0.0035		0.0030	mg/L		29-JAN-21	R5360198
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	5.8		1.0	mg/L		29-JAN-21	R5360148
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	304		1.0	mg/L		29-JAN-21	R5360145
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-JAN-21	R5360145
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-JAN-21	R5360145
Alkalinity, Total (as CaCO3)	304		1.0	mg/L		29-JAN-21	R5360145
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.148		0.0050	mg/L		28-JAN-21	R5359790
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		28-JAN-21	R5360091
<b>Chloride in Water by IC</b>							
Chloride (Cl)	0.63		0.10	mg/L		28-JAN-21	R5360091
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	525		2.0	uS/cm		29-JAN-21	R5360145
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.374		0.020	mg/L		28-JAN-21	R5360091
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	6.6			%		01-FEB-21	
Anion Sum	6.33			meq/L		01-FEB-21	
Cation Sum	7.23			meq/L		01-FEB-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2552580-1 GH_MW_BG1C_WG_2021-01-04_NP Sampled By: AF/JF on 27-JAN-21 @ 12:55 Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	114		-100	%		01-FEB-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		28-JAN-21	R5360091
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		28-JAN-21	R5360091
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		29-JAN-21	R5359932
<b>Oxidation redution potential by elect.</b>							
ORP	285		-1000	mV		04-FEB-21	R5363218
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0072		0.0020	mg/L		03-FEB-21	R5361600
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	10.3		0.30	mg/L		28-JAN-21	R5360091
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	300	DLHC	20	mg/L		02-FEB-21	R5361634
<b>Total Suspended Solids</b>							
Total Suspended Solids	9.8		1.0	mg/L		02-FEB-21	R5361451
<b>Turbidity</b>							
Turbidity	34.1		0.10	NTU		29-JAN-21	R5359904
<b>pH</b>							
pH	8.12		0.10	pH		29-JAN-21	R5360145
L2552580-2 GH_MW_BG1B_WG_2021-01-04_NP Sampled By: AF/JF on 27-JAN-21 @ 13:50 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	366		5.0	mg/L		29-JAN-21	R5360145
Carbonate (CO3)	<5.0		5.0	mg/L		29-JAN-21	R5360145
Dissolved Organic Carbon	2.34		0.50	mg/L		03-FEB-21	R5362597
Hydroxide (OH)	<5.0		5.0	mg/L		29-JAN-21	R5360145
Total Kjeldahl Nitrogen	0.130		0.050	mg/L		30-JAN-21	R5360065
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		30-JAN-21	R5360111
Total Organic Carbon	2.67		0.50	mg/L		03-FEB-21	R5362597
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	29-JAN-21	30-JAN-21	R5360084
Dissolved Metals Filtration Location	FIELD					29-JAN-21	R5359791
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	30-JAN-21	30-JAN-21	R5359943
Dissolved Mercury Filtration Location	FIELD					30-JAN-21	R5359935
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					29-JAN-21	R5359791
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	29-JAN-21	30-JAN-21	R5360084
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	29-JAN-21	30-JAN-21	R5360084
Arsenic (As)-Dissolved	0.00068		0.00010	mg/L	29-JAN-21	30-JAN-21	R5360084
Barium (Ba)-Dissolved	0.276		0.00010	mg/L	29-JAN-21	30-JAN-21	R5360084
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	29-JAN-21	30-JAN-21	R5360084
Boron (B)-Dissolved	0.013		0.010	mg/L	29-JAN-21	30-JAN-21	R5360084
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	29-JAN-21	30-JAN-21	R5360084
Calcium (Ca)-Dissolved	85.8		0.050	mg/L	29-JAN-21	30-JAN-21	R5360084
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	29-JAN-21	30-JAN-21	R5360084
Cobalt (Co)-Dissolved	2.58		0.10	ug/L	29-JAN-21	30-JAN-21	R5360084

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2552580-2 GH_MW_BG1B_WG_2021-01-04_NP							
Sampled By: AF/JF on 27-JAN-21 @ 13:50							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	29-JAN-21	30-JAN-21	R5360084
Iron (Fe)-Dissolved	3.05		0.010	mg/L	29-JAN-21	30-JAN-21	R5360084
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	29-JAN-21	30-JAN-21	R5360084
Lithium (Li)-Dissolved	0.0042		0.0010	mg/L	29-JAN-21	30-JAN-21	R5360084
Magnesium (Mg)-Dissolved	27.2		0.10	mg/L	29-JAN-21	30-JAN-21	R5360084
Manganese (Mn)-Dissolved	0.155		0.00010	mg/L	29-JAN-21	30-JAN-21	R5360084
Molybdenum (Mo)-Dissolved	0.00385		0.000050	mg/L	29-JAN-21	30-JAN-21	R5360084
Nickel (Ni)-Dissolved	0.00528		0.00050	mg/L	29-JAN-21	30-JAN-21	R5360084
Potassium (K)-Dissolved	1.34		0.050	mg/L	29-JAN-21	30-JAN-21	R5360084
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	29-JAN-21	30-JAN-21	R5360084
Silicon (Si)-Dissolved	3.24		0.050	mg/L	29-JAN-21	30-JAN-21	R5360084
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	29-JAN-21	30-JAN-21	R5360084
Sodium (Na)-Dissolved	7.61		0.050	mg/L	29-JAN-21	30-JAN-21	R5360084
Strontium (Sr)-Dissolved	0.122		0.00020	mg/L	29-JAN-21	30-JAN-21	R5360084
Thallium (Tl)-Dissolved	0.000030		0.000010	mg/L	29-JAN-21	30-JAN-21	R5360084
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	29-JAN-21	30-JAN-21	R5360084
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	29-JAN-21	30-JAN-21	R5360084
Uranium (U)-Dissolved	0.000345		0.000010	mg/L	29-JAN-21	30-JAN-21	R5360084
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	29-JAN-21	30-JAN-21	R5360084
Zinc (Zn)-Dissolved	0.0019		0.0010	mg/L	29-JAN-21	30-JAN-21	R5360084
<b>Hardness</b>							
Hardness (as CaCO3)	326		0.50	mg/L		01-FEB-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		29-JAN-21	R5360198
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0319		0.0030	mg/L		29-JAN-21	R5360198
Antimony (Sb)-Total	0.00013		0.00010	mg/L		29-JAN-21	R5360198
Arsenic (As)-Total	0.00186		0.00010	mg/L		29-JAN-21	R5360198
Barium (Ba)-Total	0.230		0.00010	mg/L		29-JAN-21	R5360198
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		29-JAN-21	R5360198
Boron (B)-Total	0.013		0.010	mg/L		29-JAN-21	R5360198
Cadmium (Cd)-Total	0.0108		0.0050	ug/L		29-JAN-21	R5360198
Calcium (Ca)-Total	84.3		0.050	mg/L		29-JAN-21	R5360198
Chromium (Cr)-Total	0.00025		0.00010	mg/L		29-JAN-21	R5360198
Cobalt (Co)-Total	2.72		0.10	ug/L		29-JAN-21	R5360198
Copper (Cu)-Total	0.00150		0.00050	mg/L		29-JAN-21	R5360198
Iron (Fe)-Total	4.82		0.010	mg/L		29-JAN-21	R5360198
Lead (Pb)-Total	0.000230		0.000050	mg/L		29-JAN-21	R5360198
Lithium (Li)-Total	0.0046		0.0010	mg/L		29-JAN-21	R5360198
Magnesium (Mg)-Total	26.3		0.10	mg/L		29-JAN-21	R5360198
Manganese (Mn)-Total	0.156		0.00010	mg/L		29-JAN-21	R5360198
Molybdenum (Mo)-Total	0.00409		0.000050	mg/L		29-JAN-21	R5360198
Nickel (Ni)-Total	0.00585		0.00050	mg/L		29-JAN-21	R5360198
Potassium (K)-Total	1.26		0.050	mg/L		29-JAN-21	R5360198
Selenium (Se)-Total	<0.050		0.050	ug/L		29-JAN-21	R5360198
Silicon (Si)-Total	3.53		0.10	mg/L		29-JAN-21	R5360198
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-JAN-21	R5360198
Sodium (Na)-Total	7.16		0.050	mg/L		29-JAN-21	R5360198
Strontium (Sr)-Total	0.125		0.00020	mg/L		29-JAN-21	R5360198
Thallium (Tl)-Total	0.000041		0.000010	mg/L		29-JAN-21	R5360198
Tin (Sn)-Total	0.00038		0.00010	mg/L		29-JAN-21	R5360198

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2552580-2 GH_MW_BG1B_WG_2021-01-04_NP							
Sampled By: AF/JF on 27-JAN-21 @ 13:50							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Titanium (Ti)-Total	<0.010		0.010	mg/L		29-JAN-21	R5360198
Uranium (U)-Total	0.000349		0.000010	mg/L		29-JAN-21	R5360198
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-JAN-21	R5360198
Zinc (Zn)-Total	0.0038		0.0030	mg/L		29-JAN-21	R5360198
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	5.4		1.0	mg/L		29-JAN-21	R5360148
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	300		1.0	mg/L		29-JAN-21	R5360145
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-JAN-21	R5360145
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-JAN-21	R5360145
Alkalinity, Total (as CaCO3)	300		1.0	mg/L		29-JAN-21	R5360145
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.153		0.0050	mg/L		28-JAN-21	R5359790
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		28-JAN-21	R5360091
<b>Chloride in Water by IC</b>							
Chloride (Cl)	0.79		0.10	mg/L		28-JAN-21	R5360091
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	516		2.0	uS/cm		29-JAN-21	R5360145
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.387		0.020	mg/L		28-JAN-21	R5360091
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	6.0			%		01-FEB-21	
Anion Sum	6.26			meq/L		01-FEB-21	
Cation Sum	7.06			meq/L		01-FEB-21	
<b>Ion Balance Calculation</b>							
Ion Balance	113		-100	%		01-FEB-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		28-JAN-21	R5360091
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		28-JAN-21	R5360091
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		29-JAN-21	R5359932
<b>Oxidation redution potential by elect.</b>							
ORP	436		-1000	mV		04-FEB-21	R5363218
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0080		0.0020	mg/L		03-FEB-21	R5361600
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	10.9		0.30	mg/L		28-JAN-21	R5360091
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	294	DLHC	20	mg/L		02-FEB-21	R5361634
<b>Total Suspended Solids</b>							
Total Suspended Solids	13.4		1.0	mg/L		02-FEB-21	R5361451
<b>Turbidity</b>							
Turbidity	55.2		0.10	NTU		29-JAN-21	R5359904
<b>pH</b>							
pH	8.13		0.10	pH		29-JAN-21	R5360145

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

2020-01-27-WG

## GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample  
 mg/kg wwt - milligrams per kilogram based on wet weight of sample  
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2552580

Report Date: 21-JAN-22

Page 1 of 12

Client: TECK COAL LIMITED (GREENHILLS)

BOX 5000  
Elkford BC V0B1H0

Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360148</b>							
<b>WG3481282-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			98.6		%		85-115	29-JAN-21
<b>WG3481282-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	29-JAN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360145</b>							
<b>WG3481273-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.8		%		85-115	29-JAN-21
<b>WG3481273-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-JAN-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360084</b>							
<b>WG3480929-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.8		%		80-120	30-JAN-21
<b>WG3480929-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-JAN-21
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360198</b>							
<b>WG3480824-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			99.8		%		80-120	29-JAN-21
<b>WG3480824-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	29-JAN-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360145</b>							
<b>WG3481273-10</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	29-JAN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360091</b>							
<b>WG3481227-2</b>	<b>LCS</b>							
Bromide (Br)			107.5		%		85-115	28-JAN-21
<b>WG3481227-6</b>	<b>LCS</b>							
Bromide (Br)			103.5		%		85-115	28-JAN-21
<b>WG3481227-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	28-JAN-21
<b>WG3481227-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	28-JAN-21



## Quality Control Report

Workorder: L2552580

Report Date: 21-JAN-22

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5362597</b>							
<b>WG3483548-7</b>	<b>DUP</b>	<b>L2552580-2</b>						
Dissolved Organic Carbon		2.34	2.24		mg/L	4.1	20	03-FEB-21
<b>WG3483548-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			105.7		%		80-120	03-FEB-21
<b>WG3483548-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.7		%		80-120	03-FEB-21
<b>WG3483548-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-FEB-21
<b>WG3483548-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-FEB-21
<b>WG3483548-8</b>	<b>MS</b>	<b>L2552580-2</b>						
Dissolved Organic Carbon			106.0		%		70-130	03-FEB-21
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5362597</b>							
<b>WG3483548-7</b>	<b>DUP</b>	<b>L2552580-2</b>						
Total Organic Carbon		2.67	2.74		mg/L	2.7	20	03-FEB-21
<b>WG3483548-2</b>	<b>LCS</b>							
Total Organic Carbon			108.3		%		80-120	03-FEB-21
<b>WG3483548-6</b>	<b>LCS</b>							
Total Organic Carbon			105.2		%		80-120	03-FEB-21
<b>WG3483548-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	03-FEB-21
<b>WG3483548-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	03-FEB-21
<b>WG3483548-8</b>	<b>MS</b>	<b>L2552580-2</b>						
Total Organic Carbon			107.5		%		70-130	03-FEB-21
<b>CL-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360091</b>							
<b>WG3481227-2</b>	<b>LCS</b>							
Chloride (Cl)			101.6		%		85-115	28-JAN-21
<b>WG3481227-6</b>	<b>LCS</b>							
Chloride (Cl)			99.4		%		85-115	28-JAN-21
<b>WG3481227-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	28-JAN-21
<b>WG3481227-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	28-JAN-21
<b>CO3-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2552580

Report Date: 21-JAN-22

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CO3-CL</b>	<b>Water</b>							
Batch R5360145								
<b>WG3481273-10 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	29-JAN-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch R5360145								
<b>WG3481273-11 LCS</b>								
Conductivity (@ 25C)			97.5		%		90-110	29-JAN-21
<b>WG3481273-10 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	29-JAN-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch R5360091								
<b>WG3481227-2 LCS</b>								
Fluoride (F)			102.4		%		90-110	28-JAN-21
<b>WG3481227-6 LCS</b>								
Fluoride (F)			100.3		%		90-110	28-JAN-21
<b>WG3481227-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	28-JAN-21
<b>WG3481227-5 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	28-JAN-21
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch R5359943								
<b>WG3481065-7 DUP</b>		<b>L2552580-2</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	30-JAN-21
<b>WG3481065-2 LCS</b>								
Mercury (Hg)-Dissolved			104.3		%		80-120	30-JAN-21
<b>WG3481065-6 LCS</b>								
Mercury (Hg)-Dissolved			104.7		%		80-120	30-JAN-21
<b>WG3481065-1 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	30-JAN-21
<b>WG3481065-5 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	30-JAN-21
<b>HG-T-U-CVAF-VA</b>	<b>Water</b>							
Batch R5360111								
<b>WG3481247-2 LCS</b>								
Mercury (Hg)-Total			91.8		%		80-120	30-JAN-21
<b>WG3481247-1 MB</b>								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	30-JAN-21
	<b>Water</b>							



## Quality Control Report

Workorder: L2552580

Report Date: 21-JAN-22

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360084</b>							
<b>WG3480929-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.7		%		80-120	30-JAN-21
Antimony (Sb)-Dissolved			101.8		%		80-120	30-JAN-21
Arsenic (As)-Dissolved			101.4		%		80-120	30-JAN-21
Barium (Ba)-Dissolved			110.4		%		80-120	30-JAN-21
Bismuth (Bi)-Dissolved			112.3		%		80-120	30-JAN-21
Boron (B)-Dissolved			101.8		%		80-120	30-JAN-21
Cadmium (Cd)-Dissolved			99.2		%		80-120	30-JAN-21
Calcium (Ca)-Dissolved			102.0		%		80-120	30-JAN-21
Chromium (Cr)-Dissolved			98.1		%		80-120	30-JAN-21
Cobalt (Co)-Dissolved			99.0		%		80-120	30-JAN-21
Copper (Cu)-Dissolved			98.6		%		80-120	30-JAN-21
Iron (Fe)-Dissolved			94.4		%		80-120	30-JAN-21
Lead (Pb)-Dissolved			106.8		%		80-120	30-JAN-21
Lithium (Li)-Dissolved			97.3		%		80-120	30-JAN-21
Magnesium (Mg)-Dissolved			100.9		%		80-120	30-JAN-21
Manganese (Mn)-Dissolved			96.7		%		80-120	30-JAN-21
Molybdenum (Mo)-Dissolved			101.1		%		80-120	30-JAN-21
Nickel (Ni)-Dissolved			98.7		%		80-120	30-JAN-21
Potassium (K)-Dissolved			102.3		%		80-120	30-JAN-21
Selenium (Se)-Dissolved			102.6		%		80-120	30-JAN-21
Silicon (Si)-Dissolved			87.4		%		60-140	30-JAN-21
Silver (Ag)-Dissolved			105.1		%		80-120	30-JAN-21
Sodium (Na)-Dissolved			102.6		%		80-120	30-JAN-21
Strontium (Sr)-Dissolved			106.5		%		80-120	30-JAN-21
Thallium (Tl)-Dissolved			107.2		%		80-120	30-JAN-21
Tin (Sn)-Dissolved			95.2		%		80-120	30-JAN-21
Titanium (Ti)-Dissolved			95.7		%		80-120	30-JAN-21
Uranium (U)-Dissolved			114.7		%		80-120	30-JAN-21
Vanadium (V)-Dissolved			99.8		%		80-120	30-JAN-21
Zinc (Zn)-Dissolved			101.8		%		80-120	30-JAN-21
<b>WG3480929-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-JAN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21



## Quality Control Report

Workorder: L2552580

Report Date: 21-JAN-22

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360084</b>							
<b>WG3480929-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-JAN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-JAN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-JAN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-JAN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-JAN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-JAN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-JAN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-JAN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-JAN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-JAN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-JAN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-JAN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-JAN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-JAN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-JAN-21
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360198</b>							
<b>WG3480824-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			105.3		%		80-120	29-JAN-21
Antimony (Sb)-Total			103.5		%		80-120	29-JAN-21
Arsenic (As)-Total			106.7		%		80-120	29-JAN-21
Barium (Ba)-Total			100.8		%		80-120	29-JAN-21





## Quality Control Report

Workorder: L2552580

Report Date: 21-JAN-22

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360198</b>							
<b>WG3480824-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			92.6		%		80-120	29-JAN-21
Boron (B)-Total			94.3		%		80-120	29-JAN-21
Cadmium (Cd)-Total			107.8		%		80-120	29-JAN-21
Calcium (Ca)-Total			99.3		%		80-120	29-JAN-21
Chromium (Cr)-Total			109.0		%		80-120	29-JAN-21
Cobalt (Co)-Total			107.8		%		80-120	29-JAN-21
Copper (Cu)-Total			107.5		%		80-120	29-JAN-21
Iron (Fe)-Total			100.8		%		80-120	29-JAN-21
Lead (Pb)-Total			100.8		%		80-120	29-JAN-21
Lithium (Li)-Total			101.3		%		80-120	29-JAN-21
Magnesium (Mg)-Total			109.2		%		80-120	29-JAN-21
Manganese (Mn)-Total			102.2		%		80-120	29-JAN-21
Molybdenum (Mo)-Total			99.0		%		80-120	29-JAN-21
Nickel (Ni)-Total			108.0		%		80-120	29-JAN-21
Potassium (K)-Total			111.6		%		80-120	29-JAN-21
Selenium (Se)-Total			107.1		%		80-120	29-JAN-21
Silicon (Si)-Total			100.3		%		80-120	29-JAN-21
Silver (Ag)-Total			96.0		%		80-120	29-JAN-21
Sodium (Na)-Total			108.3		%		80-120	29-JAN-21
Strontium (Sr)-Total			101.6		%		80-120	29-JAN-21
Thallium (Tl)-Total			102.5		%		80-120	29-JAN-21
Tin (Sn)-Total			100.4		%		80-120	29-JAN-21
Titanium (Ti)-Total			103.2		%		80-120	29-JAN-21
Uranium (U)-Total			104.9		%		80-120	29-JAN-21
Vanadium (V)-Total			110.0		%		80-120	29-JAN-21
Zinc (Zn)-Total			107.0		%		80-120	29-JAN-21
<b>WG3480824-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	29-JAN-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	29-JAN-21
Arsenic (As)-Total			<0.00010		mg/L		0.0001	29-JAN-21
Barium (Ba)-Total			<0.00010		mg/L		0.0001	29-JAN-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	29-JAN-21
Boron (B)-Total			<0.010		mg/L		0.01	29-JAN-21
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	29-JAN-21



## Quality Control Report

Workorder: L2552580

Report Date: 21-JAN-22

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R5360198</b>							
<b>WG3480824-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	29-JAN-21
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	29-JAN-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	29-JAN-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	29-JAN-21
Iron (Fe)-Total			<0.010		mg/L		0.01	29-JAN-21
Lead (Pb)-Total			<0.000050		mg/L		0.00005	29-JAN-21
Lithium (Li)-Total			<0.0010		mg/L		0.001	29-JAN-21
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	29-JAN-21
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	29-JAN-21
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	29-JAN-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	29-JAN-21
Potassium (K)-Total			<0.050		mg/L		0.05	29-JAN-21
Selenium (Se)-Total			<0.000050		mg/L		0.00005	29-JAN-21
Silicon (Si)-Total			<0.10		mg/L		0.1	29-JAN-21
Silver (Ag)-Total			<0.000010		mg/L		0.00001	29-JAN-21
Sodium (Na)-Total			<0.050		mg/L		0.05	29-JAN-21
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	29-JAN-21
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	29-JAN-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	29-JAN-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	29-JAN-21
Uranium (U)-Total			<0.000010		mg/L		0.00001	29-JAN-21
Vanadium (V)-Total			<0.00050		mg/L		0.0005	29-JAN-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	29-JAN-21
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5359790</b>							
<b>WG3480445-14</b>	<b>LCS</b>							
Ammonia as N			106.6		%		85-115	28-JAN-21
<b>WG3480445-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	28-JAN-21
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5360091</b>							
<b>WG3481227-2</b>	<b>LCS</b>							
Nitrite (as N)			99.0		%		90-110	28-JAN-21
<b>WG3481227-6</b>	<b>LCS</b>							
Nitrite (as N)			101.9		%		90-110	28-JAN-21



## Quality Control Report

Workorder: L2552580

Report Date: 21-JAN-22

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5360091							
<b>WG3481227-1 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	28-JAN-21
<b>WG3481227-5 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	28-JAN-21
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5360091							
<b>WG3481227-2 LCS</b>								
Nitrate (as N)			101.6		%		90-110	28-JAN-21
<b>WG3481227-6 LCS</b>								
Nitrate (as N)			99.8		%		90-110	28-JAN-21
<b>WG3481227-1 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	28-JAN-21
<b>WG3481227-5 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	28-JAN-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5360145							
<b>WG3481273-10 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	29-JAN-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5363218							
<b>WG3483843-1 CRM</b>		<b>CL-ORP</b>						
ORP			227		mV		210-230	04-FEB-21
<b>WG3483843-2 DUP</b>		<b>L2552580-1</b>						
ORP		285	285	J	mV	0.3	15	04-FEB-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5361600							
<b>WG3482841-14 LCS</b>								
Phosphorus (P)-Total			93.4		%		80-120	03-FEB-21
<b>WG3482841-13 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	03-FEB-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5360145							
<b>WG3481273-11 LCS</b>								
pH			7.00		pH		6.9-7.1	29-JAN-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2552580

Report Date: 21-JAN-22

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5359932</b>							
<b>WG3480895-9</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			95.0		%		80-120	29-JAN-21
<b>WG3480895-2</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-JAN-21
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360091</b>							
<b>WG3481227-2</b>	<b>LCS</b>							
Sulfate (SO4)			99.6		%		90-110	28-JAN-21
<b>WG3481227-6</b>	<b>LCS</b>							
Sulfate (SO4)			102.5		%		90-110	28-JAN-21
<b>WG3481227-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	28-JAN-21
<b>WG3481227-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	28-JAN-21
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361634</b>							
<b>WG3482002-12</b>	<b>DUP</b>	<b>L2552580-2</b>						
Total Dissolved Solids		294	298		mg/L	1.2	20	02-FEB-21
<b>WG3482002-11</b>	<b>LCS</b>							
Total Dissolved Solids			97.6		%		85-115	02-FEB-21
<b>WG3482002-10</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	02-FEB-21
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360065</b>							
<b>WG3480865-33</b>	<b>DUP</b>	<b>L2552580-1</b>						
Total Kjeldahl Nitrogen		0.149	0.198	J	mg/L	0.049	0.1	30-JAN-21
<b>WG3480865-32</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			90.1		%		75-125	30-JAN-21
<b>WG3480865-36</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.5		%		75-125	30-JAN-21
<b>WG3480865-31</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JAN-21
<b>WG3480865-35</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JAN-21
<b>WG3480865-34</b>	<b>MS</b>	<b>L2552580-1</b>						
Total Kjeldahl Nitrogen			93.8		%		70-130	30-JAN-21
<b>TSS-L-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2552580

Report Date: 21-JAN-22

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5361451							
<b>WG3482003-8</b>	<b>LCS</b>							
Total Suspended Solids			92.2		%		85-115	02-FEB-21
<b>WG3482003-7</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	02-FEB-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5359904							
<b>WG3480902-2</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	29-JAN-21
<b>WG3480902-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	29-JAN-21

# Quality Control Report

Workorder: L2552580

Report Date: 21-JAN-22

Page 11 of 12

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2552580

Report Date: 21-JAN-22

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	27-JAN-21 12:55	04-FEB-21 13:45	0.25	193	hours	EHTR-FM
	2	27-JAN-21 13:50	04-FEB-21 13:45	0.25	192	hours	EHTR-FM
pH	1	27-JAN-21 12:55	29-JAN-21 09:00	0.25	44	hours	EHTR-FM
	2	27-JAN-21 13:50	29-JAN-21 09:00	0.25	43	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2552580 were received on 28-JAN-21 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 2020-01-27-WG

TURNAROUND TIME: NORMAL

RUSH: NO

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2759 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:	ashlee.fudge@teck.com	X	X	X
Phone Number	270-865-3048			Phone Number	403 407 1794			Email 6:	DL-Equis-GHO-Field@teck.com	X	X	X
								Email 7:	jeremy.enns@teck.com	X	X	X
								PO number	739453			

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED										
							ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH	BOD/COLOUR	EPH/PAH	
GH_MW_BGIC_WG_2021-01-04_NP	GH_MW_BGIC	WG	N	1/27/2021	12:55	G	7	1	1	1	1	1	1				
GH_MW_BG1B_WG_2021-01-04_NP	GH_MW_BG1B	WG	N	1/27/2021	13:50	G	7	1	1	1	1	1	1				

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**SERVICE REQUEST (rush - subject to availability)**

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

AF/JF

Mobile #

Sampler's Signature

Date/Time

JAN 27 2021

40





SNC-Lavalin  
ATTN: Bill Wilmot  
4500 Mennie Road  
Cranbrook BC V1C 4J6

Date Received: 03-FEB-21  
Report Date: 10-FEB-21 16:12 (MT)  
Version: FINAL

Client Phone: 250-505-6493

## Certificate of Analysis

Lab Work Order #: L2554233  
Project P.O. #: 673926  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers:  
Legal Site Desc:

Inayat Dhaliwal  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2554233-1 WG 02-FEB-21 13:03 FR_MW-CH1- A_WG_2021_02_0 2_NP	L2554233-2 WG 02-FEB-21 10:42 FR_MW-CH2_WG _2021_02_02_NP	L2554233-3 WG 02-FEB-21 14:59 FR_MW-CASW6- A_WG_2021_02_0 2_NP	L2554233-4 WG 02-FEB-21 13:03 FR_MW_MC10A_ WG_2021_02_02_ NP	
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	281	303	746	280
	Hardness (as CaCO3) (mg/L)	150	164	293	147
	pH (pH)	8.09	8.01	7.68	8.09
	ORP (mV)	263	264	454	419
	Total Suspended Solids (mg/L)	17.0	<1.0	4.2	16.9
	Total Dissolved Solids (mg/L)	174 <sup>DLHC</sup>	180 <sup>DLHC</sup>	458 <sup>DLHC</sup>	159 <sup>DLHC</sup>
	Turbidity (NTU)	9.84	0.22	30.8	11.1
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	6.2	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	146	148	453	145
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	146	148	453	145
	Ammonia as N (mg/L)	<0.0050	0.0181	2.55 <sup>DLM</sup>	0.0062
	Bicarbonate (HCO3) (mg/L)	178	181	553	177
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	0.39	0.25	7.61	0.39
	Fluoride (F) (mg/L)	0.333	0.164	0.199	0.338
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	91.2	93.8	93.8	89.9
	Nitrate and Nitrite (as N) (mg/L)	0.0945	0.114	<0.0051	0.0907
	Nitrate (as N) (mg/L)	0.0935	0.114	<0.0050	0.0907
	Nitrite (as N) (mg/L)	0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.106	0.075	2.11	0.100
	Total Nitrogen (mg/L)	0.201	0.189	2.11	0.191
	Orthophosphate-Dissolved (as P) (mg/L)	0.0014	0.0028	0.0061	0.0011
	Phosphorus (P)-Total (mg/L)	0.0250	0.0029	0.0233	0.0322
	Sulfate (SO4) (mg/L)	20.5	27.8	<0.30	20.2
	Anion Sum (meq/L)	3.38	3.56	9.28	3.36
	Cation Sum (meq/L)	3.08	3.34	8.70	3.02
	Cation - Anion Balance (%)	-4.6	-3.2	-3.2	-5.3
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.72	3.40	2.93	2.15
	Total Organic Carbon (mg/L)	3.97	5.34	4.05	2.42
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0016	<0.0010	<0.0010	0.0016

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2554233-1 WG 02-FEB-21 13:03 FR_MW-CH1- A_WG_2021_02_0 2_NP	L2554233-2 WG 02-FEB-21 10:42 FR_MW-CH2_WG _2021_02_02_NP	L2554233-3 WG 02-FEB-21 14:59 FR_MW-CASW6- A_WG_2021_02_0 2_NP	L2554233-4 WG 02-FEB-21 13:03 FR_MW-MC10A_ WG_2021_02_02_ NP	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00013	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00013	0.0218 <sup>RRV</sup>	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.152	0.211	10.8	0.150
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	0.103	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000299	0.0000205	<0.000050	0.0000314
	Calcium (Ca)-Dissolved (mg/L)	39.5	46.2	84.0	38.7
	Chromium (Cr)-Dissolved (mg/L)	0.00011	0.00016	<0.00010	0.00012
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	0.00105	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00023	<0.00020	<0.00020	0.00022
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	2.75	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0079	0.0047	0.299	0.0077
	Magnesium (Mg)-Dissolved (mg/L)	12.4	11.7	20.2	12.1
	Manganese (Mn)-Dissolved (mg/L)	0.0330	0.00575	0.0865	0.0325
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00423	0.000847	0.00518	0.00417
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00944	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.37	0.52	5.59	0.37
	Selenium (Se)-Dissolved (mg/L)	0.000689	0.000793	<0.000050	0.000662
	Silicon (Si)-Dissolved (mg/L)	1.86	1.92	4.68	1.88
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.77	1.29	54.6	1.75
	Strontium (Sr)-Dissolved (mg/L)	0.0825	0.0669	1.67 <sup>RRV</sup>	0.0807
	Sulfur (S)-Dissolved (mg/L)	7.03	9.47	<0.50	7.28
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000017	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000672	0.000866	0.000056	0.000679
	Vanadium (V)-Dissolved (mg/L)	0.00055	<0.00050	<0.00050	0.00054
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0019	0.0051	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2554233-1, -2, -3, -4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2554233

Report Date: 10-FEB-21

Page 1 of 13

Client: SNC-Lavalin  
 4500 Mennie Road  
 Cranbrook BC V1C 4J6  
 Contact: Bill Wilmot

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5365521</b>							
<b>WG3484737-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.5		%		85-115	06-FEB-21
<b>WG3484737-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	06-FEB-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5362137</b>							
<b>WG3483485-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.6		%		85-115	03-FEB-21
<b>WG3483485-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-FEB-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-3</b>	<b>DUP</b>	<b>L2554233-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	08-FEB-21
<b>WG3485346-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			90.1		%		80-120	08-FEB-21
<b>WG3485346-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			89.2		%		80-120	09-FEB-21
<b>WG3485346-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-FEB-21
<b>WG3485346-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	09-FEB-21
<b>WG3485346-4</b>	<b>MS</b>	<b>L2554233-1</b>						
Beryllium (Be)-Dissolved			98.9		%		70-130	08-FEB-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5362137</b>							
<b>WG3483485-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	03-FEB-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5370559</b>							
<b>WG3486538-2</b>	<b>LCS</b>							
Bromide (Br)			100.5		%		85-115	05-FEB-21
<b>WG3486538-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	05-FEB-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2554233

Report Date: 10-FEB-21

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5370063							
<b>WG3486407-2 LCS</b>								
Dissolved Organic Carbon			111.1		%		80-120	09-FEB-21
<b>WG3486407-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-FEB-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5370063							
<b>WG3486407-2 LCS</b>								
Total Organic Carbon			105.5		%		80-120	09-FEB-21
<b>WG3486407-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	09-FEB-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5370559							
<b>WG3486538-2 LCS</b>								
Chloride (Cl)			101.4		%		85-115	05-FEB-21
<b>WG3486538-1 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	05-FEB-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5362137							
<b>WG3483485-13 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	03-FEB-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5362137							
<b>WG3483485-14 LCS</b>								
Conductivity (@ 25C)			96.2		%		90-110	03-FEB-21
<b>WG3483485-13 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	03-FEB-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5370559							
<b>WG3486538-2 LCS</b>								
Fluoride (F)			105.0		%		90-110	05-FEB-21
<b>WG3486538-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	05-FEB-21
<b>HG-D-CVAA-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2554233

Report Date: 10-FEB-21

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5362695</b>							
<b>WG3483607-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.9		%		80-120	04-FEB-21
<b>WG3483607-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000050		mg/L		0.000005	04-FEB-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-3</b>	<b>DUP</b>	<b>L2554233-1</b>						
Aluminum (Al)-Dissolved		0.0016	0.0018		mg/L	11	20	08-FEB-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-FEB-21
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-FEB-21
Barium (Ba)-Dissolved		0.152	0.154		mg/L	1.2	20	08-FEB-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-FEB-21
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	08-FEB-21
Cadmium (Cd)-Dissolved		0.0000299	0.0000262		mg/L	13	20	08-FEB-21
Calcium (Ca)-Dissolved		39.5	40.4		mg/L	2.3	20	08-FEB-21
Chromium (Cr)-Dissolved		0.00011	0.00012		mg/L	14	20	08-FEB-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-FEB-21
Copper (Cu)-Dissolved		0.00023	0.00023		mg/L	1.2	20	08-FEB-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	08-FEB-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-FEB-21
Lithium (Li)-Dissolved		0.0079	0.0081		mg/L	2.0	20	08-FEB-21
Magnesium (Mg)-Dissolved		12.4	12.3		mg/L	0.7	20	08-FEB-21
Manganese (Mn)-Dissolved		0.0330	0.0331		mg/L	0.3	20	08-FEB-21
Molybdenum (Mo)-Dissolved		0.00423	0.00435		mg/L	2.7	20	08-FEB-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-FEB-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-FEB-21
Potassium (K)-Dissolved		0.37	0.37		mg/L	0.6	20	08-FEB-21
Selenium (Se)-Dissolved		0.000689	0.000643		mg/L	6.9	20	08-FEB-21
Silicon (Si)-Dissolved		1.86	1.92		mg/L	3.0	20	08-FEB-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	08-FEB-21
Sodium (Na)-Dissolved		1.77	1.80		mg/L	1.9	20	08-FEB-21
Strontium (Sr)-Dissolved		0.0825	0.0826		mg/L	0.2	20	08-FEB-21
Sulfur (S)-Dissolved		7.03	7.47		mg/L	6.1	20	08-FEB-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	08-FEB-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-FEB-21



## Quality Control Report

Workorder: L2554233

Report Date: 10-FEB-21

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-3</b>	<b>DUP</b>	<b>L2554233-1</b>						
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	08-FEB-21
Uranium (U)-Dissolved		0.000672	0.000680		mg/L	1.2	20	08-FEB-21
Vanadium (V)-Dissolved		0.00055	0.00061		mg/L	9.9	20	08-FEB-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	08-FEB-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	08-FEB-21
<b>WG3485346-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			88.8		%		80-120	08-FEB-21
Antimony (Sb)-Dissolved			90.0		%		80-120	08-FEB-21
Arsenic (As)-Dissolved			87.0		%		80-120	08-FEB-21
Barium (Ba)-Dissolved			91.9		%		80-120	08-FEB-21
Bismuth (Bi)-Dissolved			91.7		%		80-120	08-FEB-21
Boron (B)-Dissolved			93.5		%		80-120	08-FEB-21
Cadmium (Cd)-Dissolved			89.1		%		80-120	08-FEB-21
Calcium (Ca)-Dissolved			91.0		%		80-120	08-FEB-21
Chromium (Cr)-Dissolved			89.0		%		80-120	08-FEB-21
Cobalt (Co)-Dissolved			88.0		%		80-120	08-FEB-21
Copper (Cu)-Dissolved			87.6		%		80-120	08-FEB-21
Iron (Fe)-Dissolved			89.7		%		80-120	08-FEB-21
Lead (Pb)-Dissolved			92.8		%		80-120	08-FEB-21
Lithium (Li)-Dissolved			89.3		%		80-120	08-FEB-21
Magnesium (Mg)-Dissolved			88.4		%		80-120	08-FEB-21
Manganese (Mn)-Dissolved			89.0		%		80-120	08-FEB-21
Molybdenum (Mo)-Dissolved			92.0		%		80-120	08-FEB-21
Nickel (Ni)-Dissolved			87.6		%		80-120	08-FEB-21
Phosphorus (P)-Dissolved			93.6		%		70-130	08-FEB-21
Potassium (K)-Dissolved			90.1		%		80-120	08-FEB-21
Selenium (Se)-Dissolved			85.7		%		80-120	08-FEB-21
Silicon (Si)-Dissolved			94.1		%		60-140	08-FEB-21
Silver (Ag)-Dissolved			92.5		%		80-120	08-FEB-21
Sodium (Na)-Dissolved			90.0		%		80-120	08-FEB-21
Strontium (Sr)-Dissolved			89.1		%		80-120	08-FEB-21
Sulfur (S)-Dissolved			90.4		%		80-120	08-FEB-21
Thallium (Tl)-Dissolved			92.2		%		80-120	08-FEB-21
Tin (Sn)-Dissolved			89.9		%		80-120	08-FEB-21



## Quality Control Report

Workorder: L2554233

Report Date: 10-FEB-21

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-2</b>	<b>LCS</b>	<b>TMRM</b>						
Titanium (Ti)-Dissolved			88.0		%		80-120	08-FEB-21
Uranium (U)-Dissolved			98.0		%		80-120	08-FEB-21
Vanadium (V)-Dissolved			90.3		%		80-120	08-FEB-21
Zinc (Zn)-Dissolved			84.8		%		80-120	08-FEB-21
Zirconium (Zr)-Dissolved			88.9		%		80-120	08-FEB-21
<b>WG3485346-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			88.9		%		80-120	09-FEB-21
Antimony (Sb)-Dissolved			85.9		%		80-120	09-FEB-21
Arsenic (As)-Dissolved			90.5		%		80-120	09-FEB-21
Barium (Ba)-Dissolved			89.3		%		80-120	09-FEB-21
Bismuth (Bi)-Dissolved			87.7		%		80-120	09-FEB-21
Boron (B)-Dissolved			83.5		%		80-120	09-FEB-21
Cadmium (Cd)-Dissolved			89.9		%		80-120	09-FEB-21
Calcium (Ca)-Dissolved			85.7		%		80-120	09-FEB-21
Chromium (Cr)-Dissolved			89.3		%		80-120	09-FEB-21
Cobalt (Co)-Dissolved			89.1		%		80-120	09-FEB-21
Copper (Cu)-Dissolved			89.4		%		80-120	09-FEB-21
Iron (Fe)-Dissolved			90.9		%		80-120	09-FEB-21
Lead (Pb)-Dissolved			89.9		%		80-120	09-FEB-21
Lithium (Li)-Dissolved			90.1		%		80-120	09-FEB-21
Magnesium (Mg)-Dissolved			91.6		%		80-120	09-FEB-21
Manganese (Mn)-Dissolved			90.1		%		80-120	09-FEB-21
Molybdenum (Mo)-Dissolved			88.0		%		80-120	09-FEB-21
Nickel (Ni)-Dissolved			89.9		%		80-120	09-FEB-21
Phosphorus (P)-Dissolved			92.2		%		70-130	09-FEB-21
Potassium (K)-Dissolved			87.5		%		80-120	09-FEB-21
Selenium (Se)-Dissolved			88.7		%		80-120	09-FEB-21
Silicon (Si)-Dissolved			93.2		%		60-140	09-FEB-21
Silver (Ag)-Dissolved			89.6		%		80-120	09-FEB-21
Sodium (Na)-Dissolved			90.1		%		80-120	09-FEB-21
Strontium (Sr)-Dissolved			86.2		%		80-120	09-FEB-21
Sulfur (S)-Dissolved			89.7		%		80-120	09-FEB-21
Thallium (Tl)-Dissolved			88.5		%		80-120	09-FEB-21
Tin (Sn)-Dissolved			86.5		%		80-120	09-FEB-21



## Quality Control Report

Workorder: L2554233

Report Date: 10-FEB-21

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-6</b>	<b>LCS</b>	<b>TMRM</b>						
Titanium (Ti)-Dissolved			88.9		%		80-120	09-FEB-21
Uranium (U)-Dissolved			92.2		%		80-120	09-FEB-21
Vanadium (V)-Dissolved			89.8		%		80-120	09-FEB-21
Zinc (Zn)-Dissolved			87.3		%		80-120	09-FEB-21
Zirconium (Zr)-Dissolved			85.3		%		80-120	09-FEB-21
<b>WG3485346-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-FEB-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-FEB-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-FEB-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-FEB-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-FEB-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-FEB-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-FEB-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-FEB-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-FEB-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-FEB-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-FEB-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-FEB-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	08-FEB-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-FEB-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-FEB-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-FEB-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-FEB-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-FEB-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-FEB-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-FEB-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-FEB-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-21



## Quality Control Report

Workorder: L2554233

Report Date: 10-FEB-21

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-1</b>	<b>MB</b>							
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-FEB-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-FEB-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-FEB-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-FEB-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-FEB-21
<b>WG3485346-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	09-FEB-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	09-FEB-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	09-FEB-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	09-FEB-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	09-FEB-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	09-FEB-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	09-FEB-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	09-FEB-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	09-FEB-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	09-FEB-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	09-FEB-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	09-FEB-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	09-FEB-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	09-FEB-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	09-FEB-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	09-FEB-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	09-FEB-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	09-FEB-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	09-FEB-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	09-FEB-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	09-FEB-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	09-FEB-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	09-FEB-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	09-FEB-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	09-FEB-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	09-FEB-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	09-FEB-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	09-FEB-21



## Quality Control Report

Workorder: L2554233

Report Date: 10-FEB-21

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-5 MB</b>								
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	09-FEB-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	09-FEB-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	09-FEB-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	09-FEB-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	09-FEB-21
<b>WG3485346-4 MS</b>		<b>L2554233-1</b>						
Aluminum (Al)-Dissolved			100.5		%		70-130	08-FEB-21
Antimony (Sb)-Dissolved			98.4		%		70-130	08-FEB-21
Arsenic (As)-Dissolved			96.7		%		70-130	08-FEB-21
Barium (Ba)-Dissolved			100.9		%		70-130	08-FEB-21
Bismuth (Bi)-Dissolved			103.8		%		70-130	08-FEB-21
Boron (B)-Dissolved			102.4		%		70-130	08-FEB-21
Cadmium (Cd)-Dissolved			101.0		%		70-130	08-FEB-21
Calcium (Ca)-Dissolved			101.0		%		70-130	08-FEB-21
Chromium (Cr)-Dissolved			101.0		%		70-130	08-FEB-21
Cobalt (Co)-Dissolved			100.4		%		70-130	08-FEB-21
Copper (Cu)-Dissolved			101.3		%		70-130	08-FEB-21
Iron (Fe)-Dissolved			100.4		%		70-130	08-FEB-21
Lead (Pb)-Dissolved			102.4		%		70-130	08-FEB-21
Lithium (Li)-Dissolved			97.4		%		70-130	08-FEB-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	08-FEB-21
Manganese (Mn)-Dissolved			101.0		%		70-130	08-FEB-21
Molybdenum (Mo)-Dissolved			97.2		%		70-130	08-FEB-21
Nickel (Ni)-Dissolved			100.9		%		70-130	08-FEB-21
Phosphorus (P)-Dissolved			102.0		%		70-130	08-FEB-21
Potassium (K)-Dissolved			100.8		%		70-130	08-FEB-21
Selenium (Se)-Dissolved			97.4		%		70-130	08-FEB-21
Silicon (Si)-Dissolved			98.2		%		70-130	08-FEB-21
Silver (Ag)-Dissolved			102.6		%		70-130	08-FEB-21
Sodium (Na)-Dissolved			102.2		%		70-130	08-FEB-21
Strontium (Sr)-Dissolved			96.3		%		70-130	08-FEB-21
Thallium (Tl)-Dissolved			102.9		%		70-130	08-FEB-21
Tin (Sn)-Dissolved			96.4		%		70-130	08-FEB-21
Titanium (Ti)-Dissolved			96.0		%		70-130	08-FEB-21



## Quality Control Report

Workorder: L2554233

Report Date: 10-FEB-21

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-4</b>	<b>MS</b>	<b>L2554233-1</b>						
Uranium (U)-Dissolved			106.6		%		70-130	08-FEB-21
Vanadium (V)-Dissolved			101.2		%		70-130	08-FEB-21
Zinc (Zn)-Dissolved			98.8		%		70-130	08-FEB-21
Zirconium (Zr)-Dissolved			96.3		%		70-130	08-FEB-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5363857</b>							
<b>WG3483666-6</b>	<b>LCS</b>							
Ammonia as N			99.2		%		85-115	04-FEB-21
<b>WG3483666-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	04-FEB-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5370559</b>							
<b>WG3486538-2</b>	<b>LCS</b>							
Nitrite (as N)			101.3		%		90-110	05-FEB-21
<b>WG3486538-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	05-FEB-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5370559</b>							
<b>WG3486538-2</b>	<b>LCS</b>							
Nitrate (as N)			101.8		%		90-110	05-FEB-21
<b>WG3486538-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	05-FEB-21
<b>OH-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5362137</b>							
<b>WG3483485-13</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	03-FEB-21
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5369822</b>							
<b>WG3486333-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	10-FEB-21
<b>WG3486333-4</b>	<b>DUP</b>	<b>L2554233-1</b>						
ORP		263	250	J	mV	12.8	15	10-FEB-21
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2554233

Report Date: 10-FEB-21

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5368521</b>							
<b>WG3485757-16</b>	<b>DUP</b>	<b>L2554233-4</b>						
Phosphorus (P)-Total		0.0322	0.0318		mg/L	1.4	20	09-FEB-21
<b>WG3485757-4</b>	<b>LCS</b>							
Phosphorus (P)-Total			95.5		%		80-120	09-FEB-21
<b>WG3485757-3</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	09-FEB-21
<b>WG3485757-23</b>	<b>MS</b>	<b>L2554233-4</b>						
Phosphorus (P)-Total			96.7		%		70-130	09-FEB-21
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5362137</b>							
<b>WG3483485-14</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	03-FEB-21
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5364298</b>							
<b>WG3483660-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			95.5		%		80-120	04-FEB-21
<b>WG3483660-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-FEB-21
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5370559</b>							
<b>WG3486538-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.6		%		90-110	05-FEB-21
<b>WG3486538-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	05-FEB-21
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5368179</b>							
<b>WG3485154-2</b>	<b>LCS</b>							
Total Dissolved Solids			100.1		%		85-115	08-FEB-21
<b>WG3485154-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	08-FEB-21
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5364768</b>							
<b>WG3484244-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			80.9		%		75-125	05-FEB-21
<b>WG3484244-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			80.4		%		75-125	05-FEB-21





## Quality Control Report

Workorder: L2554233

Report Date: 10-FEB-21

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5364768</b>							
<b>WG3484244-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			79.7		%		75-125	05-FEB-21
<b>WG3484244-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-FEB-21
<b>WG3484244-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-FEB-21
<b>WG3484244-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-FEB-21
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5367956</b>							
<b>WG3485153-2</b>	<b>LCS</b>							
Total Suspended Solids			98.2		%		85-115	08-FEB-21
<b>WG3485153-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	08-FEB-21
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5362873</b>							
<b>WG3483643-8</b>	<b>LCS</b>							
Turbidity			104.0		%		85-115	04-FEB-21
<b>WG3483643-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	04-FEB-21

# Quality Control Report

Workorder: L2554233

Report Date: 10-FEB-21

Page 12 of 13

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2554233

Report Date: 10-FEB-21

Page 13 of 13

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	02-FEB-21 13:03	10-FEB-21 06:30	0.25	186	hours	EHTR-FM
	2	02-FEB-21 10:42	10-FEB-21 07:30	0.25	189	hours	EHTR-FM
	3	02-FEB-21 14:59	10-FEB-21 07:30	0.25	185	hours	EHTR-FM
	4	02-FEB-21 13:03	10-FEB-21 07:30	0.25	186	hours	EHTR-FM
pH							
	1	02-FEB-21 13:03	03-FEB-21 16:00	0.25	27	hours	EHTR-FM
	2	02-FEB-21 10:42	03-FEB-21 16:00	0.25	29	hours	EHTR-FM
	3	02-FEB-21 14:59	03-FEB-21 16:00	0.25	25	hours	EHTR-FM
	4	02-FEB-21 13:03	03-FEB-21 16:00	0.25	27	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2554233 were received on 03-FEB-21 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2554233-COFC

COC Number:

Page 1 of 1

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																
Company: SNC-Lavalin - Nelson		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																
Contact: Bill Wilmot		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			4 day [P4-20%] <input type="checkbox"/>					1 Business day [E1 - 100%] <input type="checkbox"/>											
Phone: Tel.: Cell.: (250) 464-5054		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%] <input type="checkbox"/>					Same Day, Weekend or Statutory holiday [E2 - 200%] <input type="checkbox"/>											
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			2 day [P2-50%] <input type="checkbox"/>					[Laboratory opening fees may apply.]											
Street: 520 Lake Street		SNC Emails: "Bill.Wilmot", "Alex.Heathcott"			Date and Time Required for all E&P TATs:																
City/Province: Nelson, BC		Vicky.Lipinski @snclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																
Postal Code: V1L 4C6		Teck Emails - Jennifer.Dane@teck.com			<b>Analysis Request</b>																
<b>Invoice To</b>		<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P P F/P																
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		SNC Emails: Bill.Wilmot & payables @snclavalin.com			DOC (C-DIS-ORG-LOW-CL)																
Company:					TOC (C-TOT-ORG-LOW-CL)																
Contact:					BCMDG D-Met.+Hg (MET-D-BCMDG-CL)																
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>			Total N Calc. (N-T-CALC-CL)																
ALS Account # / Quote #: MOR125 / Q78197		AFE/Cost Center: PO#			Nitrate + Nitrite Calc. (N2N3-CALC-CL)																
Job #: 673926		Major/Minor Code: Routing Code:			Teck Routine (TECKCOAL-ROUTINE-CL)																
PO / AFE: 673926		Requisitioner:			TKN (TKN-L-F-CL)																
LSD:		Location:			Bicarbonate (BIC-CL)																
ALS Lab Work Order # (lab use only): L2554233		ALS Contact: Inayat Dhaliwal 403-407-1784			Carbonate (CO3-CL)																
		Sampler: RAS/JNC			Hydroxide (OH-CL)																
ALS Sample # (lab use only)		Sample Identification &/or Coordinates (This description will appear on the report)		Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type		SAMPLES ON HOLD									
		FR_MW-FRRB1-WG_2021-02-02-NP		FR_MW-FRRB1						WG		Sample is hazardous (please provide further detail)									
		FR_MW-CH1-A-WG_2021-02-02-NP		FR_MW-CH1-A		02-FEB-21		1303		WG		NUMBER OF CONTAINERS									
		FR_MW-CH2-WG_2021-02-02-NP		FR_MW-CH2				1042		WG											
		FR_MW-CASW6-A-WG_2021-02-02-NP		FR_MW-CASW6-A				1459		WG											
		FR_MW-MC10A-WG_2021-02-02-NP		FR_MW-MC10A		02-FEB-21		1303		WG											
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					Frozen <input type="checkbox"/> Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)			Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Cooling Initiated <input type="checkbox"/>																
					INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C																
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																
Released by: [Signature]		Date: 2021-02-02		Time: 1700		Received by: [Signature]		Date: 2/2		Time: [Signature]		Received by:		Date:		Time:					

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



SNC-Lavalin  
ATTN: Bill Wilmot  
4500 Mennie Road  
Cranbrook BC V1C 4J6

Date Received: 04-FEB-21  
Report Date: 14-FEB-21 19:58 (MT)  
Version: FINAL

Client Phone: 250-505-6493

## Certificate of Analysis

Lab Work Order #: L2554903  
Project P.O. #: 673926  
Job Reference: FORDING RIVER OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Inayat Dhaliwal  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2554903-1	L2554903-2	L2554903-3
		Description	WG	WG	WG
		Sampled Date	03-FEB-21	03-FEB-21	03-FEB-21
		Sampled Time	10:30	10:30	10:30
		Client ID	FR_MW-FRRD1_WG_2021_02_03_NP	FR_MW_MC10B_WG_2021_02_03_NP	FR_MW_MC10C_WG_2021_02_03_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	634	<2.0	<2.0	
	Hardness (as CaCO3) (mg/L)	322	<0.50	<0.50	
	pH (pH)	7.77	5.47	5.52	
	ORP (mV)	342	445	457	
	Total Suspended Solids (mg/L)	39.8	<1.0	<1.0	
	Total Dissolved Solids (mg/L)	417 <sup>DLHC</sup>	<10	<10	
	Turbidity (NTU)	32.7	<0.10 <sup>HTD</sup>	<0.10	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	7.9	1.6	1.6	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	325	<1.0	<1.0	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	325	<1.0	<1.0	
	Ammonia as N (mg/L)	0.0057	<0.0050	<0.0050	
	Bicarbonate (HCO3) (mg/L)	397	<5.0	<5.0	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	37.9	<0.10	<0.10	
	Fluoride (F) (mg/L)	0.065	<0.020	<0.020	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	93.9	0.0	0.0	
	Nitrate and Nitrite (as N) (mg/L)	0.219	<0.0051	<0.0051	
	Nitrate (as N) (mg/L)	0.219	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.262	<0.050	<0.050	
	Total Nitrogen (mg/L)	0.481	<0.050	<0.050	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0034	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0907	<0.0020	<0.0020	
	Sulfate (SO4) (mg/L)	10.9	<0.30	<0.30	
	Anion Sum (meq/L)	7.82	<0.10	<0.10	
	Cation Sum (meq/L)	7.34	<0.10	<0.10	
Cation - Anion Balance (%)	-3.1	0.0	0.0		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.67	<0.50	<0.50	
	Total Organic Carbon (mg/L)	1.82	<0.50	<0.50	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0013	<0.0010	<0.0010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2554903-1	L2554903-2	L2554903-3
		Description	WG	WG	WG
		Sampled Date	03-FEB-21	03-FEB-21	03-FEB-21
		Sampled Time	10:30	10:30	10:30
		Client ID	FR_MW- FRRD1_WG_2021 _02_03_NP	FR_MW_MC10B_ WG_2021_02_03_ NP	FR_MW_MC10C_ WG_2021_02_03_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00012	<0.00010	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.296	<0.00010	<0.00010	
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	0.0000249	<0.0000050	<0.0000050	
	Calcium (Ca)-Dissolved (mg/L)	92.7	<0.050	<0.050	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Dissolved (mg/L)	0.00195	<0.00020	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0043	<0.0010	<0.0010	
	Magnesium (Mg)-Dissolved (mg/L)	21.9	<0.0050	<0.0050	
	Manganese (Mn)-Dissolved (mg/L)	0.00454	<0.00010	<0.00010	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.000468	0.000139 <sup>RRV</sup>	<0.000050	
	Nickel (Ni)-Dissolved (mg/L)	0.00051	<0.00050	<0.00050	
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	
	Potassium (K)-Dissolved (mg/L)	1.11	<0.10	<0.10	
	Selenium (Se)-Dissolved (mg/L)	0.000216	<0.000050	<0.000050	
	Silicon (Si)-Dissolved (mg/L)	4.99	<0.050	<0.050	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	20.4	<0.050	<0.050	
	Strontium (Sr)-Dissolved (mg/L)	0.116	<0.00020	<0.00020	
	Sulfur (S)-Dissolved (mg/L)	3.67	<0.50	<0.50	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	
	Uranium (U)-Dissolved (mg/L)	0.000489	<0.000010	<0.000010	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0060	<0.0010	<0.0010	
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2554903-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B



## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL**            Water            Dissolved Mercury in Water by CVAAS            APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL**    Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL**            Water            Dissolved Metals in Water by CRC ICPMS            APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL**            Water            Total Nitrogen (Calculation)            APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL**            Water            Nitrate+Nitrite            CALCULATION

**NH3-L-F-CL**            Water            Ammonia, Total (as N)            J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL**            Water            Nitrite in Water by IC (Low Level)            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**            Water            Nitrate in Water by IC (Low Level)            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL**            Water            Hydroxide in Water            APHA 2320 B-Potentiometric Titration

**ORP-CL**            Water            Oxidation reduction potential by elect.            ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**            Water            Phosphorus (P)-Total            APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL**            Water            pH            APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**    Water            Orthophosphate-Dissolved (as P)            APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**            Water            Sulfate in Water by IC            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**            Water            Total Dissolved Solids            APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**    Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2554903

Report Date: 14-FEB-21

Page 1 of 13

Client: SNC-Lavalin  
 4500 Mennie Road  
 Cranbrook BC V1C 4J6

Contact: Bill Wilmot

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366399</b>							
<b>WG3485061-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.0		%		85-115	07-FEB-21
<b>WG3485061-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.4		%		85-115	07-FEB-21
<b>WG3485061-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	07-FEB-21
<b>WG3485061-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	07-FEB-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366683</b>							
<b>WG3485076-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			104.8		%		85-115	07-FEB-21
<b>WG3485076-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	07-FEB-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-7</b>	<b>DUP</b>	<b>L2554903-3</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	09-FEB-21
<b>WG3485346-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			90.1		%		80-120	08-FEB-21
<b>WG3485346-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			89.2		%		80-120	09-FEB-21
<b>WG3485346-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-FEB-21
<b>WG3485346-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	09-FEB-21
<b>WG3485346-8</b>	<b>MS</b>	<b>L2554903-3</b>						
Beryllium (Be)-Dissolved			94.9		%		70-130	09-FEB-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366683</b>							
<b>WG3485076-10</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	07-FEB-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5365598</b>							
<b>WG3484772-2</b>	<b>LCS</b>							
Bromide (Br)			97.7		%		85-115	06-FEB-21
<b>WG3484772-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2554903

Report Date: 14-FEB-21

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b> <b>Water</b>								
Batch	R5365598							
WG3484772-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	06-FEB-21
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5374018							
WG3487827-6	LCS							
Dissolved Organic Carbon			104.9		%		80-120	11-FEB-21
WG3487827-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	11-FEB-21
Batch	R5374441							
WG3487979-2	LCS							
Dissolved Organic Carbon			101.6		%		80-120	12-FEB-21
WG3487979-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-FEB-21
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5374018							
WG3487827-6	LCS							
Total Organic Carbon			108.0		%		80-120	11-FEB-21
WG3487827-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	11-FEB-21
<b>CL-L-IC-N-CL</b> <b>Water</b>								
Batch	R5365598							
WG3484772-2	LCS							
Chloride (Cl)			101.9		%		85-115	06-FEB-21
WG3484772-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	06-FEB-21
<b>CO3-CL</b> <b>Water</b>								
Batch	R5366683							
WG3485076-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	07-FEB-21
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R5366683							
WG3485076-11	LCS							
Conductivity (@ 25C)			97.1		%		90-110	07-FEB-21
WG3485076-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	07-FEB-21



## Quality Control Report

Workorder: L2554903

Report Date: 14-FEB-21

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Batch R5365598</b>								
<b>WG3484772-2</b>	<b>LCS</b>							
Fluoride (F)			104.3		%		90-110	06-FEB-21
<b>WG3484772-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	06-FEB-21
<b>HG-D-CVAA-CL</b>								
<b>Batch R5364477</b>								
<b>WG3484403-3</b>	<b>DUP</b>	<b>L2554903-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	05-FEB-21
<b>WG3484403-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			104.0		%		80-120	05-FEB-21
<b>WG3484403-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	05-FEB-21
<b>WG3484403-4</b>	<b>MS</b>	<b>L2554903-1</b>						
Mercury (Hg)-Dissolved			84.6		%		70-130	05-FEB-21
<b>MET-D-CCMS-CL</b>								
<b>Batch R5366580</b>								
<b>WG3485346-7</b>	<b>DUP</b>	<b>L2554903-3</b>						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	09-FEB-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-FEB-21
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-FEB-21
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-FEB-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-FEB-21
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	09-FEB-21
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	09-FEB-21
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	09-FEB-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-FEB-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-FEB-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	09-FEB-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	09-FEB-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-FEB-21
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	09-FEB-21
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	09-FEB-21
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-FEB-21
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-FEB-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	09-FEB-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	09-FEB-21



## Quality Control Report

Workorder: L2554903

Report Date: 14-FEB-21

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-7</b>	<b>DUP</b>	<b>L2554903-3</b>						
Potassium (K)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	09-FEB-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-FEB-21
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	09-FEB-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-FEB-21
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	09-FEB-21
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	09-FEB-21
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	09-FEB-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-FEB-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-FEB-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	09-FEB-21
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-FEB-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	09-FEB-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	09-FEB-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	09-FEB-21
<b>WG3485346-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			88.8		%		80-120	08-FEB-21
Antimony (Sb)-Dissolved			90.0		%		80-120	08-FEB-21
Arsenic (As)-Dissolved			87.0		%		80-120	08-FEB-21
Barium (Ba)-Dissolved			91.9		%		80-120	08-FEB-21
Bismuth (Bi)-Dissolved			91.7		%		80-120	08-FEB-21
Boron (B)-Dissolved			93.5		%		80-120	08-FEB-21
Cadmium (Cd)-Dissolved			89.1		%		80-120	08-FEB-21
Calcium (Ca)-Dissolved			91.0		%		80-120	08-FEB-21
Chromium (Cr)-Dissolved			89.0		%		80-120	08-FEB-21
Cobalt (Co)-Dissolved			88.0		%		80-120	08-FEB-21
Copper (Cu)-Dissolved			87.6		%		80-120	08-FEB-21
Iron (Fe)-Dissolved			89.7		%		80-120	08-FEB-21
Lead (Pb)-Dissolved			92.8		%		80-120	08-FEB-21
Lithium (Li)-Dissolved			89.3		%		80-120	08-FEB-21
Magnesium (Mg)-Dissolved			88.4		%		80-120	08-FEB-21
Manganese (Mn)-Dissolved			89.0		%		80-120	08-FEB-21
Molybdenum (Mo)-Dissolved			92.0		%		80-120	08-FEB-21
Nickel (Ni)-Dissolved			87.6		%		80-120	08-FEB-21
Phosphorus (P)-Dissolved			93.6		%		70-130	08-FEB-21



## Quality Control Report

Workorder: L2554903

Report Date: 14-FEB-21

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-2</b>	<b>LCS</b>	<b>TMRM</b>						
Potassium (K)-Dissolved			90.1		%		80-120	08-FEB-21
Selenium (Se)-Dissolved			85.7		%		80-120	08-FEB-21
Silicon (Si)-Dissolved			94.1		%		60-140	08-FEB-21
Silver (Ag)-Dissolved			92.5		%		80-120	08-FEB-21
Sodium (Na)-Dissolved			90.0		%		80-120	08-FEB-21
Strontium (Sr)-Dissolved			89.1		%		80-120	08-FEB-21
Sulfur (S)-Dissolved			90.4		%		80-120	08-FEB-21
Thallium (Tl)-Dissolved			92.2		%		80-120	08-FEB-21
Tin (Sn)-Dissolved			89.9		%		80-120	08-FEB-21
Titanium (Ti)-Dissolved			88.0		%		80-120	08-FEB-21
Uranium (U)-Dissolved			98.0		%		80-120	08-FEB-21
Vanadium (V)-Dissolved			90.3		%		80-120	08-FEB-21
Zinc (Zn)-Dissolved			84.8		%		80-120	08-FEB-21
Zirconium (Zr)-Dissolved			88.9		%		80-120	08-FEB-21
<b>WG3485346-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			88.9		%		80-120	09-FEB-21
Antimony (Sb)-Dissolved			85.9		%		80-120	09-FEB-21
Arsenic (As)-Dissolved			90.5		%		80-120	09-FEB-21
Barium (Ba)-Dissolved			89.3		%		80-120	09-FEB-21
Bismuth (Bi)-Dissolved			87.7		%		80-120	09-FEB-21
Boron (B)-Dissolved			83.5		%		80-120	09-FEB-21
Cadmium (Cd)-Dissolved			89.9		%		80-120	09-FEB-21
Calcium (Ca)-Dissolved			85.7		%		80-120	09-FEB-21
Chromium (Cr)-Dissolved			89.3		%		80-120	09-FEB-21
Cobalt (Co)-Dissolved			89.1		%		80-120	09-FEB-21
Copper (Cu)-Dissolved			89.4		%		80-120	09-FEB-21
Iron (Fe)-Dissolved			90.9		%		80-120	09-FEB-21
Lead (Pb)-Dissolved			89.9		%		80-120	09-FEB-21
Lithium (Li)-Dissolved			90.1		%		80-120	09-FEB-21
Magnesium (Mg)-Dissolved			91.6		%		80-120	09-FEB-21
Manganese (Mn)-Dissolved			90.1		%		80-120	09-FEB-21
Molybdenum (Mo)-Dissolved			88.0		%		80-120	09-FEB-21
Nickel (Ni)-Dissolved			89.9		%		80-120	09-FEB-21
Phosphorus (P)-Dissolved			92.2		%		70-130	09-FEB-21



## Quality Control Report

Workorder: L2554903

Report Date: 14-FEB-21

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-6</b>	<b>LCS</b>	<b>TMRM</b>						
Potassium (K)-Dissolved			87.5		%		80-120	09-FEB-21
Selenium (Se)-Dissolved			88.7		%		80-120	09-FEB-21
Silicon (Si)-Dissolved			93.2		%		60-140	09-FEB-21
Silver (Ag)-Dissolved			89.6		%		80-120	09-FEB-21
Sodium (Na)-Dissolved			90.1		%		80-120	09-FEB-21
Strontium (Sr)-Dissolved			86.2		%		80-120	09-FEB-21
Sulfur (S)-Dissolved			89.7		%		80-120	09-FEB-21
Thallium (Tl)-Dissolved			88.5		%		80-120	09-FEB-21
Tin (Sn)-Dissolved			86.5		%		80-120	09-FEB-21
Titanium (Ti)-Dissolved			88.9		%		80-120	09-FEB-21
Uranium (U)-Dissolved			92.2		%		80-120	09-FEB-21
Vanadium (V)-Dissolved			89.8		%		80-120	09-FEB-21
Zinc (Zn)-Dissolved			87.3		%		80-120	09-FEB-21
Zirconium (Zr)-Dissolved			85.3		%		80-120	09-FEB-21
<b>WG3485346-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-FEB-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-FEB-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-FEB-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-FEB-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-FEB-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-FEB-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-FEB-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-FEB-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-FEB-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-FEB-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-FEB-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-FEB-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	08-FEB-21





## Quality Control Report

Workorder: L2554903

Report Date: 14-FEB-21

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-1</b>	<b>MB</b>							
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-FEB-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-FEB-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-FEB-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-FEB-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-FEB-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-FEB-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-FEB-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-FEB-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-FEB-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-FEB-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-FEB-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-FEB-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-FEB-21
<b>WG3485346-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	09-FEB-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	09-FEB-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	09-FEB-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	09-FEB-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	09-FEB-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	09-FEB-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	09-FEB-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	09-FEB-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	09-FEB-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	09-FEB-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	09-FEB-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	09-FEB-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	09-FEB-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	09-FEB-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	09-FEB-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	09-FEB-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	09-FEB-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	09-FEB-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	09-FEB-21



## Quality Control Report

Workorder: L2554903

Report Date: 14-FEB-21

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-5</b>	<b>MB</b>							
Potassium (K)-Dissolved			<0.050		mg/L		0.05	09-FEB-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	09-FEB-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	09-FEB-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	09-FEB-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	09-FEB-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	09-FEB-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	09-FEB-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	09-FEB-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	09-FEB-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	09-FEB-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	09-FEB-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	09-FEB-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	09-FEB-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	09-FEB-21
<b>WG3485346-8</b>	<b>MS</b>	<b>L2554903-3</b>						
Aluminum (Al)-Dissolved			94.0		%		70-130	09-FEB-21
Antimony (Sb)-Dissolved			94.9		%		70-130	09-FEB-21
Arsenic (As)-Dissolved			91.3		%		70-130	09-FEB-21
Barium (Ba)-Dissolved			95.7		%		70-130	09-FEB-21
Bismuth (Bi)-Dissolved			95.0		%		70-130	09-FEB-21
Boron (B)-Dissolved			92.7		%		70-130	09-FEB-21
Cadmium (Cd)-Dissolved			94.6		%		70-130	09-FEB-21
Calcium (Ca)-Dissolved			95.7		%		70-130	09-FEB-21
Chromium (Cr)-Dissolved			94.6		%		70-130	09-FEB-21
Cobalt (Co)-Dissolved			94.1		%		70-130	09-FEB-21
Copper (Cu)-Dissolved			96.1		%		70-130	09-FEB-21
Iron (Fe)-Dissolved			94.3		%		70-130	09-FEB-21
Lead (Pb)-Dissolved			94.2		%		70-130	09-FEB-21
Lithium (Li)-Dissolved			94.4		%		70-130	09-FEB-21
Magnesium (Mg)-Dissolved			93.0		%		70-130	09-FEB-21
Manganese (Mn)-Dissolved			94.6		%		70-130	09-FEB-21
Molybdenum (Mo)-Dissolved			94.4		%		70-130	09-FEB-21
Nickel (Ni)-Dissolved			95.3		%		70-130	09-FEB-21
Phosphorus (P)-Dissolved			92.9		%		70-130	09-FEB-21



## Quality Control Report

Workorder: L2554903

Report Date: 14-FEB-21

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366580</b>							
<b>WG3485346-8</b>	<b>MS</b>	<b>L2554903-3</b>						
Potassium (K)-Dissolved			94.4		%		70-130	09-FEB-21
Selenium (Se)-Dissolved			90.0		%		70-130	09-FEB-21
Silicon (Si)-Dissolved			96.3		%		70-130	09-FEB-21
Silver (Ag)-Dissolved			98.2		%		70-130	09-FEB-21
Sodium (Na)-Dissolved			96.8		%		70-130	09-FEB-21
Strontium (Sr)-Dissolved			94.6		%		70-130	09-FEB-21
Thallium (Tl)-Dissolved			93.4		%		70-130	09-FEB-21
Tin (Sn)-Dissolved			94.0		%		70-130	09-FEB-21
Titanium (Ti)-Dissolved			90.9		%		70-130	09-FEB-21
Uranium (U)-Dissolved			96.4		%		70-130	09-FEB-21
Vanadium (V)-Dissolved			94.2		%		70-130	09-FEB-21
Zinc (Zn)-Dissolved			94.0		%		70-130	09-FEB-21
Zirconium (Zr)-Dissolved			95.3		%		70-130	09-FEB-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366816</b>							
<b>WG3485215-26</b>	<b>LCS</b>							
Ammonia as N			97.1		%		85-115	08-FEB-21
<b>WG3485215-25</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	08-FEB-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5365598</b>							
<b>WG3484772-2</b>	<b>LCS</b>							
Nitrite (as N)			99.6		%		90-110	06-FEB-21
<b>WG3484772-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	06-FEB-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5365598</b>							
<b>WG3484772-2</b>	<b>LCS</b>							
Nitrate (as N)			102.4		%		90-110	06-FEB-21
<b>WG3484772-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	06-FEB-21
<b>OH-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2554903

Report Date: 14-FEB-21

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch R5370477								
WG3485797-10 MB								
Total Dissolved Solids			<10		mg/L		10	09-FEB-21
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch R5368576								
WG3485544-2 LCS								
Total Kjeldahl Nitrogen			81.7		%		75-125	09-FEB-21
WG3485544-4 LCS								
Total Kjeldahl Nitrogen			77.7		%		75-125	09-FEB-21
WG3485544-6 LCS								
Total Kjeldahl Nitrogen			76.1		%		75-125	09-FEB-21
WG3485544-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-FEB-21
WG3485544-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-FEB-21
WG3485544-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-FEB-21
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch R5370278								
WG3485796-8 LCS								
Total Suspended Solids			94.0		%		85-115	09-FEB-21
WG3485796-7 MB								
Total Suspended Solids			<1.0		mg/L		1	09-FEB-21
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch R5362873								
WG3483643-26 LCS								
Turbidity			102.0		%		85-115	04-FEB-21
WG3483643-25 MB								
Turbidity			<0.10		NTU		0.1	04-FEB-21

# Quality Control Report

Workorder: L2554903

Report Date: 14-FEB-21

Page 12 of 13

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2554903

Report Date: 14-FEB-21

Page 13 of 13

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	03-FEB-21 10:30	11-FEB-21 07:00	0.25	188	hours	EHTR-FM
	2	03-FEB-21 10:30	11-FEB-21 07:00	0.25	188	hours	EHTR-FM
	3	03-FEB-21 10:30	11-FEB-21 07:00	0.25	188	hours	EHTR-FM
Turbidity	2	03-FEB-21 10:30	13-FEB-21 10:30	3	10	days	EHT
pH	1	03-FEB-21 10:30	07-FEB-21 13:00	0.25	98	hours	EHTR-FM
	2	03-FEB-21 10:30	07-FEB-21 13:00	0.25	98	hours	EHTR-FM
	3	03-FEB-21 10:30	07-FEB-21 13:00	0.25	98	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2554903 were received on 04-FEB-21 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



### Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2554903-COFC

COC Number:

Page 1 of 1

[www.alsglobal.com](http://www.alsglobal.com)

Report To <small>Contact and company name below will appear on the final report</small>		Report Format / Distribution			Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																																																																																																																																																																													
Company:	SNC-Lavalin ~Nelson	Select Report Format:	<input checked="checked" type="checkbox"/> PDF <input checked="checked" type="checkbox"/> EXCEL <input checked="checked" type="checkbox"/> EDD (DIGITAL)			<input checked="checked" type="checkbox"/> Regular [R] <input checked="checked" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply						EMERGENCY: <input type="checkbox"/> 1 Business day [E1 - 100%] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]																																																																																																																																																																						
Contact:	Bill Wilmot	Quality Control (QC) Report with Report:	<input checked="checked" type="checkbox"/> YES <input type="checkbox"/> NO			PRIORITY (Business Days)	<input type="checkbox"/> 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%]																																																																																																																																																																											
Phone:	Tel.: Cell.: (250) 464-5054	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			Select Distribution:	<input checked="checked" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Date and Time Required for all E&P TATs:																																																																																																																																																																									
Street: 520 Lake Street City/Province: Nelson, BC Postal Code: V1L 4C6		SNC Emails: "Bill.Wilmot", "Alex.Heathcott" Vicky.Lipinski@sncclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																																																																																																																																																																													
Invoice To: Same as Report To <input checked="checked" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution: Select Invoice Distribution: <input checked="checked" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX SNC Emails: Bill.Wilmot & payables@sncclavalin.com			Analysis Request Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																																																																																																																																													
Project Information ALS Account # / Quote #: MOR125 / Q78197 Job #: 673926 PO / AFE: 673926 LSD:		Oil and Gas Required Fields (client use) AFE/Cost Center:    PO#: Major/Minor Code:    Routing Code: Requisitioner: Location:			F/P    P    F/P    P						DOC (C-DIS-ORG-LOW-CL)    TOC (C-TOT-ORG-LOW-CL)    BCMDG D-Mer +Hg (MET-D-BCMDG-CL)    Total N Calc. (N-T-CALC-CL)    Nitrate + Nitrite Calc. (N2N3-CALC-CL)    Teck Routine (TECKCOAL-ROUTINE-CL)    TKN (TKN-L-F-CL)    Bicarbonate (BIC-CL)    Carbonate (CO3-CL)    Hydroxide (OH-CL)						SAMPLES ON HOLD Sample is hazardous (please provide further detail)		NUMBER OF CONTAINERS																																																																																																																																																															
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784 Sampler: <i>RAS/JNL</i>			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ALS Sample # (lab use only)</th> <th>Sample Identification &amp;/or Coordinates <small>(This description will appear on the report)</small></th> <th>Teck Sample Location (sys_loc_code) <small>(For Teck data upload to EQUIS database)</small></th> <th>Date <small>(dd-mmm-yy)</small></th> <th>Time <small>(hh:mm)</small></th> <th>Sample Type</th> <th>DOC (C-DIS-ORG-LOW-CL)</th> <th>TOC (C-TOT-ORG-LOW-CL)</th> <th>BCMDG D-Mer +Hg (MET-D-BCMDG-CL)</th> <th>Total N Calc. (N-T-CALC-CL)</th> <th>Nitrate + Nitrite Calc. (N2N3-CALC-CL)</th> <th>Teck Routine (TECKCOAL-ROUTINE-CL)</th> <th>TKN (TKN-L-F-CL)</th> <th>Bicarbonate (BIC-CL)</th> <th>Carbonate (CO3-CL)</th> <th>Hydroxide (OH-CL)</th> <th>SAMPLES ON HOLD</th> <th>NUMBER OF CONTAINERS</th> </tr> </thead> <tbody> <tr> <td></td> <td>FR_MW-FRRD1_WG_2021_02_03_NP</td> <td>FR_MW-FRRD1</td> <td>03-Feb-21</td> <td>10:30</td> <td>WG</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td>5</td> </tr> <tr> <td></td> <td><del>FR_MW-FRRD1_WG_2021_02_03_NP</del></td> <td><del>FR_MW-FRRD1</del></td> <td></td> <td></td> <td><del>WG</del></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5</td> </tr> <tr> <td></td> <td><del>FR_MW-FRRD1_WG_2021_02_03_NP</del></td> <td><del>FR_MW-FRRD1</del></td> <td></td> <td></td> <td><del>WG</del></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5</td> </tr> <tr> <td></td> <td><del>FR_MW-FRRD1_WG_2021_02_03_NP</del></td> <td><del>FR_MW-FRRD1</del></td> <td></td> <td></td> <td><del>WG</del></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5</td> </tr> <tr> <td></td> <td><del>FR_MW-FRRD1_WG_2021_02_03_NP</del></td> <td><del>FR_MW-FRRD1</del></td> <td></td> <td></td> <td><del>WG</del></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5</td> </tr> <tr> <td></td> <td><del>FR_MW-FRRD1_WG_2021_02_03_NP</del></td> <td><del>FR_MW-FRRD1</del></td> <td></td> <td></td> <td><del>WG</del></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5</td> </tr> <tr> <td></td> <td>FR_MW_MC10B_WG_2021_02_03_NP</td> <td>FR_MW_MC10B</td> <td>03-Feb-21</td> <td>10:30</td> <td>WG</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td>5</td> </tr> <tr> <td></td> <td>FR_MW_MC10C_WG_2021_02_03_NP</td> <td>FR_MW_MC10C</td> <td>03-Feb-21</td> <td>10:30</td> <td>WG</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td>5</td> </tr> </tbody> </table>												ALS Sample # (lab use only)	Sample Identification &/or Coordinates <small>(This description will appear on the report)</small>	Teck Sample Location (sys_loc_code) <small>(For Teck data upload to EQUIS database)</small>	Date <small>(dd-mmm-yy)</small>	Time <small>(hh:mm)</small>	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Mer +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	NUMBER OF CONTAINERS		FR_MW-FRRD1_WG_2021_02_03_NP	FR_MW-FRRD1	03-Feb-21	10:30	WG	X	X	X	X	X	X	X	X	X	X		5		<del>FR_MW-FRRD1_WG_2021_02_03_NP</del>	<del>FR_MW-FRRD1</del>			<del>WG</del>												5		<del>FR_MW-FRRD1_WG_2021_02_03_NP</del>	<del>FR_MW-FRRD1</del>			<del>WG</del>												5		<del>FR_MW-FRRD1_WG_2021_02_03_NP</del>	<del>FR_MW-FRRD1</del>			<del>WG</del>												5		<del>FR_MW-FRRD1_WG_2021_02_03_NP</del>	<del>FR_MW-FRRD1</del>			<del>WG</del>												5		<del>FR_MW-FRRD1_WG_2021_02_03_NP</del>	<del>FR_MW-FRRD1</del>			<del>WG</del>												5		FR_MW_MC10B_WG_2021_02_03_NP	FR_MW_MC10B	03-Feb-21	10:30	WG	X	X	X	X	X	X	X	X	X	X		5		FR_MW_MC10C_WG_2021_02_03_NP	FR_MW_MC10C	03-Feb-21	10:30	WG	X	X	X	X	X	X	X	X	X	X		5
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Drinking Water (DW) Samples <sup>1</sup> (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			SAMPLE CONDITION AS RECEIVED (lab use only)																																																																																																																																																																													
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="checked" type="checkbox"/> NO		Teck Facility Name: <u>(please select the applicable Facility)</u> GHQ-GREENHILLS OPERATION    FRO-FORDING RIVER OPERATION    EVO-ELKVIEW OPERATIONS			Frozen <input type="checkbox"/> SIF Observations    Yes <input type="checkbox"/> No <input type="checkbox"/>				Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact    Yes <input type="checkbox"/> No <input type="checkbox"/>				Cooling Initiated <input type="checkbox"/>																																																																																																																																																																					
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="checked" type="checkbox"/> NO					INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C																																																																																																																																																																									
SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)																																																																																																																																																																												
Released by: <i>Ryan Schoorman</i> Date: 2021-02-03    Time: 17:00		Received by: <i>RH</i> Date: 2/4    Time: 8:30																																																																																																																																																																																

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION    WHITE - LABORATORY COPY    YELLOW - CLIENT COPY    SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.





SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 25-MAR-21  
Report Date: 12-APR-21 14:14 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2570451  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Comments: Alkalinity, BIC, CO3, OH analyzed past hold time for sample -4.

Inayat Dhaliwal  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2570451-1 WG 24-MAR-21 10:45 GH_MW-WILLOW- 1D_WG_2021_03_ 24_NP	L2570451-2 WG 24-MAR-21 11:30 GH_MW-WILLOW- 2S_WG_2021_03_ 24_NP	L2570451-3 WG 24-MAR-21 12:30 GH_MW-WILLOW- 2D_WG_2021_03_ 24_NP	L2570451-4 WG 24-MAR-21 14:45 GH_MW_MC10- B_WG_2021_03_2 4_NP	L2570451-5 WG 24-MAR-21 15:30 GH_MW-WOLF- 2D_WG_2021_03_ 24_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	466	368	643	<2.0	525
	Hardness (as CaCO3) (mg/L)	140	201	133	<0.50	267
	pH (pH)	8.26	8.11	8.38	5.52	8.03
	ORP (mV)	417	428	445	439	425
	Total Suspended Solids (mg/L)	1.1	1.4	5.1	<1.0	61.5
	Total Dissolved Solids (mg/L)	256 <sup>DLHC</sup>	198 <sup>DLHC</sup>	375 <sup>DLHC</sup>	<10	306 <sup>DLHC</sup>
	Turbidity (NTU)	19.1	3.09	6.31	<0.10	50.6
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	5.8
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	249	217	367	<1.0	292
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	9.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	249	217	376	<1.0	292
	Ammonia as N (mg/L)	0.0792	<0.0050	0.155	<0.0050	0.0177
	Bicarbonate (HCO3) (mg/L)	304	264	447	<5.0	356
	Bromide (Br) (mg/L)	<0.050	<0.050	0.062	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	5.4	<5.0	<5.0
	Chloride (Cl) (mg/L)	10.7	0.50	13.9	<0.10	0.81
	Fluoride (F) (mg/L)	0.815	0.098	1.10	<0.020	0.264
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	101	94.6	97.8	0.0	94.8
	Nitrate and Nitrite (as N) (mg/L)	0.0135	0.575	0.0299	<0.0051	<0.0051
	Nitrate (as N) (mg/L)	0.0135	0.575	0.0287	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.0012	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.134	0.182	0.257	<0.050	0.114
	Total Nitrogen (mg/L)	0.148	0.757	0.287	<0.050	0.114
	Orthophosphate-Dissolved (as P) (mg/L)	0.0029	0.0141	0.0107	<0.0010	0.0071
	Phosphorus (P)-Total (mg/L)	0.239 <sup>DLHC</sup>	0.0139	0.117 <sup>DLHC</sup>	<0.0020	0.10 <sup>DLHC</sup>
	Sulfate (SO4) (mg/L)	8.41	8.15	1.37	<0.30	29.4
	Anion Sum (meq/L)	5.49	4.56	7.99	<0.10	6.48
	Cation Sum (meq/L)	5.52	4.31	7.81	<0.10	6.15
Cation - Anion Balance (%)	0.3	-2.8	-1.1	0.0	-2.6	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.51	4.59	0.93	<0.50	2.44
	Total Organic Carbon (mg/L)	0.69	4.59	1.20	<0.50	4.68
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0017	0.0015	0.0019	<0.0010	0.0041

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2570451-1 WG 24-MAR-21 10:45 GH_MW-WILLOW- 1D_WG_2021_03_ 24_NP	L2570451-2 WG 24-MAR-21 11:30 GH_MW-WILLOW- 2S_WG_2021_03_ 24_NP	L2570451-3 WG 24-MAR-21 12:30 GH_MW-WILLOW- 2D_WG_2021_03_ 24_NP	L2570451-4 WG 24-MAR-21 14:45 GH_MW_MC10- B_WG_2021_03_2 4_NP	L2570451-5 WG 24-MAR-21 15:30 GH_MW-WOLF- 2D_WG_2021_03_ 24_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00011	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00038	0.00024	0.00128	<0.00010
	Barium (Ba)-Dissolved (mg/L)	1.71 <sup>RRV</sup>	0.172	0.914	<0.00010
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.161	0.013	0.326	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	0.0000116	<0.000050	<0.000050
	Calcium (Ca)-Dissolved (mg/L)	29.0	50.6	26.9	<0.050
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00015	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00048	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.450	<0.010	0.044	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0923	0.0094	0.218	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	16.4	18.0	16.0	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.0618	<0.00010	0.0145	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00431	0.000602	0.00407	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00204	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.99	0.93	2.00	<0.10
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.00110	0.000077	<0.000050
	Silicon (Si)-Dissolved (mg/L)	3.24	3.38	4.30	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	61.3	6.47	117	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.634	0.128	0.422	<0.00020
	Sulfur (S)-Dissolved (mg/L)	2.88	3.09	0.70	<0.50
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000151	0.000554	0.000354	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Phosphorus (P)-Total	MS-B	L2570451-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL**            Water            Dissolved Mercury in Water by CVAAS            APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL**    Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL**            Water            Dissolved Metals in Water by CRC ICPMS            APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL**            Water            Total Nitrogen (Calculation)            APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL**            Water            Nitrate+Nitrite            CALCULATION

**NH3-L-F-CL**            Water            Ammonia, Total (as N)            J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL**            Water            Nitrite in Water by IC (Low Level)            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**            Water            Nitrate in Water by IC (Low Level)            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL**            Water            Hydroxide in Water            APHA 2320 B-Potentiometric Titration

**ORP-CL**            Water            Oxidation reduction potential by elect.            ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**            Water            Phosphorus (P)-Total            APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL**            Water            pH            APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**    Water            Orthophosphate-Dissolved (as P)            APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**            Water            Sulfate in Water by IC            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**            Water            Total Dissolved Solids            APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**    Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2570451

Report Date: 12-APR-21

Page 1 of 12

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418950</b>							
<b>WG3512589-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			111.4		%		85-115	02-APR-21
<b>WG3512589-13</b>	<b>MB</b>							
Acidity (as CaCO3)			<10		mg/L		20	02-APR-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418758</b>							
<b>WG3512352-9</b>	<b>DUP</b>	<b>L2570451-5</b>						
Alkalinity, Total (as CaCO3)		292	289		mg/L	1.0	20	01-APR-21
<b>WG3512352-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.7		%		85-115	01-APR-21
<b>WG3512352-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-APR-21
<b>Batch</b>	<b>R5421848</b>							
<b>WG3515988-4</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.96		%		85-115	09-APR-21
<b>WG3515988-3</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	09-APR-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5416771</b>							
<b>WG3510221-3</b>	<b>DUP</b>	<b>L2570451-4</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	29-MAR-21
<b>WG3510221-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			90.0		%		80-120	29-MAR-21
<b>WG3510221-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-MAR-21
<b>WG3510221-4</b>	<b>MS</b>	<b>L2570451-4</b>						
Beryllium (Be)-Dissolved			100.7		%		70-130	29-MAR-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418758</b>							
<b>WG3512352-9</b>	<b>DUP</b>	<b>L2570451-5</b>						
Bicarbonate (HCO3)		356	353		mg/L	1.0	20	01-APR-21
<b>WG3512352-7</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	01-APR-21
<b>Batch</b>	<b>R5421848</b>							
<b>WG3515988-4</b>	<b>LCS</b>							
Bicarbonate (HCO3)					mg/L			09-APR-21
<b>WG3515988-3</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	09-APR-21



## Quality Control Report

Workorder: L2570451

Report Date: 12-APR-21

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5417221</b>							
<b>WG3510747-2</b>	<b>LCS</b>							
Bromide (Br)			105.7		%		85-115	27-MAR-21
<b>WG3510747-6</b>	<b>LCS</b>							
Bromide (Br)			103.4		%		85-115	27-MAR-21
<b>WG3510747-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-MAR-21
<b>WG3510747-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-MAR-21
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5419244</b>							
<b>WG3512946-3</b>	<b>DUP</b>	<b>L2570451-5</b>						
Dissolved Organic Carbon		2.44	2.52		mg/L	3.3	20	01-APR-21
<b>WG3512946-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.5		%		80-120	01-APR-21
<b>WG3512946-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-APR-21
<b>WG3512946-4</b>	<b>MS</b>	<b>L2570451-5</b>						
Dissolved Organic Carbon			93.3		%		70-130	01-APR-21
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5419244</b>							
<b>WG3512946-3</b>	<b>DUP</b>	<b>L2570451-5</b>						
Total Organic Carbon		4.68	4.52		mg/L	3.4	20	01-APR-21
<b>WG3512946-2</b>	<b>LCS</b>							
Total Organic Carbon			103.9		%		80-120	01-APR-21
<b>WG3512946-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	01-APR-21
<b>WG3512946-4</b>	<b>MS</b>	<b>L2570451-5</b>						
Total Organic Carbon			91.7		%		70-130	01-APR-21
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5417221</b>							
<b>WG3510747-2</b>	<b>LCS</b>							
Chloride (Cl)			102.3		%		85-115	27-MAR-21
<b>WG3510747-6</b>	<b>LCS</b>							
Chloride (Cl)			99.3		%		85-115	27-MAR-21
<b>WG3510747-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	27-MAR-21
<b>WG3510747-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	27-MAR-21





## Quality Control Report

Workorder: L2570451

Report Date: 12-APR-21

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CO3-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5418758</b>							
<b>WG3512352-9</b>	<b>DUP</b>	<b>L2570451-5</b>						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	01-APR-21
<b>WG3512352-7</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	01-APR-21
<b>Batch</b>	<b>R5421848</b>							
<b>WG3515988-4</b>	<b>LCS</b>							
Carbonate (CO3)					mg/L			09-APR-21
<b>WG3515988-3</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	09-APR-21
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5418758</b>							
<b>WG3512352-9</b>	<b>DUP</b>	<b>L2570451-5</b>						
Conductivity (@ 25C)		525	527		uS/cm	0.4	10	01-APR-21
<b>WG3512352-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.7		%		90-110	01-APR-21
<b>WG3512352-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	01-APR-21
<b>Batch</b>	<b>R5421848</b>							
<b>WG3515988-4</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.0		%		90-110	09-APR-21
<b>WG3515988-3</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	09-APR-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5417221</b>							
<b>WG3510747-2</b>	<b>LCS</b>							
Fluoride (F)			105.9		%		90-110	27-MAR-21
<b>WG3510747-6</b>	<b>LCS</b>							
Fluoride (F)			94.3		%		90-110	27-MAR-21
<b>WG3510747-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	27-MAR-21
<b>WG3510747-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	27-MAR-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5418516</b>							
<b>WG3511738-3</b>	<b>DUP</b>	<b>L2570451-4</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	01-APR-21
<b>WG3511738-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			112.0		%		80-120	01-APR-21



## Quality Control Report

Workorder: L2570451

Report Date: 12-APR-21

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418516</b>							
<b>WG3511738-1 MB</b>								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	01-APR-21
<b>WG3511738-4 MS</b>		<b>L2570451-4</b>						
Mercury (Hg)-Dissolved			115.0		%		70-130	01-APR-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5416771</b>							
<b>WG3510221-3 DUP</b>		<b>L2570451-4</b>						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	29-MAR-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-MAR-21
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-MAR-21
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-MAR-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-MAR-21
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	29-MAR-21
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	29-MAR-21
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	29-MAR-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-MAR-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-MAR-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	29-MAR-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	29-MAR-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-MAR-21
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	29-MAR-21
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	29-MAR-21
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-MAR-21
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-MAR-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	29-MAR-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	29-MAR-21
Potassium (K)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	29-MAR-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-MAR-21
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	29-MAR-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-MAR-21
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	29-MAR-21
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	29-MAR-21
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	29-MAR-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-MAR-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-MAR-21



## Quality Control Report

Workorder: L2570451

Report Date: 12-APR-21

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5416771</b>							
<b>WG3510221-3</b>	<b>DUP</b>	<b>L2570451-4</b>						
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	29-MAR-21
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-MAR-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	29-MAR-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	29-MAR-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	29-MAR-21
<b>WG3510221-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			91.4		%		80-120	29-MAR-21
Antimony (Sb)-Dissolved			89.6		%		80-120	29-MAR-21
Arsenic (As)-Dissolved			91.6		%		80-120	29-MAR-21
Barium (Ba)-Dissolved			94.5		%		80-120	29-MAR-21
Bismuth (Bi)-Dissolved			92.7		%		80-120	29-MAR-21
Boron (B)-Dissolved			91.8		%		80-120	29-MAR-21
Cadmium (Cd)-Dissolved			92.1		%		80-120	29-MAR-21
Calcium (Ca)-Dissolved			90.9		%		80-120	29-MAR-21
Chromium (Cr)-Dissolved			91.8		%		80-120	29-MAR-21
Cobalt (Co)-Dissolved			91.5		%		80-120	29-MAR-21
Copper (Cu)-Dissolved			88.8		%		80-120	29-MAR-21
Iron (Fe)-Dissolved			91.3		%		80-120	29-MAR-21
Lead (Pb)-Dissolved			93.3		%		80-120	29-MAR-21
Lithium (Li)-Dissolved			88.6		%		80-120	29-MAR-21
Magnesium (Mg)-Dissolved			94.8		%		80-120	29-MAR-21
Manganese (Mn)-Dissolved			93.9		%		80-120	29-MAR-21
Molybdenum (Mo)-Dissolved			89.9		%		80-120	29-MAR-21
Nickel (Ni)-Dissolved			90.0		%		80-120	29-MAR-21
Phosphorus (P)-Dissolved			96.9		%		70-130	29-MAR-21
Potassium (K)-Dissolved			92.0		%		80-120	29-MAR-21
Selenium (Se)-Dissolved			90.1		%		80-120	29-MAR-21
Silicon (Si)-Dissolved			93.9		%		60-140	29-MAR-21
Silver (Ag)-Dissolved			91.4		%		80-120	29-MAR-21
Sodium (Na)-Dissolved			91.4		%		80-120	29-MAR-21
Strontium (Sr)-Dissolved			93.4		%		80-120	29-MAR-21
Sulfur (S)-Dissolved			89.2		%		80-120	29-MAR-21
Thallium (Tl)-Dissolved			92.2		%		80-120	29-MAR-21
Tin (Sn)-Dissolved			92.5		%		80-120	29-MAR-21



## Quality Control Report

Workorder: L2570451

Report Date: 12-APR-21

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5416771</b>							
<b>WG3510221-2</b>	<b>LCS</b>	<b>TMRM</b>						
Titanium (Ti)-Dissolved			89.3		%		80-120	29-MAR-21
Uranium (U)-Dissolved			94.0		%		80-120	29-MAR-21
Vanadium (V)-Dissolved			92.6		%		80-120	29-MAR-21
Zinc (Zn)-Dissolved			87.7		%		80-120	29-MAR-21
Zirconium (Zr)-Dissolved			88.2		%		80-120	29-MAR-21
<b>WG3510221-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-MAR-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-MAR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-MAR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-MAR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-MAR-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	29-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-MAR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-MAR-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	29-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-MAR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-21



## Quality Control Report

Workorder: L2570451

Report Date: 12-APR-21

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5416771</b>							
<b>WG3510221-1</b>	<b>MB</b>							
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-MAR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-MAR-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	29-MAR-21
<b>WG3510221-4</b>	<b>MS</b>	<b>L2570451-4</b>						
Aluminum (Al)-Dissolved			100.9		%		70-130	29-MAR-21
Antimony (Sb)-Dissolved			97.9		%		70-130	29-MAR-21
Arsenic (As)-Dissolved			99.1		%		70-130	29-MAR-21
Barium (Ba)-Dissolved			102.7		%		70-130	29-MAR-21
Bismuth (Bi)-Dissolved			103.0		%		70-130	29-MAR-21
Boron (B)-Dissolved			100.3		%		70-130	29-MAR-21
Cadmium (Cd)-Dissolved			101.1		%		70-130	29-MAR-21
Calcium (Ca)-Dissolved			99.7		%		70-130	29-MAR-21
Chromium (Cr)-Dissolved			100.3		%		70-130	29-MAR-21
Cobalt (Co)-Dissolved			100.9		%		70-130	29-MAR-21
Copper (Cu)-Dissolved			100.0		%		70-130	29-MAR-21
Iron (Fe)-Dissolved			101.2		%		70-130	29-MAR-21
Lead (Pb)-Dissolved			101.3		%		70-130	29-MAR-21
Lithium (Li)-Dissolved			99.5		%		70-130	29-MAR-21
Magnesium (Mg)-Dissolved			101.6		%		70-130	29-MAR-21
Manganese (Mn)-Dissolved			104.2		%		70-130	29-MAR-21
Molybdenum (Mo)-Dissolved			95.9		%		70-130	29-MAR-21
Nickel (Ni)-Dissolved			100.0		%		70-130	29-MAR-21
Phosphorus (P)-Dissolved			101.4		%		70-130	29-MAR-21
Potassium (K)-Dissolved			100.9		%		70-130	29-MAR-21
Selenium (Se)-Dissolved			99.4		%		70-130	29-MAR-21
Silicon (Si)-Dissolved			99.9		%		70-130	29-MAR-21
Silver (Ag)-Dissolved			97.9		%		70-130	29-MAR-21
Sodium (Na)-Dissolved			102.2		%		70-130	29-MAR-21
Strontium (Sr)-Dissolved			101.3		%		70-130	29-MAR-21
Thallium (Tl)-Dissolved			102.0		%		70-130	29-MAR-21
Tin (Sn)-Dissolved			97.4		%		70-130	29-MAR-21
Titanium (Ti)-Dissolved			95.6		%		70-130	29-MAR-21



## Quality Control Report

Workorder: L2570451

Report Date: 12-APR-21

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5416771</b>							
<b>WG3510221-4</b>	<b>MS</b>	<b>L2570451-4</b>						
Uranium (U)-Dissolved			102.3		%		70-130	29-MAR-21
Vanadium (V)-Dissolved			101.9		%		70-130	29-MAR-21
Zinc (Zn)-Dissolved			99.9		%		70-130	29-MAR-21
Zirconium (Zr)-Dissolved			95.4		%		70-130	29-MAR-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417970</b>							
<b>WG3511426-6</b>	<b>LCS</b>							
Ammonia as N			101.7		%		85-115	31-MAR-21
<b>WG3511426-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	31-MAR-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417221</b>							
<b>WG3510747-2</b>	<b>LCS</b>							
Nitrite (as N)			103.3		%		90-110	27-MAR-21
<b>WG3510747-6</b>	<b>LCS</b>							
Nitrite (as N)			102.7		%		90-110	27-MAR-21
<b>WG3510747-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	27-MAR-21
<b>WG3510747-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	27-MAR-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417221</b>							
<b>WG3510747-2</b>	<b>LCS</b>							
Nitrate (as N)			104.1		%		90-110	27-MAR-21
<b>WG3510747-6</b>	<b>LCS</b>							
Nitrate (as N)			99.7		%		90-110	27-MAR-21
<b>WG3510747-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	27-MAR-21
<b>WG3510747-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	27-MAR-21
<b>OH-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418758</b>							
<b>WG3512352-9</b>	<b>DUP</b>	<b>L2570451-5</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	01-APR-21
<b>WG3512352-7</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	01-APR-21





## Quality Control Report

Workorder: L2570451

Report Date: 12-APR-21

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
Batch	R5417221							
<b>WG3510747-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	27-MAR-21
<b>WG3510747-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	27-MAR-21
<b>SOLIDS-TDS-CL</b>								
Batch	R5418538							
<b>WG3511071-3</b>	<b>DUP</b>	<b>L2570451-1</b>						
Total Dissolved Solids		256	262		mg/L	2.3	20	31-MAR-21
<b>WG3511071-2</b>	<b>LCS</b>							
Total Dissolved Solids			95.8		%		85-115	31-MAR-21
<b>WG3511071-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	31-MAR-21
<b>TKN-L-F-CL</b>								
Batch	R5419798							
<b>WG3512958-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.0		%		75-125	05-APR-21
<b>WG3512958-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-APR-21
<b>TSS-L-CL</b>								
Batch	R5418504							
<b>WG3511069-2</b>	<b>LCS</b>							
Total Suspended Solids			99.6		%		85-115	31-MAR-21
<b>WG3511069-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	31-MAR-21
<b>TURBIDITY-CL</b>								
Batch	R5419089							
<b>WG3508979-2</b>	<b>LCS</b>							
Turbidity			100.5		%		85-115	26-MAR-21
<b>WG3508979-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	26-MAR-21



# Quality Control Report

Workorder: L2570451

Report Date: 12-APR-21

Page 11 of 12

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2570451

Report Date: 12-APR-21

Page 12 of 12

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	24-MAR-21 10:45	01-APR-21 06:48	0.25	188	hours	EHTR-FM
	2	24-MAR-21 11:30	01-APR-21 06:48	0.25	187	hours	EHTR-FM
	3	24-MAR-21 12:30	01-APR-21 06:48	0.25	186	hours	EHTR-FM
	4	24-MAR-21 14:45	01-APR-21 06:48	0.25	184	hours	EHTR-FM
	5	24-MAR-21 15:30	01-APR-21 06:48	0.25	183	hours	EHTR-FM
pH	1	24-MAR-21 10:45	01-APR-21 11:00	0.25	192	hours	EHTR-FM
	2	24-MAR-21 11:30	01-APR-21 11:00	0.25	192	hours	EHTR-FM
	3	24-MAR-21 12:30	01-APR-21 11:00	0.25	191	hours	EHTR-FM
	4	24-MAR-21 14:45	09-APR-21 10:00	0.25	379	hours	EHTR-FM
	5	24-MAR-21 15:30	01-APR-21 11:00	0.25	187	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Alkalinity (Species) by Manual Titration	4	24-MAR-21 14:45	09-APR-21 10:00	14	16	days	EHT
Bicarbonate (HCO3)	4	24-MAR-21 14:45	09-APR-21 10:00	14	16	days	EHT
Carbonate (CO3)	4	24-MAR-21 14:45	09-APR-21 10:00	14	16	days	EHT
Hydroxide in Water	4	24-MAR-21 14:45	09-APR-21 10:00	14	16	days	EHT

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2570451 were received on 25-MAR-21 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2570451-COFC

COC Number:

Page 1 of 3

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<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>				<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>												
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)				Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply												
Contact: Genevieve Pomerleau		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO				PRIORITY (Business Days) 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/>		EMERGENCY 1 Business day [E1 - 100%] Same Day, Weekend or Statutory holiday [E2 - 200%] (Laboratory opening fees may apply) <input type="checkbox"/>										
Phone: Tel.:250-354-1664 Cell.: 250-505-2847		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked				Date and Time Required for all E&P TATs:												
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				For tests that can not be performed according to the service level selected, you will be contacted.												
Street: 520 Lake Street		Emails: SNC - 'genevieve.pomerleau', and vicky.lipinski@sncclavalin.com				<b>Analysis Request</b>												
City/Province: Nelson, BC		Teck - crystal.sabel@teck.com				Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												
Postal Code: V1L 4C6		Teck - crystal.sabel@teck.com				DOC (C-DIS-ORG-LOW-CL) <input type="checkbox"/> TOC (C-TOT-ORG-LOW-CL) <input type="checkbox"/> BCMGDG D-Met.+Hg (MET-D-BCMDG-CL) <input type="checkbox"/> Total N Calc. (N-T-CALC-CL) <input type="checkbox"/> Nitrate + Nitrite Calc. (N2N3-CALC-CL) <input type="checkbox"/> Teck Routine (TECKCOAL-ROUTINE-CL) <input type="checkbox"/> TKN (TKN-L-F-CL) <input type="checkbox"/> Bicarbonate (BIC-CL) <input type="checkbox"/> Carbonate (CO3-CL) <input type="checkbox"/> Hydroxide (OH-CL) <input type="checkbox"/>												
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>Invoice Distribution</b>				SAMPLES ON HOLD												
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				Sample is hazardous (please provide further detail)												
Company:		Emails: genevieve.pomerleau@sncclavalin.com				NUMBER OF CONTAINERS												
Contact:		payables@sncclavalin.com																
<b>Project Information</b>						<b>Oil and Gas Required Fields (client use)</b>												
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center:		PO#														
Job #: Greenhills Operations		Major/Minor Code:		Routing Code:														
PO / AFE: 658004		Requisitioner:		Location:														
LSD:		ALS Contact: Inayat Dhaliwal 403-407-1784		Sampler: JVG, MB														
ALS Lab Work Order # (lab use only):																		
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC	TOC	BCMDG	Total N	Nitrate + Nitrite	Teck Routine	TKN	Bicarbonate	Carbonate	Hydroxide	SAMPLES ON HOLD	Sample is hazardous	NUMBER OF CONTAINERS
	<del>GH_MW-MC-1S_WG_2021_03_NP</del>	<del>GH_MW-MC-1S</del>			<del>WG</del>													
	<del>GH_MW-MC-1D_WG_2021_03_NP</del>	<del>GH_MW-MC-1D</del>			<del>WG</del>													
	<del>GH_MW-MC-2S_WG_2021_03_NP</del>	<del>GH_MW-MC-2S</del>			<del>WG</del>													
	<del>GH_MW-MC-2D_WG_2021_03_NP</del>	<del>GH_MW-MC-2D</del>			<del>WG</del>													
	<del>GH_MW-Willow-1S_WG_2021_03_NP</del>	<del>GH_MW-Willow-1S</del>			<del>WG</del>													
	GH_MW-Willow-1D_WG_2021_03_24NP	GH_MW-Willow-1D	24-Mar-21	10:45	WG	X	X	X	X	X	X	X	X	X	X			5
	GH_MW-Willow-2S_WG_2021_03_24NP	GH_MW-Willow-2S	24-Mar-21	11:30	WG	X	X	X	X	X	X	X	X	X	X			5
	GH_MW-Willow-2D_WG_2021_03_24NP	GH_MW-Willow-2D	24-Mar-21	12:30	WG	X	X	X	X	X	X	X	X	X	X			5
	<del>GH_MW-Willow-3S_WG_2021_03_NP</del>	<del>GH_MW-Willow-3S</del>			<del>WG</del>													
	<del>GH_MW-Willow-3D_WG_2021_03_NP</del>	<del>GH_MW-Willow-3D</del>			<del>WG</del>													
	<del>GH_MW-Well-1S_WG_2021_03_NP</del>	<del>GH_MW-Well-1S</del>			<del>WG</del>													
	<del>GH_MW-Well-1D_WG_2021_03_NP</del>	<del>GH_MW-Well-1D</del>			<del>WG</del>													
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>												
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>												
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)				Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>												
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS				Cooling Initiated <input type="checkbox"/>												
						INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C												
						2,5°C												
<b>SHIPMENT RELEASE (client use)</b>						<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>						<b>FINAL SHIPMENT RECEPTION (lab use only)</b>						
Released by: Gen Vananad		Date: 21 03 24		Time: 1800		Received by:		Date:		Time:		Received by: GH		Date: 25/03/21		Time: 9:00		

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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

SEPT 2017 FRMT



L2570451-COFC

COC Number:

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<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																		
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																		
Contact: Genevieve Pomerleau		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			PRIORITY (Business Days)	4 day [P4-20%] <input type="checkbox"/>			EMERGENCY	1 Business day [E1 - 100%] <input type="checkbox"/>													
Phone: Tel.: 250-354-1664 Cell.: 250-505-2847		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked				3 day [P3-25%] <input type="checkbox"/>				Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] <input type="checkbox"/>													
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				2 day [P2-50%] <input type="checkbox"/>																	
Street: 520 Lake Street		Emails: SNC - 'genevieve.pomerleau', and			Date and Time Required for all E&P TATs:																		
City/Province: Nelson, BC		vicky.lipinski@snclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																		
Postal Code: V1L 4C6		Teck - 'crystal.sabel@teck.com			<b>Analysis Request</b>																		
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																		
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P	P	F/P		P														
Company:		Emails: genevieve.pomerleau@snclavalin.com			DOC (C-DIS-ORG-LOW-CL)																		
Contact:		payables@snclavalin.com			TOC (C-TOT-ORG-LOW-CL)																		
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>			BCMDG D-Met +Hg (MET-D-BCMDG-CL)																		
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#			Total N Calc. (N-T-CALC-CL)																		
Job #: Greenhills Operations		Major/Minor Code: Routing Code:			Nitrate + Nitrite Calc. (N2N3-CALC-CL)																		
PO / AFE: 658004		Requisitioner:			Teck Routine (TECKCOAL-ROUTINE-CL)																		
LSD:		Location:			TKN (TKN-L-F-CL)																		
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784			Carbonate (BIC-CL)																		
		Sampler: JVG, MB			Carbonate (CO3-CL)																		
					Hydroxide (OH-CL)																		
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type																		
	GH_MW_MC10-A_WG_2021-03-NP	GH_MW_MC10-A			-WG-																		
	GH_MW_MC11-A_WG_2021-03-NP	GH_MW_MC11-A			-WG-																		
	GH_MW_MC10-B_WG_2021-03-24NP	GH_MW_MC10-B	24-May-21	14:45	WG	X	X	X	X	X	X	X	X	X	X	X	X						61
	GH_MW_MC10-C_WG_2021-03-NP	GH_MW_MC10-C			-WG-																		
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																		
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		<b>PLEASE ALSO SUBMIT EQUIS UPLOAD TO <a href="mailto:teckcoal@equisonline.com">teckcoal@equisonline.com</a></b>			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																		
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO					Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																		
		Teck Facility Name: (please select the applicable Facility)			Cooling Initiated <input type="checkbox"/>																		
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C														
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																		
Released by: <u>G. Mananad</u>		Received by:			Date: 210324		Date:		Time: 1700		Time:		Date:		Time:								

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SEPT 2017 F98T

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																
Contact: Genevieve Pomerleau		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			4 day [P4-20%] <input type="checkbox"/> <b>EMERGENCY</b> 1 Business day [E1 - 100%] <input type="checkbox"/>																
Phone: Tel.:250-354-1664 Cell.: 250-505-2847		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>																
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			2 day [P2-50%] <input type="checkbox"/>																
Street: 520 Lake Street		Emails: SNC - 'genevieve.pomerleau',			Date and Time Required for all E&P TATs:																
City/Province: Nelson, BC		vicky.lipinski@sncclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																
Postal Code: V1L 4C6		Teck - " crystal.sabel@teck.com			<b>Analysis Request</b>																
Invoice To Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P P F/P P																
Company:		Emails: genevieve.pomerleau@sncclavalin.com			DOC (C-DIS-ORG-LOW-CL)																
Contact:		payables@sncclavalin.com			TOC (C-TOT-ORG-LOW-CL)																
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>			BCMDG D-Met.+Hg (MET-D-BCMDG-CL)																
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#			Total N Calc. (N-T-CALC-CL)																
Job #: Greenhills Operations		Major/Minor Code: Routing Code:			Nitrate + Nitrite Calc. (N2N3-CALC-CL)																
PO / AFE: 658004		Requisitioner:			Teck Routine (TECKCOAL-ROUTINE-CL)																
LSD:		Location:			TKN (TKN-L-F-CL)																
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784			Bicarbonate (BIC-CL)																
		Sampler: JVG, MB			Carbonate (CO3-CL)																
					Hydroxide (OH-CL)																
					SAMPLES ON HOLD																
					Sample is hazardous (please provide further detail)																
					NUMBER OF CONTAINERS																
<b>ALS Sample # (lab use only)</b>		<b>Sample Identification &amp;/or Coordinates</b> (This description will appear on the report)		<b>Teck Sample Location (sys_loc_code)</b> (For Teck data upload to EQUIS database)		<b>Date</b> (dd-mmm-yy)		<b>Time</b> (hh:mm)		<b>Sample Type</b>											
		GH_MW-Wolf-2S_WG-2021-03_NP		GH_MW-Wolf-2S						WG											
		GH_MW-Wolf-2D_WG-2021-03-24-NP		GH_MW-Wolf-2D		24-Mar-21		15:30		WG		X X									
		GH_MW-LC1-A_WG-2021-03_NP		GH_MW-LC1-A						WG											
		GH_MW-LC1-B_WG-2021-03_NP		GH_MW-LC1-B						WG											
		GH_MW-LC2-A_WG-2021-03_NP		GH_MW-LC2-A						WG											
		GH_MW-LC2-B_WG-2021-03_NP		GH_MW-LC2-B						WG											
		GH_MW-WC1-A_WG-2021-03_NP		GH_MW-WC1-A						WG											
		GH_MW-WC1-B_WG-2021-03_NP		GH_MW-WC1-B						WG											
		GH_MW-WC1-C_WG-2021-03_NP		GH_MW-WC1-C						WG											
<b>Drinking Water (DW) Samples (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>										<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>									
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com										Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>									
Are samples for human consumption/use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)										Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>									
		GH0-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS										Cooling Initiated <input type="checkbox"/>									
												INITIAL COOLER TEMPERATURES °C									
												FINAL COOLER TEMPERATURES °C									
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>										<b>FINAL SHIPMENT RECEPTION (lab use only)</b>									
Released by: <i>Apurva</i>		Date: 210324		Time: 1700		Received by:		Date:		Time:		Received by:		Date:		Time:					



SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 26-MAR-21  
Report Date: 07-APR-21 17:08 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2570790  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Inayat Dhaliwal  
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2570790-1	L2570790-2	L2570790-3	L2570790-4	L2570790-5
					WG	WG	WG	WG	WG
		25-MAR-21	09:50		25-MAR-21	25-MAR-21	25-MAR-21	25-MAR-21	25-MAR-21
					09:50	11:30	09:45	15:30	16:30
					GH_MW_WC1-A_WG_2021_03_25_NP	GH_MW_WC1-B_WG_2021_03_25_NP	GH_MW_WC1-C_WG_2021_03_25_NP	GH_MW-WOLF-1D_WG_2021_03_25_NP	GH_MW_MC10-C_WG_2021_03_25_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	311	386	307	393	<2.0			
	Hardness (as CaCO3) (mg/L)	164	218	171	211	<0.50			
	pH (pH)	7.89	7.89	7.92	7.77	5.39			
	ORP (mV)	439	388	392	408	411			
	Total Suspended Solids (mg/L)	<1.0	9.3	<1.0	44.1	<1.0			
	Total Dissolved Solids (mg/L)	185 <sup>DLHC</sup>	235 <sup>DLHC</sup>	162 <sup>DLHC</sup>	220 <sup>DLHC</sup>	<10			
	Turbidity (NTU)	1.47	4.50	0.11	23.5	<0.10			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5.3	5.1	4.2	9.0	1.8			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	163	169	159	228	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	163	169	159	228	<1.0			
	Ammonia as N (mg/L)	0.0703	0.0268	<0.0050	0.0650	<0.0050			
	Bicarbonate (HCO3) (mg/L)	198	206	194	278	<5.0			
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050			
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Chloride (Cl) (mg/L)	0.70	0.78	0.27	0.75	<0.10			
	Fluoride (F) (mg/L)	0.293	0.204	0.104	0.283	<0.020			
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Ion Balance (%)	97.0	99.0	92.6	98.1	0.0			
	Nitrate and Nitrite (as N) (mg/L)	0.0083	0.914	0.103	<0.0051	<0.0051			
	Nitrate (as N) (mg/L)	0.0083	0.914	0.103	<0.0050	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.088	0.404	<0.050	0.093	<0.050			
	Total Nitrogen (mg/L)	0.096	1.32	0.103	0.093	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0011	<0.0010	0.0020	<0.0010	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0077	<0.0020	0.0319	<0.0020			
	Sulfate (SO4) (mg/L)	23.5	52.3	25.9	10.7	<0.30			
	Anion Sum (meq/L)	3.78	4.56	3.74	4.81	<0.10			
	Cation Sum (meq/L)	3.66	4.52	3.46	4.72	<0.10			
Cation - Anion Balance (%)	-1.5	-0.5	-3.8	-1.0	0.0				
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	0.70	<0.50			
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	1.00	<0.50			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	<0.0010	0.0011	0.0019	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2570790-1 WG 25-MAR-21 09:50 GH_MW_WC1- A_WG_2021_03_ 25_NP	L2570790-2 WG 25-MAR-21 11:30 GH_MW_WC1- B_WG_2021_03_ 25_NP	L2570790-3 WG 25-MAR-21 09:45 GH_MW_WC1- C_WG_2021_03_ 25_NP	L2570790-4 WG 25-MAR-21 15:30 GH_MW-WOLF- 1D_WG_2021_03_ 25_NP	L2570790-5 WG 25-MAR-21 16:30 GH_MW_MC10- C_WG_2021_03_2 5_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00056	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00140	0.00259	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0796	0.0960	0.0468	<0.00010
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.039	0.013	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000139	0.0000069	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	40.1	56.1	49.0	<0.050
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00024	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00019	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.193	0.082	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	0.000078	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0081	0.0216	0.0033	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	15.5	18.8	11.8	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.0902	0.0282	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00305	0.00334	0.000987	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00170	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.94	0.79	0.34	<0.10
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.00389	0.00123	<0.000050
	Silicon (Si)-Dissolved (mg/L)	5.15	3.84	1.63	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	7.98	3.35	0.786	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.752	0.319	0.205	<0.00020
	Sulfur (S)-Dissolved (mg/L)	7.62	17.7	7.93	<0.50
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000015	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000097	0.000699	0.000829	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.0013	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Phosphorus (P)-Total	MS-B	L2570790-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

## Reference Information

<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			

## Reference Information

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2570790

Report Date: 07-APR-21

Page 1 of 12

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5419977</b>							
<b>WG3513803-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			109.4		%		85-115	05-APR-21
<b>WG3513803-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	05-APR-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5419890</b>							
<b>WG3513653-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			103.3		%		85-115	05-APR-21
<b>WG3513653-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	05-APR-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417283</b>							
<b>WG3510789-3</b>	<b>DUP</b>	<b>L2570790-5</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	30-MAR-21
<b>WG3510789-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			110.1		%		80-120	30-MAR-21
<b>WG3510789-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-MAR-21
<b>WG3510789-4</b>	<b>MS</b>	<b>L2570790-5</b>						
Beryllium (Be)-Dissolved			119.2		%		70-130	30-MAR-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5419890</b>							
<b>WG3513653-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	05-APR-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417221</b>							
<b>WG3510747-7</b>	<b>DUP</b>	<b>L2570790-5</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	27-MAR-21
<b>WG3510747-2</b>	<b>LCS</b>							
Bromide (Br)			105.7		%		85-115	27-MAR-21
<b>WG3510747-6</b>	<b>LCS</b>							
Bromide (Br)			103.4		%		85-115	27-MAR-21
<b>WG3510747-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-MAR-21
<b>WG3510747-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-MAR-21
<b>WG3510747-8</b>	<b>MS</b>	<b>L2570790-5</b>						



## Quality Control Report

Workorder: L2570790

Report Date: 07-APR-21

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b> <b>Water</b>								
Batch	R5417221							
<b>WG3510747-8</b>	<b>MS</b>	<b>L2570790-5</b>						
Bromide (Br)			118.3		%		75-125	27-MAR-21
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5419839							
<b>WG3513644-3</b>	<b>DUP</b>	<b>L2570790-1</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	05-APR-21
<b>WG3513644-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.5		%		80-120	05-APR-21
<b>WG3513644-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-APR-21
<b>WG3513644-4</b>	<b>MS</b>	<b>L2570790-1</b>						
Dissolved Organic Carbon			91.9		%		70-130	05-APR-21
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5419839							
<b>WG3513644-3</b>	<b>DUP</b>	<b>L2570790-1</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	05-APR-21
<b>WG3513644-2</b>	<b>LCS</b>							
Total Organic Carbon			103.8		%		80-120	05-APR-21
<b>WG3513644-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	05-APR-21
<b>WG3513644-4</b>	<b>MS</b>	<b>L2570790-1</b>						
Total Organic Carbon			99.0		%		70-130	05-APR-21
<b>CL-L-IC-N-CL</b> <b>Water</b>								
Batch	R5417221							
<b>WG3510747-7</b>	<b>DUP</b>	<b>L2570790-5</b>						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	27-MAR-21
<b>WG3510747-2</b>	<b>LCS</b>							
Chloride (Cl)			102.3		%		85-115	27-MAR-21
<b>WG3510747-6</b>	<b>LCS</b>							
Chloride (Cl)			99.3		%		85-115	27-MAR-21
<b>WG3510747-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	27-MAR-21
<b>WG3510747-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	27-MAR-21
<b>WG3510747-8</b>	<b>MS</b>	<b>L2570790-5</b>						
Chloride (Cl)			113.6		%		75-125	27-MAR-21
<b>CO3-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2570790

Report Date: 07-APR-21

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CO3-CL</b>								
<b>Water</b>								
Batch R5419890								
WG3513653-1 MB								
Carbonate (CO3)								
			<5.0		mg/L		5	05-APR-21
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch R5419890								
WG3513653-2 LCS								
Conductivity (@ 25C)								
			101.9		%		90-110	05-APR-21
WG3513653-1 MB								
Conductivity (@ 25C)								
			<2.0		uS/cm		2	05-APR-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch R5417221								
WG3510747-7 DUP								
Fluoride (F)								
		L2570790-5	<0.020	RPD-NA	mg/L	N/A	20	27-MAR-21
WG3510747-2 LCS								
Fluoride (F)								
			105.9		%		90-110	27-MAR-21
WG3510747-6 LCS								
Fluoride (F)								
			94.3		%		90-110	27-MAR-21
WG3510747-1 MB								
Fluoride (F)								
			<0.020		mg/L		0.02	27-MAR-21
WG3510747-5 MB								
Fluoride (F)								
			<0.020		mg/L		0.02	27-MAR-21
WG3510747-8 MS								
Fluoride (F)								
		L2570790-5	107.8		%		75-125	27-MAR-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
Batch R5418849								
WG3512449-2 LCS								
Mercury (Hg)-Dissolved								
			99.8		%		80-120	03-APR-21
WG3512449-1 MB								
Mercury (Hg)-Dissolved								
			<0.000005C		mg/L		0.000005	03-APR-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
Batch R5417283								
WG3510789-3 DUP								
Aluminum (Al)-Dissolved								
		L2570790-5	<0.0010	RPD-NA	mg/L	N/A	20	30-MAR-21
Antimony (Sb)-Dissolved								
			<0.00010	RPD-NA	mg/L	N/A	20	30-MAR-21
Arsenic (As)-Dissolved								
			<0.00010	RPD-NA	mg/L	N/A	20	30-MAR-21
Barium (Ba)-Dissolved								
			<0.00010	RPD-NA	mg/L	N/A	20	30-MAR-21
Bismuth (Bi)-Dissolved								
			<0.000050	RPD-NA	mg/L	N/A	20	30-MAR-21



## Quality Control Report

Workorder: L2570790

Report Date: 07-APR-21

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417283</b>							
<b>WG3510789-3</b>	<b>DUP</b>	<b>L2570790-5</b>						
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	30-MAR-21
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	30-MAR-21
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-MAR-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-MAR-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-MAR-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	30-MAR-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	30-MAR-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-MAR-21
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-MAR-21
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	30-MAR-21
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-MAR-21
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-MAR-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	30-MAR-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-MAR-21
Potassium (K)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	30-MAR-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-MAR-21
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-MAR-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-MAR-21
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-MAR-21
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	30-MAR-21
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	30-MAR-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-MAR-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-MAR-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	30-MAR-21
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-MAR-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	30-MAR-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-MAR-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	30-MAR-21
<b>WG3510789-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			107.5		%		80-120	30-MAR-21
Antimony (Sb)-Dissolved			109.4		%		80-120	30-MAR-21
Arsenic (As)-Dissolved			106.9		%		80-120	30-MAR-21
Barium (Ba)-Dissolved			107.0		%		80-120	30-MAR-21
Bismuth (Bi)-Dissolved			107.2		%		80-120	30-MAR-21



## Quality Control Report

Workorder: L2570790

Report Date: 07-APR-21

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417283</b>							
<b>WG3510789-2</b>	<b>LCS</b>	<b>TMRM</b>						
Boron (B)-Dissolved			107.7		%		80-120	30-MAR-21
Cadmium (Cd)-Dissolved			107.3		%		80-120	30-MAR-21
Calcium (Ca)-Dissolved			104.4		%		80-120	30-MAR-21
Chromium (Cr)-Dissolved			107.6		%		80-120	30-MAR-21
Cobalt (Co)-Dissolved			105.1		%		80-120	30-MAR-21
Copper (Cu)-Dissolved			104.3		%		80-120	30-MAR-21
Iron (Fe)-Dissolved			104.0		%		80-120	30-MAR-21
Lead (Pb)-Dissolved			110.0		%		80-120	30-MAR-21
Lithium (Li)-Dissolved			110.8		%		80-120	30-MAR-21
Magnesium (Mg)-Dissolved			109.3		%		80-120	30-MAR-21
Manganese (Mn)-Dissolved			107.4		%		80-120	30-MAR-21
Molybdenum (Mo)-Dissolved			110.4		%		80-120	30-MAR-21
Nickel (Ni)-Dissolved			104.3		%		80-120	30-MAR-21
Phosphorus (P)-Dissolved			112.4		%		70-130	30-MAR-21
Potassium (K)-Dissolved			107.2		%		80-120	30-MAR-21
Selenium (Se)-Dissolved			104.8		%		80-120	30-MAR-21
Silicon (Si)-Dissolved			109.6		%		60-140	30-MAR-21
Silver (Ag)-Dissolved			110.8		%		80-120	30-MAR-21
Sodium (Na)-Dissolved			106.5		%		80-120	30-MAR-21
Strontium (Sr)-Dissolved			114.7		%		80-120	30-MAR-21
Sulfur (S)-Dissolved			97.8		%		80-120	30-MAR-21
Thallium (Tl)-Dissolved			106.2		%		80-120	30-MAR-21
Tin (Sn)-Dissolved			109.9		%		80-120	30-MAR-21
Titanium (Ti)-Dissolved			104.6		%		80-120	30-MAR-21
Uranium (U)-Dissolved			106.8		%		80-120	30-MAR-21
Vanadium (V)-Dissolved			108.0		%		80-120	30-MAR-21
Zinc (Zn)-Dissolved			105.5		%		80-120	30-MAR-21
Zirconium (Zr)-Dissolved			109.7		%		80-120	30-MAR-21
<b>WG3510789-1 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-MAR-21





## Quality Control Report

Workorder: L2570790

Report Date: 07-APR-21

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417283</b>							
<b>WG3510789-1</b>	<b>MB</b>							
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-MAR-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-MAR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-MAR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-MAR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-MAR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-MAR-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	30-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-MAR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-MAR-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	30-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-MAR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-MAR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-MAR-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	30-MAR-21
<b>WG3510789-4</b>	<b>MS</b>	<b>L2570790-5</b>						
Aluminum (Al)-Dissolved			110.0		%		70-130	30-MAR-21
Antimony (Sb)-Dissolved			115.0		%		70-130	30-MAR-21
Arsenic (As)-Dissolved			105.5		%		70-130	30-MAR-21
Barium (Ba)-Dissolved			109.2		%		70-130	30-MAR-21
Bismuth (Bi)-Dissolved			112.0		%		70-130	30-MAR-21



## Quality Control Report

Workorder: L2570790

Report Date: 07-APR-21

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417283</b>							
<b>WG3510789-4</b>	<b>MS</b>	<b>L2570790-5</b>						
Boron (B)-Dissolved			115.9		%		70-130	30-MAR-21
Cadmium (Cd)-Dissolved			113.0		%		70-130	30-MAR-21
Calcium (Ca)-Dissolved			111.0		%		70-130	30-MAR-21
Chromium (Cr)-Dissolved			109.8		%		70-130	30-MAR-21
Cobalt (Co)-Dissolved			109.3		%		70-130	30-MAR-21
Copper (Cu)-Dissolved			109.9		%		70-130	30-MAR-21
Iron (Fe)-Dissolved			108.9		%		70-130	30-MAR-21
Lead (Pb)-Dissolved			114.4		%		70-130	30-MAR-21
Lithium (Li)-Dissolved			119.5		%		70-130	30-MAR-21
Magnesium (Mg)-Dissolved			109.3		%		70-130	30-MAR-21
Manganese (Mn)-Dissolved			108.7		%		70-130	30-MAR-21
Molybdenum (Mo)-Dissolved			111.0		%		70-130	30-MAR-21
Nickel (Ni)-Dissolved			108.1		%		70-130	30-MAR-21
Phosphorus (P)-Dissolved			110.1		%		70-130	30-MAR-21
Potassium (K)-Dissolved			112.6		%		70-130	30-MAR-21
Selenium (Se)-Dissolved			110.8		%		70-130	30-MAR-21
Silicon (Si)-Dissolved			111.7		%		70-130	30-MAR-21
Silver (Ag)-Dissolved			114.4		%		70-130	30-MAR-21
Sodium (Na)-Dissolved			112.2		%		70-130	30-MAR-21
Strontium (Sr)-Dissolved			118.4		%		70-130	30-MAR-21
Thallium (Tl)-Dissolved			112.0		%		70-130	30-MAR-21
Tin (Sn)-Dissolved			112.1		%		70-130	30-MAR-21
Titanium (Ti)-Dissolved			104.8		%		70-130	30-MAR-21
Uranium (U)-Dissolved			111.6		%		70-130	30-MAR-21
Vanadium (V)-Dissolved			109.9		%		70-130	30-MAR-21
Zinc (Zn)-Dissolved			111.9		%		70-130	30-MAR-21
Zirconium (Zr)-Dissolved			117.7		%		70-130	30-MAR-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418384</b>							
<b>WG3512029-2</b>	<b>LCS</b>							
Ammonia as N			94.3		%		85-115	01-APR-21
<b>WG3512029-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	01-APR-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2570790

Report Date: 07-APR-21

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5417221</b>							
<b>WG3510747-7</b>	<b>DUP</b>	<b>L2570790-5</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-MAR-21
<b>WG3510747-2</b>	<b>LCS</b>							
Nitrite (as N)			103.3		%		90-110	27-MAR-21
<b>WG3510747-6</b>	<b>LCS</b>							
Nitrite (as N)			102.7		%		90-110	27-MAR-21
<b>WG3510747-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	27-MAR-21
<b>WG3510747-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	27-MAR-21
<b>WG3510747-8</b>	<b>MS</b>	<b>L2570790-5</b>						
Nitrite (as N)			116.6		%		75-125	27-MAR-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5417221</b>							
<b>WG3510747-7</b>	<b>DUP</b>	<b>L2570790-5</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	27-MAR-21
<b>WG3510747-2</b>	<b>LCS</b>							
Nitrate (as N)			104.1		%		90-110	27-MAR-21
<b>WG3510747-6</b>	<b>LCS</b>							
Nitrate (as N)			99.7		%		90-110	27-MAR-21
<b>WG3510747-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	27-MAR-21
<b>WG3510747-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	27-MAR-21
<b>WG3510747-8</b>	<b>MS</b>	<b>L2570790-5</b>						
Nitrate (as N)			113.6		%		75-125	27-MAR-21
<b>OH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5419890</b>							
<b>WG3513653-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	05-APR-21
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5418183</b>							
<b>WG3511795-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			216		mV		210-230	01-APR-21
<b>P-T-L-COL-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2570790

Report Date: 07-APR-21

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b> <b>Water</b>								
Batch	R5417885							
<b>WG3511353-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			89.4		%		80-120	31-MAR-21
<b>WG3511353-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	31-MAR-21
<b>PH-CL</b> <b>Water</b>								
Batch	R5419890							
<b>WG3513653-2</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	05-APR-21
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R5415975							
<b>WG3509294-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.0		%		80-120	26-MAR-21
<b>WG3509294-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-MAR-21
<b>WG3509294-4</b>	<b>MS</b>	<b>L2570790-5</b>						
Orthophosphate-Dissolved (as P)			112.0		%		70-130	26-MAR-21
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R5417221							
<b>WG3510747-7</b>	<b>DUP</b>	<b>L2570790-5</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	27-MAR-21
<b>WG3510747-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.0		%		90-110	27-MAR-21
<b>WG3510747-6</b>	<b>LCS</b>							
Sulfate (SO4)			97.4		%		90-110	27-MAR-21
<b>WG3510747-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	27-MAR-21
<b>WG3510747-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	27-MAR-21
<b>WG3510747-8</b>	<b>MS</b>	<b>L2570790-5</b>						
Sulfate (SO4)			111.2		%		75-125	27-MAR-21
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R5418538							
<b>WG3511071-2</b>	<b>LCS</b>							
Total Dissolved Solids			95.8		%		85-115	31-MAR-21
<b>WG3511071-5</b>	<b>LCS</b>							
Total Dissolved Solids			95.1		%		85-115	31-MAR-21
<b>WG3511071-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2570790

Report Date: 07-APR-21

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418538</b>							
<b>WG3511071-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	31-MAR-21
<b>WG3511071-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	31-MAR-21
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5419798</b>							
<b>WG3512958-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.0		%		75-125	05-APR-21
<b>WG3512958-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-APR-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418504</b>							
<b>WG3511069-2</b>	<b>LCS</b>							
Total Suspended Solids			99.6		%		85-115	31-MAR-21
<b>WG3511069-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	31-MAR-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5416200</b>							
<b>WG3509572-3</b>	<b>DUP</b>	<b>L2570790-4</b>						
Turbidity		23.5	23.6		NTU	0.4	15	27-MAR-21
<b>WG3509572-2</b>	<b>LCS</b>							
Turbidity			101.5		%		85-115	27-MAR-21
<b>WG3509572-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	27-MAR-21

# Quality Control Report

Workorder: L2570790

Report Date: 07-APR-21

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2570790

Report Date: 07-APR-21

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	25-MAR-21 09:50	01-APR-21 08:30	0.25	167	hours	EHTR-FM
	2	25-MAR-21 11:30	01-APR-21 07:30	0.25	164	hours	EHTR-FM
	3	25-MAR-21 09:45	01-APR-21 07:30	0.25	166	hours	EHTR-FM
	4	25-MAR-21 15:30	01-APR-21 07:30	0.25	160	hours	EHTR-FM
	5	25-MAR-21 16:30	01-APR-21 07:30	0.25	159	hours	EHTR-FM
pH							
	1	25-MAR-21 09:50	05-APR-21 09:00	0.25	263	hours	EHTR-FM
	2	25-MAR-21 11:30	05-APR-21 09:00	0.25	262	hours	EHTR-FM
	3	25-MAR-21 09:45	05-APR-21 09:00	0.25	263	hours	EHTR-FM
	4	25-MAR-21 15:30	05-APR-21 09:00	0.25	258	hours	EHTR-FM
	5	25-MAR-21 16:30	05-APR-21 09:00	0.25	257	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2570790 were received on 26-MAR-21 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2570790-COFC

COC Number:

Page 1 of 3

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																		
Company:	SNC-Lavalin	Select Report Format:	<input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)	<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																			
Contact:	Genevieve Pomerleau	Quality Control (QC) Report with Report	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<b>PRIORITY (Business days)</b>		<b>EMERGENCY</b>																	
Phone:	Tel.:250-354-1664 Cell.: 250-505-2847	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>																	
Company address below will appear on the final report		Select Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>																	
Street:	520 Lake Street	Electronically signed by:		2 day [P2-50%] <input type="checkbox"/>		Date and Time Required for all E&P TATs:																	
City/Province:	Nelson, BC	Emails: SNC - 'genevieve.pomerleau',				For tests that can not be performed according to the service level selected, you will be contacted.																	
Postal Code:	V1L 4C6	vicky.lipinski@snc-lavalin.com				<b>Analysis Request</b>																	
<b>Invoice To</b>		<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																		
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P	P	F/P																
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: genevieve.pomerleau@snc-lavalin.com																					
Company:		payables@snc-lavalin.com																					
Contact:		Project Information																					
ALS Account # / Quote #:		Oil and Gas Required Fields (client use)																					
MOR125 / Q72340		AFE/Cost Center: PO#																					
Job #: Greenhills Operations		Major/Minor Code: Routine Code:																					
PO / AFE: 658004		Requisitioner: Location:																					
LSD:		ALS Lab Work Order # (lab use only):																					
		ALS Contact: Inayat Dhaliwal 403-407-1784																					
		Sampler: MB, JVG																					
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met. +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)								
	GH_MW_Wolf-2S_WG_2021_03_NP	GH_MW_Wolf-2S			WG																		
	GH_MW_Wolf-2D_WG_2021_03_NP	GH_MW_Wolf-2D			WG																		
	GH_MW_LC1-A_WG_2021_03_NP	GH_MW_LC1-A			WG																		
	GH_MW_LC1-B_WG_2021_03_NP	GH_MW_LC1-B			WG																		
	GH_MW_LC2-A_WG_2021_03_NP	GH_MW_LC2-A			WG																		
	GH_MW_LC2-B_WG_2021_03_NP	GH_MW_LC2-B			WG																		
	GH_MW_WC1-A_WG_2021_03_25_NP	GH_MW_WC1-A	25 Mar 21	09:50	WG	X	X	X	X	X	X	X	X	X	X							5	
	GH_MW_WC1-B_WG_2021_03_25_NP	GH_MW_WC1-B	25 Mar 21	11:30	WG	X	X	X	X	X	X	X	X	X	X							5	
	GH_MW_WC1-C_WG_2021_03_25_NP	GH_MW_WC1-C	25 Mar 21	09:45	WG	X	X	X	X	X	X	X	X	X	X							5	
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																		
Are samples taken from a Regulated DW System?		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																		
<input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)			Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																		
Are samples for human consumption/ use?		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Cooling Initiated <input type="checkbox"/>																		
<input checked="" type="checkbox"/> NO					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C													
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Jan Vengrad	210325	1700																					





<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																
Company:	SNC-Lavalin	Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																
Contact:	Genevieve Pomerleau	Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		PRIORITY (Business Days)	4 day [P4-20%] <input type="checkbox"/>		EMERGENCY	1 Business day [E1 - 100%] <input type="checkbox"/>												
Phone:	Tel.:250-354-1664 Cell.: 250-505-2847	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%] <input type="checkbox"/>			Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>												
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Date and Time Required for all E&P TATs:																
Street:	520 Lake Street	Emails: SNC - 'genevieve.pomerleau', and		For tests that can not be performed according to the service level selected, you will be contacted.																
City/Province:	Nelson, BC	vicky.lipinski@snclavalin.com		<b>Analysis Request</b>																
Postal Code:	V1L 4C6	Teck - crystal.sabel@teck.com		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																
Invoice To	Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<b>Invoice Distribution</b>		F/P	P	F/P														
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																		
Company:		Emails: genevieve.pomerleau@snclavalin.com		DOC (C-DIS-ORG-LOW-CL)																
Contact:		payables@snclavalin.com		TOC (C-TOT-ORG-LOW-CL)																
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>		BCMDG D-Met. +Hg (MET-D-BCMDG-CL)																
ALS Account # / Quote #:	MOR125 / Q72340	AFE/Cost Center:	PO#	Total N Calc. (N-T-CALC-CL)																
Job #:	Greenhills Operations	Major/Minor Code:	Routing Code:	Nitrate + Nitrite Calc. (N2N3-CALC-CL)																
PO / AFE:	658004	Requisitioner:		Teck Routine (TECKCOAL-ROUTINE-CL)																
LSD:		Location:		TKN (TKN-L-F-CL)																
ALS Lab Work Order # (lab use only):		ALS Contact:	Inayat Dhaliwal 403-407-1784	Sampler:	MB, JVG		Bicarbonate (BIC-CL)													
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type															
	GH_MW-MC-1S_WG_2021_03__NP	GH_MW-MC-1S			WG															
	GH_MW-MC-1D_WG_2021_03__NP	GH_MW-MC-1D			WG															
	GH_MW-MC-2S_WG_2021_03__NP	GH_MW-MC-2S			WG															
	GH_MW-MC-2D_WG_2021_03__NP	GH_MW-MC-2D			WG															
	GH_MW-Willow-1S_WG_2021_03__NP	GH_MW-Willow-1S			WG															
	GH_MW-Willow-1D_WG_2021_03__NP	GH_MW-Willow-1D			WG															
	GH_MW-Willow-2S_WG_2021_03__NP	GH_MW-Willow-2S			WG															
	GH_MW-Willow-2D_WG_2021_03__NP	GH_MW-Willow-2D			WG															
	GH_MW-Willow-3S_WG_2021_03__NP	GH_MW-Willow-3S			WG															
	GH_MW-Willow-3D_WG_2021_03__NP	GH_MW-Willow-3D			WG															
	GH_MW-Wolf-1S_WG_2021_03__NP	GH_MW-Wolf-1S			WG															
	GH_MW-Wolf-1D_WG_2021_03__NP	GH_MW-Wolf-1D	25 Mar 21	15:30	WG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	5
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO <a href="mailto:teckcoal@equisonline.com">teckcoal@equisonline.com</a>		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input type="checkbox"/>																
				INITIAL COOLER TEMPERATURES °C																
				FINAL COOLER TEMPERATURES °C																
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>		<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:												
Jen Longard	210325	1700				3/4	26/23	8:40												



L2570790-COFC

COC Number:

Page 3 of 3

Report To		Report Format / Distribution				Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																												
Contact and company name below will appear on the final report		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)				Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																												
Company:	SNC-Lavalin	Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO				PRIORITY (Business Days)	4 day [P4-20%] <input type="checkbox"/>		EMERGENCY	1 Business day [E1 - 100%] <input type="checkbox"/>																								
Contact:	Genevieve Pomerleau	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked					3 day [P3-25%] <input type="checkbox"/>			Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>																								
Phone:	Tel.: 250-354-1664 Cell.: 250-505-2847	Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX					2 day [P2-50%] <input type="checkbox"/>																											
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				Date and Time Required for all E&P TATs:																												
Street:	520 Lake Street	Emails: SNC - 'genevieve.pomerleau', and				For tests that can not be performed according to the service level selected, you will be contacted.																												
City/Province:	Nelson, BC	vicky.lipinski@snclavalin.com				Analysis Request																												
Postal Code:	V1L 4C6	Teck - 'crystal.sabel@teck.com				Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																												
Invoice To	Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Invoice Distribution				F/P	P	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (NT-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS														
Copy of Invoice with Report	<input type="checkbox"/> YES <input type="checkbox"/> NO	Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																																
Company:		Emails: genevieve.pomerleau@snclavalin.com																																
Contact:		payables@snclavalin.com																																
Project Information		Oil and Gas Required Fields (client use)																																
ALS Account # / Quote #:		MOR125 / Q72340		AFE/Cost Center:		PO#																												
Job #:		Greenhills Operations		Major/Minor Code:		Routing Code:																												
PO / AFE:		658004		Requisitioner:																														
LSD:				Location:																														
ALS Lab Work Order # (lab use only):				ALS Contact:		Inayat Dhaliwal 403-407-1784		Sampler: MB, NG																										
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type																													
	GH_MW_MC10-A_WG_2021_03_NP	GH_MW_MC10-A			-WG																													
	GH_MW_MC11-A_WG_2021_03_NP	GH_MW_MC11-A			-WG																													
	GH_MW_MC10-B_WG_2021_03_NP	GH_MW_MC10-B			-WG																													
	GH_MW_MC10-C_WG_2021_03_25 NP	GH_MW_MC10-C	25 Mar 21	1630	-WG	X	X	X	X	X	X	X	X	X	X	X	X	X					5											

Drinking Water (DW) Samples <sup>1</sup> (client use)			Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				SAMPLE CONDITION AS RECEIVED (lab use only)																	
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO			PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com				Frozen <input type="checkbox"/>		SIF Observations		Yes <input type="checkbox"/>		No <input type="checkbox"/>											
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO			Teck Facility Name: (please select the applicable Facility)				Ice Packs <input type="checkbox"/>		Ice Cubes <input type="checkbox"/>		Custody seal intact		Yes <input type="checkbox"/>		No <input type="checkbox"/>									
SHIPMENT RELEASE (client use)			GHO-GREENHILLS OPERATION				FRO-FORDING RIVER OPERATION		EVO-ELKVIEW OPERATIONS		INITIAL COOLER TEMPERATURES °C						FINAL COOLER TEMPERATURES °C							
Released by: [Signature]			Date: 210325				Time: 1700		Received by: [Signature]				Date: 26/3				Time: 8:40		FINAL SHIPMENT RECEPTION (lab use only)					



SNC-Lavalin  
ATTN: Stefan Humphries  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 27-MAR-21  
Report Date: 19-AUG-21 14:36 (MT)  
Version: FINAL REV. 2

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2571088  
Project P.O. #: 672225  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers: 17-704051  
Legal Site Desc:

Comments:

19-AUG-2021 sample name revised

Inayat Dhaliwal  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2571088-1 WG 26-MAR-21 10:30 GH_MW_BG1A_W G_2021_03_26_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	593			
	Hardness (as CaCO3) (mg/L)	284			
	pH (pH)	7.62			
	ORP (mV)	393			
	Total Suspended Solids (mg/L)	9.3			
	Total Dissolved Solids (mg/L)	345	DLHC		
	Turbidity (NTU)	13.6			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	18.5			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	340			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	340			
	Ammonia as N (mg/L)	0.0945			
	Bicarbonate (HCO3) (mg/L)	415			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	2.91			
	Fluoride (F) (mg/L)	0.230			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	87.7			
	Nitrate and Nitrite (as N) (mg/L)	0.0190			
	Nitrate (as N) (mg/L)	0.0190			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	3.07			
	Total Nitrogen (mg/L)	3.09			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0133			
	Sulfate (SO4) (mg/L)	32.4			
	Anion Sum (meq/L)	7.57			
	Cation Sum (meq/L)	6.64			
	Cation - Anion Balance (%)	-6.5			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	3.06			
	Total Organic Carbon (mg/L)	3.72			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0013			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2571088-1 WG 26-MAR-21 10:30 GH_MW_BG1A_W G_2021_03_26_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00281			
	Barium (Ba)-Dissolved (mg/L)	0.196			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.025			
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050			
	Calcium (Ca)-Dissolved (mg/L)	64.2			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	0.00046			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	1.19			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0181			
	Magnesium (Mg)-Dissolved (mg/L)	30.1			
	Manganese (Mn)-Dissolved (mg/L)	0.394			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00640			
	Nickel (Ni)-Dissolved (mg/L)	0.00076			
	Phosphorus (P)-Dissolved (mg/L)	<0.050			
	Potassium (K)-Dissolved (mg/L)	2.97			
	Selenium (Se)-Dissolved (mg/L)	0.000067			
	Silicon (Si)-Dissolved (mg/L)	3.71			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	18.5			
	Strontium (Sr)-Dissolved (mg/L)	0.106			
	Sulfur (S)-Dissolved (mg/L)	9.10			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.00229			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

## Reference Information

with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

## Reference Information

<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

17-704051

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2571088

Report Date: 19-AUG-21

Page 1 of 8

Client: SNC-Lavalin  
 # 3 - 520 Lake Street  
 Nelson BC V1L 4C6  
 Contact: Stefan Humphries

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R5419977							
<b>WG3513803-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			109.4		%		85-115	05-APR-21
<b>WG3513803-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	05-APR-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R5419890							
<b>WG3513653-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			103.3		%		85-115	05-APR-21
<b>WG3513653-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	05-APR-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
Batch	R5417283							
<b>WG3510789-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			96.6		%		80-120	30-MAR-21
<b>WG3510789-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-MAR-21
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R5419890							
<b>WG3513653-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	05-APR-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R5417991							
<b>WG3511580-2</b>	<b>LCS</b>							
Bromide (Br)			104.0		%		85-115	28-MAR-21
<b>WG3511580-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	28-MAR-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R5419244							
<b>WG3512946-7</b>	<b>DUP</b>	<b>L2571088-1</b>						
Dissolved Organic Carbon		3.06	3.22		mg/L	5.0	20	01-APR-21
<b>WG3512946-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.5		%		80-120	01-APR-21
<b>WG3512946-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-APR-21
<b>WG3512946-8</b>	<b>MS</b>	<b>L2571088-1</b>						
Dissolved Organic Carbon			93.1		%		70-130	01-APR-21



## Quality Control Report

Workorder: L2571088

Report Date: 19-AUG-21

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5419244</b>							
<b>WG3512946-7</b>	<b>DUP</b>	<b>L2571088-1</b>						
Total Organic Carbon		3.72	3.47		mg/L	7.1	20	01-APR-21
<b>WG3512946-6</b>	<b>LCS</b>							
Total Organic Carbon			105.6		%		80-120	01-APR-21
<b>WG3512946-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	01-APR-21
<b>WG3512946-8</b>	<b>MS</b>	<b>L2571088-1</b>						
Total Organic Carbon			95.9		%		70-130	01-APR-21
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5417991</b>							
<b>WG3511580-2</b>	<b>LCS</b>							
Chloride (Cl)			102.0		%		85-115	28-MAR-21
<b>WG3511580-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	28-MAR-21
<b>CO3-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5419890</b>							
<b>WG3513653-1</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	05-APR-21
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5419890</b>							
<b>WG3513653-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.9		%		90-110	05-APR-21
<b>WG3513653-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	05-APR-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5417991</b>							
<b>WG3511580-2</b>	<b>LCS</b>							
Fluoride (F)			102.6		%		90-110	28-MAR-21
<b>WG3511580-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	28-MAR-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5419855</b>							
<b>WG3513518-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			104.0		%		80-120	06-APR-21
<b>WG3513518-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	06-APR-21



## Quality Control Report

Workorder: L2571088

Report Date: 19-AUG-21

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417283</b>							
<b>WG3510789-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			97.1		%		80-120	30-MAR-21
Antimony (Sb)-Dissolved			96.7		%		80-120	30-MAR-21
Arsenic (As)-Dissolved			96.9		%		80-120	30-MAR-21
Barium (Ba)-Dissolved			98.5		%		80-120	30-MAR-21
Bismuth (Bi)-Dissolved			94.2		%		80-120	30-MAR-21
Boron (B)-Dissolved			92.7		%		80-120	30-MAR-21
Cadmium (Cd)-Dissolved			98.8		%		80-120	30-MAR-21
Calcium (Ca)-Dissolved			92.9		%		80-120	30-MAR-21
Chromium (Cr)-Dissolved			97.5		%		80-120	30-MAR-21
Cobalt (Co)-Dissolved			95.5		%		80-120	30-MAR-21
Copper (Cu)-Dissolved			94.9		%		80-120	30-MAR-21
Iron (Fe)-Dissolved			93.9		%		80-120	30-MAR-21
Lead (Pb)-Dissolved			96.9		%		80-120	30-MAR-21
Lithium (Li)-Dissolved			95.7		%		80-120	30-MAR-21
Magnesium (Mg)-Dissolved			91.4		%		80-120	30-MAR-21
Manganese (Mn)-Dissolved			97.1		%		80-120	30-MAR-21
Molybdenum (Mo)-Dissolved			96.0		%		80-120	30-MAR-21
Nickel (Ni)-Dissolved			94.5		%		80-120	30-MAR-21
Phosphorus (P)-Dissolved			100.0		%		70-130	30-MAR-21
Potassium (K)-Dissolved			97.9		%		80-120	30-MAR-21
Selenium (Se)-Dissolved			94.2		%		80-120	30-MAR-21
Silicon (Si)-Dissolved			100.2		%		60-140	30-MAR-21
Silver (Ag)-Dissolved			97.1		%		80-120	30-MAR-21
Sodium (Na)-Dissolved			95.0		%		80-120	30-MAR-21
Strontium (Sr)-Dissolved			98.9		%		80-120	30-MAR-21
Sulfur (S)-Dissolved			92.8		%		80-120	30-MAR-21
Thallium (Tl)-Dissolved			95.5		%		80-120	30-MAR-21
Tin (Sn)-Dissolved			99.2		%		80-120	30-MAR-21
Titanium (Ti)-Dissolved			91.7		%		80-120	30-MAR-21
Uranium (U)-Dissolved			93.8		%		80-120	30-MAR-21
Vanadium (V)-Dissolved			97.7		%		80-120	30-MAR-21
Zinc (Zn)-Dissolved			92.5		%		80-120	30-MAR-21
Zirconium (Zr)-Dissolved			96.3		%		80-120	30-MAR-21
<b>WG3510789-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2571088

Report Date: 19-AUG-21

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5417283</b>							
<b>WG3510789-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-MAR-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-MAR-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-MAR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-MAR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-MAR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-MAR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-MAR-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	30-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-MAR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-MAR-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	30-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-MAR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-MAR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-MAR-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	30-MAR-21

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2571088

Report Date: 19-AUG-21

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch	R5420384							
<b>WG3514136-10</b>	<b>LCS</b>							
Ammonia as N			88.5		%		85-115	06-APR-21
<b>WG3514136-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	06-APR-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R5417991							
<b>WG3511580-2</b>	<b>LCS</b>							
Nitrite (as N)			99.6		%		90-110	28-MAR-21
<b>WG3511580-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	28-MAR-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R5417991							
<b>WG3511580-2</b>	<b>LCS</b>							
Nitrate (as N)			101.8		%		90-110	28-MAR-21
<b>WG3511580-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	28-MAR-21
<b>OH-CL</b>								
<b>Water</b>								
Batch	R5419890							
<b>WG3513653-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	05-APR-21
<b>ORP-CL</b>								
<b>Water</b>								
Batch	R5418942							
<b>WG3512581-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			219		mV		210-230	04-APR-21
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch	R5417885							
<b>WG3511353-18</b>	<b>LCS</b>							
Phosphorus (P)-Total			87.3		%		80-120	31-MAR-21
<b>WG3511353-17</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	31-MAR-21
<b>PH-CL</b>								
<b>Water</b>								
Batch	R5419890							
<b>WG3513653-2</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	05-APR-21



## Quality Control Report

Workorder: L2571088

Report Date: 19-AUG-21

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R5416226							
<b>WG3509578-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			95.7		%		80-120	27-MAR-21
<b>WG3509578-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-MAR-21
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R5417991							
<b>WG3511580-2</b>	<b>LCS</b>							
Sulfate (SO4)			99.3		%		90-110	28-MAR-21
<b>WG3511580-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	28-MAR-21
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R5418768							
<b>WG3511782-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.5		%		85-115	01-APR-21
<b>WG3511782-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	01-APR-21
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R5420497							
<b>WG3513765-5</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			119.0		%		75-125	07-APR-21
<b>WG3513765-6</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-APR-21
<b>TSS-L-CL</b> <b>Water</b>								
Batch	R5418739							
<b>WG3511781-2</b>	<b>LCS</b>							
Total Suspended Solids			89.6		%		85-115	01-APR-21
<b>WG3511781-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	01-APR-21
<b>TURBIDITY-CL</b> <b>Water</b>								
Batch	R5417025							
<b>WG3509803-3</b>	<b>DUP</b>	<b>L2571088-1</b>						
Turbidity		13.6	13.8		NTU	1.5	15	29-MAR-21
<b>WG3509803-2</b>	<b>LCS</b>							
Turbidity			100.5		%		85-115	29-MAR-21
<b>WG3509803-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	29-MAR-21

# Quality Control Report

Workorder: L2571088

Report Date: 19-AUG-21

Page 7 of 8

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2571088

Report Date: 19-AUG-21

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	26-MAR-21 10:30	04-APR-21 08:51	0.25	214	hours	EHTR-FM
pH	1	26-MAR-21 10:30	05-APR-21 09:00	0.25	239	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2571088 were received on 27-MAR-21 08:55.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.





L2571088-COFC

COC Number: 17 - 704051

Page 1 of 1

Report To		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)	
Contact and company name below will appear on the final report		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular (R) <input type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply	
Company: SNC Lavalin Inc		Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		PRIORITY (Business Days): 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/>	
Contact: See digital COC		<input type="checkbox"/> Compare Results to Criteria of Report - provide details below if box checked		EMERGENCY: 1 Business day [E-100%] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2-200%] (Laboratory opening fees may apply) <input type="checkbox"/>	
Phone: See digital COC		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm	
Street: 520 Lake St		Email 1 or Fax: See digital COC		For tests that can not be performed according to the service level selected, you will be contacted.	
City/Province: Nelson, BC		Email 2: See digital COC		Analysis Request	
Postal Code: V1L 4C6		Email 3: See digital COC		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		F/P P F P P P P	
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		E&P P F P P P P	
Company: SNC Lavalin Inc		Email 1 or Fax: Stefan.humphreys@snc-lavalin.com		P	
Contact: See digital COC		Email 2: payables@snc-lavalin.com		P	
Project Information		Oil and Gas Required Fields (client use)		SAMPLES ON HOLD	
ALS Account # / Quote #:		AFE/Cost Center:		Major/Minor Code:	
Job #: Greenhills Operations		Major/Minor Code:		Routing Code:	
PO / AFE: 672225		Requisitioner:		Location:	
LSD:		ALS Contact: Inayat Phalngal 403-409-1784		Sampler: MB	
ALS Lab Work Order # (lab use only):		Date (dd-mmm-yy):		Time (hh:mm):	
ALS Sample # (lab use only):		Sample Identification and/or Coordinates (This description will appear on the report):		Sample Type:	
GH-MW-BG1D-W6-2021-03-26-NP		26 Mar 21		10:30 WG	
				DOC	
				TDC	
				BEMD6 D-Met + Flg	
				Total N Calc.	
				Nitrate + Nitrite Calc	
				Teck Routine	
				TKN	
				Bicarbonate	
				Carbonate	
				Hydroxide	
				NUMBER OF CONTAINERS	
				5	
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)	
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		* Please also add submit Equis upload to teckcoal@equisonline.com Teck Facility Name: GHO Greenhills operation		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>	
				Cooling Initiated <input type="checkbox"/>	
				INITIAL COOLER TEMPERATURES °C	
				FINAL COOLER TEMPERATURES °C	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)	
Released by: Gem Varnard		Received by: [Signature]		Received by: [Signature]	
Date: 210326		Date: 1700		Date: 27/03	
Time: 1700		Time: 1700		Time: 8:55	

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>CG2101163</b> <b>Amendment</b> : <b>2</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : <b>Jeremy Enns</b> <b>Address</b> : <b>Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0</b> <b>Telephone</b> : <b>250 865 3305</b> <b>Project</b> : <b>GREENHILLS OPERATION</b> <b>PO</b> : <b>VPO00739453</b> <b>C-O-C number</b> : <b>2021-03-12-WG</b> <b>Sampler</b> : <b>----</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>Teck Coal Master Quote</b> <b>No. of samples received</b> : <b>5</b> <b>No. of samples analysed</b> : <b>5</b>	<b>Page</b> : <b>1 of 7</b>  <b>Laboratory</b> : <b>Calgary - Environmental</b> <b>Account Manager</b> : <b>Justine Buma-a</b> <b>Address</b> : <b>2559 29th Street NE Calgary AB Canada T1Y 7B5</b> <b>Telephone</b> : <b>+1 403 407 1800</b> <b>Date Samples Received</b> : <b>01-May-2021 09:17</b> <b>Date Analysis Commenced</b> : <b>01-May-2021</b> <b>Issue Date</b> : <b>19-Jan-2022 16:27</b>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sunil Palak		Microbiology, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
MPN/100mL	most probable number per 100 mL
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

Sample	Client Id	Comment
CG2101163-005	GH_RDI2_WG_2021-04-05_N P	Bacteriological bottle received .Sample was analyzed for Total Coliform and E.coli.

## Qualifiers

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-BG1A_ WG_2021-04-0 5_NP	GH_MW-BG1B_ WG_2021-04-0 5_NP	GH_MW-BG1C_ WG_2021-04-0 5_NP	GH_FOX3_WG_ 2021-04-05_NP	GH_RDI2_WG_2 021-04-05_NP
Client sampling date / time					30-Apr-2021 10:00	30-Apr-2021 11:15	30-Apr-2021 12:15	30-Apr-2021 12:30	30-Apr-2021 13:00	
Analyte	CAS Number	Method	LOR	Unit	CG2101163-001 Result	CG2101163-002 Result	CG2101163-003 Result	CG2101163-004 Result	CG2101163-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	3.2	<2.0	2.4	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	321	289	307	297	<1.0	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	321	289	307	297	<1.0	
conductivity	----	E100	2.0	µS/cm	579	492	504	508	<2.0	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	308	290	281	286	<0.50	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	262	292	300	284	454	
pH	----	E108	0.10	pH units	8.14	8.17	8.12	8.15	5.41	
solids, total dissolved [TDS]	----	E162	10	mg/L	338	289	295	313	<10	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	13.4	13.5	17.7	17.0	<1.0	
turbidity	----	E121	0.10	NTU	13.8	50.7	37.5	39.5	<0.10	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	391	353	374	363	<1.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0926	0.148	0.149	0.167	<0.0050	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.07	0.41	0.36	0.36	<0.10	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.195	0.427	0.406	0.403	<0.020	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.136	0.119	0.209	0.226	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0141	0.0055	0.0063	0.0082	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	23.3	4.70	7.45	7.50	<0.30	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.44	2.41	2.48	2.74	<0.50	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.56	2.56	2.81	2.88	<0.50	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-BG1A_WG_2021-04-05_NP	GH_MW-BG1B_WG_2021-04-05_NP	GH_MW-BG1C_WG_2021-04-05_NP	GH_FOX3_WG_2021-04-05_NP	GH_RDI2_WG_2021-04-05_NP
Client sampling date / time					30-Apr-2021 10:00	30-Apr-2021 11:15	30-Apr-2021 12:15	30-Apr-2021 12:30	30-Apr-2021 13:00	
Analyte	CAS Number	Method	LOR	Unit	CG2101163-001	CG2101163-002	CG2101163-003	CG2101163-004	CG2101163-005	
					Result	Result	Result	Result	Result	
<b>Bacteriological Tests</b>										
coliforms, total	----	E010	1	MPN/100mL	----	----	----	----	<1	
coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	----	----	----	----	<1	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.97	5.91	6.32	6.12	<0.10	
cation sum	----	EC101	0.10	meq/L	6.95	6.13	6.10	6.22	<0.10	
ion balance (cations/anions ratio)	----	EC101	0.010	%	99.7	104	96.5	102	100	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.144	1.83	1.77	0.810	<0.010	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0741	0.0350	0.104	0.104	<0.0030	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00010	0.00026	0.00203	0.00182	<0.00010	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00210	0.00345	0.00172	0.00183	<0.00010	
barium, total	7440-39-3	E420	0.00010	mg/L	0.192	0.262	0.208	0.223	<0.00010	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	0.028	0.013	0.013	0.014	<0.010	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0442	<0.0150 <sup>DLM</sup>	<0.0250 <sup>DLM</sup>	0.0278	<0.0050	
calcium, total	7440-70-2	E420	0.050	mg/L	75.7	79.2	74.9	78.9	<0.050	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00024	0.00030	0.00027	0.00027	<0.00010	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.64	2.77	1.87	2.02	<0.10	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00103	0.00192	0.00080	0.00078	<0.00050	
iron, total	7439-89-6	E420	0.010	mg/L	0.993	4.58	4.23	4.42	<0.010	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000237	0.000361	0.000282	0.000304	<0.000050	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0184	0.0041	0.0042	0.0046	<0.0010	
magnesium, total	7439-95-4	E420	0.0050	mg/L	32.0	25.6	25.4	26.3	<0.0050	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.402	0.159	0.157	0.166	<0.00010	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00752	0.00624	0.00335	0.00360	<0.000050	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00209	0.00559	0.00446	0.00464	<0.00050	
potassium, total	7440-09-7	E420	0.050	mg/L	3.18	1.38	1.29	1.37	<0.050	
selenium, total	7782-49-2	E420	0.050	µg/L	0.161	0.052	0.064	<0.050	<0.050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-BG1A_WG_2021-04-05_NP	GH_MW-BG1B_WG_2021-04-05_NP	GH_MW-BG1C_WG_2021-04-05_NP	GH_FOX3_WG_2021-04-05_NP	GH_RDI2_WG_2021-04-05_NP
Client sampling date / time					30-Apr-2021 10:00	30-Apr-2021 11:15	30-Apr-2021 12:15	30-Apr-2021 12:30	30-Apr-2021 13:00	
Analyte	CAS Number	Method	LOR	Unit	CG2101163-001	CG2101163-002	CG2101163-003	CG2101163-004	CG2101163-005	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
silicon, total	7440-21-3	E420	0.10	mg/L	3.83	3.67	3.68	3.79	<0.10	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	0.000012	0.000044	0.000034	<0.000010	
sodium, total	7440-23-5	E420	0.050	mg/L	18.0	3.37	8.16	8.74	<0.050	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.112	0.113	0.184	0.196	<0.00020	
sulfur, total	7704-34-9	E420	0.50	mg/L	8.86	2.36	3.32	3.29	<0.50	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000013	0.000039	<0.000010	<0.000010	<0.000010	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00040	0.00040	0.00026	0.00027	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00198	<0.00090 <sup>DLM</sup>	0.00186	0.00206	<0.00030	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00234	0.000212	0.000634	0.000653	<0.000010	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00121	0.00064	0.00085	0.00080	<0.00050	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0047	0.0033	<0.0030	<0.0030	<0.0030	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00203	0.00076	0.00105	0.00103	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.198	0.246	0.202	0.207	<0.00010	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.027	0.012	0.012	0.013	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	71.4	75.3	71.5	74.0	<0.050	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.55	2.62	1.82	1.82	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.852	3.25	3.12	3.14	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0183	0.0042	0.0044	0.0045	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	31.4	24.9	24.8	24.7	<0.0050	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.404	0.152	0.153	0.154	<0.00010	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-BG1A_WG_2021-04-05_NP	GH_MW-BG1B_WG_2021-04-05_NP	GH_MW-BG1C_WG_2021-04-05_NP	GH_FOX3_WG_2021-04-05_NP	GH_RDI2_WG_2021-04-05_NP
Client sampling date / time					30-Apr-2021 10:00	30-Apr-2021 11:15	30-Apr-2021 12:15	30-Apr-2021 12:30	30-Apr-2021 13:00	
Analyte	CAS Number	Method	LOR	Unit	CG2101163-001	CG2101163-002	CG2101163-003	CG2101163-004	CG2101163-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00693	0.00495	0.00322	0.00334	<0.000050	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00182	0.00522	0.00392	0.00400	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.11	1.35	1.28	1.29	<0.050	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.49	3.31	3.32	3.36	<0.050	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	15.4	3.72	7.65	7.77	<0.050	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.104	0.106	0.182	0.185	<0.00020	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	7.47	2.17	2.81	2.95	<0.50	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000038	<0.000010	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00226	0.000218	0.000586	0.000620	<0.000010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0013	0.0016	<0.0010	<0.0010	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.




COC ID: 2021-03-12-WG

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Burma-a			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	eric.culsen@teck.com	X	X	X
Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Phone Number	403 407 1794	Email 5:	jennifer.manojlovic@teck.com	X	X	X
								Email 6:	DL.Equis.GHO-Field@teck.com	X	X	X
								Email 7:	jeremy.enns@teck.com	X	X	X
								PO number	739453			

Environmental Division  
Calgary  
Work Order Reference  
**CG2101163**



Telephone: +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED																
ALS Package	Property	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
ALS Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-TKN/TOC	EPH/PAH/LEPH/IEPH	SULPHIDE	BOD	COD	Phenols	VOC/PH/BTEX	Sodium bisulphate	ZN acetate, NaOH	H2SO4	H2SO4	Sodium bisulphate							
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.																			
<del>GH_MW-EE1A_WG_2021-04-05_NP</del>	<del>GH_MW-EE1A</del>	<del>WG</del>	<del>N</del>	<del>4/20/2021</del>	<del>10:00</del>	<del>G</del>	<del>7</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>GH_MW-EE1B_WG_2021-04-05_NP</del>	<del>GH_MW-EE1B</del>	<del>WG</del>	<del>N</del>	<del>4/20/2021</del>	<del>11:15</del>	<del>G</del>	<del>7</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
GH_MW-BG1A_WG_2021-04-05_NP	GH_MW-BG1A	WG	N	4/29/2021	10:00	G	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GH_MW-BG1B_WG_2021-04-05_NP	GH_MW-BG1B	WG	N	4/29/2021	11:15	G	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GH_MW-BG1C_WG_2021-04-05_NP	GH_MW-BG1C	WG	N	4/29/2021	12:15	G	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GH_Fox3_WG_2021-04-05_NP	GH_Fox3	WG	N	4/30/2021	12:30	G	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GH_RD12_WG_2021-04-05_NP	GH_RD12	WG	N	4/30/2021	13:00	G	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	MARC BEATON SNC-Lawatin	Apr 20/21 15:00	<i>[Signature]</i>	05/01/21 14:17

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	MARC BEATON	250 777 7860	<i>[Signature]</i>	April 29, 2021

30  
0.7



SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 08-JUN-21  
Report Date: 02-JUL-21 14:02 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2598492  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.  
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2598492-1	L2598492-2		
		Description	WG	WG		
		Sampled Date	07-JUN-21	07-JUN-21		
		Sampled Time	15:30	11:20		
		Client ID	GH_MW-WOLF- 1D_WG_2021_06_ 07_NP	GH_MW-WOLF- 2D_WG_2021_06_ 07_NP		
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	376	433			
	Hardness (as CaCO3) (mg/L)	224	286			
	pH (pH)	8.24	8.11			
	ORP (mV)	285	385			
	Total Suspended Solids (mg/L)	17.3	4.1			
	Total Dissolved Solids (mg/L)	238	287			
	Turbidity (NTU)	31.0	12.3			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	3.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	226	233			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	226	233			
	Ammonia as N (mg/L)	0.0999	0.0327			
	Bicarbonate (HCO3) (mg/L)	276	285			
	Bromide (Br) (mg/L)	<0.050	<0.050			
	Carbonate (CO3) (mg/L)	<5.0	<5.0			
	Chloride (Cl) (mg/L)	0.67	0.34			
	Fluoride (F) (mg/L)	0.244	0.222			
	Hydroxide (OH) (mg/L)	<5.0	<5.0			
	Ion Balance (%)	105	120		RRV	
	Nitrate and Nitrite (as N) (mg/L)	0.0138	<0.0051			
	Nitrate (as N) (mg/L)	0.0138	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.379	0.098			
	Total Nitrogen (mg/L)	0.393	0.098			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0213	0.0148			
	Sulfate (SO4) (mg/L)	10.2	22.6		RRV	
	Anion Sum (meq/L)	4.77	5.16		RRV	
	Cation Sum (meq/L)	4.98	6.19		RRV	
Cation - Anion Balance (%)	2.3	9.1				
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.48	1.57			
	Total Organic Carbon (mg/L)	1.70	1.82			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0144	0.0028			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2598492-1	L2598492-2		
		Description	WG	WG		
		Sampled Date	07-JUN-21	07-JUN-21		
		Sampled Time	15:30	11:20		
		Client ID	GH_MW-WOLF- 1D_WG_2021_06_07_NP	GH_MW-WOLF- 2D_WG_2021_06_07_NP		
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00099	0.00186			
	Barium (Ba)-Dissolved (mg/L)	0.228	0.0789			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.095	0.047			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000076	0.0000112			
	Calcium (Ca)-Dissolved (mg/L)	52.6	74.7			
	Chromium (Cr)-Dissolved (mg/L)	0.00095	0.00090			
	Cobalt (Co)-Dissolved (mg/L)	0.00019	0.00048			
	Copper (Cu)-Dissolved (mg/L)	0.00143	0.00024			
	Iron (Fe)-Dissolved (mg/L)	0.836	0.347			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0313	0.0169			
	Magnesium (Mg)-Dissolved (mg/L)	22.5	24.2			
	Manganese (Mn)-Dissolved (mg/L)	0.200	0.141			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00287	0.00302			
	Nickel (Ni)-Dissolved (mg/L)	0.00192	0.00242			
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050			
	Potassium (K)-Dissolved (mg/L)	1.09	1.44			
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050			
	Silicon (Si)-Dissolved (mg/L)	5.62	4.99			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	9.81	9.46			
	Strontium (Sr)-Dissolved (mg/L)	0.905	0.440			
	Sulfur (S)-Dissolved (mg/L)	4.75	9.23			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000017			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.000255	0.00118			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0017	0.0019			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2598492-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2598492-1, -2

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL**            Water            Dissolved Mercury in Water by CVAAS            APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL**    Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL**            Water            Dissolved Metals in Water by CRC ICPMS            APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL**            Water            Total Nitrogen (Calculation)            APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL**            Water            Nitrate+Nitrite            CALCULATION

**NH3-L-F-CL**            Water            Ammonia, Total (as N)            J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL**            Water            Nitrite in Water by IC (Low Level)            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**            Water            Nitrate in Water by IC (Low Level)            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL**            Water            Hydroxide in Water            APHA 2320 B-Potentiometric Titration

**ORP-CL**            Water            Oxidation reduction potential by elect.            ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**            Water            Phosphorus (P)-Total            APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL**            Water            pH            APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**    Water            Orthophosphate-Dissolved (as P)            APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**            Water            Sulfate in Water by IC            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**            Water            Total Dissolved Solids            APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**    Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2598492

Report Date: 02-JUL-21

Page 1 of 10

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491189</b>							
<b>WG3555981-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			107.8		%		85-115	15-JUN-21
<b>WG3555981-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	15-JUN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493200</b>							
<b>WG3558241-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			104.1		%		85-115	18-JUN-21
<b>WG3558241-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-JUN-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487948</b>							
<b>WG3553767-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			99.97		%		80-120	12-JUN-21
<b>WG3553767-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-JUN-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493200</b>							
<b>WG3558241-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	18-JUN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5482654</b>							
<b>WG3552137-3</b>	<b>DUP</b>	<b>L2598492-2</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	09-JUN-21
<b>WG3552137-2</b>	<b>LCS</b>							
Bromide (Br)			99.7		%		85-115	09-JUN-21
<b>WG3552137-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	09-JUN-21
<b>WG3552137-4</b>	<b>MS</b>	<b>L2598492-2</b>						
Bromide (Br)			98.5		%		75-125	09-JUN-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5504381</b>							
<b>WG3564370-5</b>	<b>DUP</b>	<b>L2598492-2</b>						
Dissolved Organic Carbon		1.57	1.53		mg/L	2.6	20	26-JUN-21
<b>WG3564370-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			98.0		%		80-120	27-JUN-21





## Quality Control Report

Workorder: L2598492

Report Date: 02-JUL-21

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5504381							
<b>WG3564370-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-JUN-21
<b>WG3564370-6</b>	<b>MS</b>	<b>L2598492-2</b>						
Dissolved Organic Carbon			93.2		%		70-130	26-JUN-21
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5504381							
<b>WG3564370-2</b>	<b>LCS</b>							
Total Organic Carbon			104.2		%		80-120	27-JUN-21
<b>WG3564370-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	27-JUN-21
<b>WG3564370-6</b>	<b>MS</b>	<b>L2598492-2</b>						
Total Organic Carbon			99.97		%		70-130	26-JUN-21
<b>CL-L-IC-N-CL</b> <b>Water</b>								
Batch	R5482654							
<b>WG3552137-3</b>	<b>DUP</b>	<b>L2598492-2</b>						
Chloride (Cl)			0.34	0.35	mg/L	1.8	20	09-JUN-21
<b>WG3552137-2</b>	<b>LCS</b>							
Chloride (Cl)			100.3		%		85-115	09-JUN-21
<b>WG3552137-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	09-JUN-21
<b>WG3552137-4</b>	<b>MS</b>	<b>L2598492-2</b>						
Chloride (Cl)			101.8		%		75-125	09-JUN-21
<b>CO3-CL</b> <b>Water</b>								
Batch	R5493200							
<b>WG3558241-1</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	18-JUN-21
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R5493200							
<b>WG3558241-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			104.8		%		90-110	18-JUN-21
<b>WG3558241-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	18-JUN-21
<b>F-IC-N-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2598492

Report Date: 02-JUL-21

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5482654</b>							
<b>WG3552137-3</b>	<b>DUP</b>	<b>L2598492-2</b>						
Fluoride (F)		0.222	0.224		mg/L	0.9	20	09-JUN-21
<b>WG3552137-2</b>	<b>LCS</b>							
Fluoride (F)			96.3		%		90-110	09-JUN-21
<b>WG3552137-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	09-JUN-21
<b>WG3552137-4</b>	<b>MS</b>	<b>L2598492-2</b>						
Fluoride (F)			98.1		%		75-125	09-JUN-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5490946</b>							
<b>WG3555580-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			105.0		%		80-120	15-JUN-21
<b>WG3555580-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-JUN-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5487948</b>							
<b>WG3553767-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			103.4		%		80-120	12-JUN-21
Antimony (Sb)-Dissolved			100.4		%		80-120	12-JUN-21
Arsenic (As)-Dissolved			96.9		%		80-120	12-JUN-21
Barium (Ba)-Dissolved			102.3		%		80-120	12-JUN-21
Bismuth (Bi)-Dissolved			100.3		%		80-120	12-JUN-21
Boron (B)-Dissolved			99.6		%		80-120	12-JUN-21
Cadmium (Cd)-Dissolved			99.99		%		80-120	12-JUN-21
Calcium (Ca)-Dissolved			97.6		%		80-120	12-JUN-21
Chromium (Cr)-Dissolved			97.1		%		80-120	12-JUN-21
Cobalt (Co)-Dissolved			97.7		%		80-120	12-JUN-21
Copper (Cu)-Dissolved			96.5		%		80-120	12-JUN-21
Iron (Fe)-Dissolved			93.4		%		80-120	12-JUN-21
Lead (Pb)-Dissolved			100.1		%		80-120	12-JUN-21
Lithium (Li)-Dissolved			105.1		%		80-120	12-JUN-21
Magnesium (Mg)-Dissolved			107.8		%		80-120	12-JUN-21
Manganese (Mn)-Dissolved			98.9		%		80-120	12-JUN-21
Molybdenum (Mo)-Dissolved			97.2		%		80-120	12-JUN-21
Nickel (Ni)-Dissolved			96.9		%		80-120	12-JUN-21
Phosphorus (P)-Dissolved			109.2		%		70-130	12-JUN-21



## Quality Control Report

Workorder: L2598492

Report Date: 02-JUL-21

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487948</b>							
<b>WG3553767-6</b>	<b>LCS</b>	<b>TMRM</b>						
Potassium (K)-Dissolved			99.4		%		80-120	12-JUN-21
Selenium (Se)-Dissolved			99.1		%		80-120	12-JUN-21
Silicon (Si)-Dissolved			106.2		%		60-140	12-JUN-21
Silver (Ag)-Dissolved			89.2		%		80-120	12-JUN-21
Sodium (Na)-Dissolved			98.7		%		80-120	12-JUN-21
Strontium (Sr)-Dissolved			98.6		%		80-120	12-JUN-21
Sulfur (S)-Dissolved			117.1		%		80-120	12-JUN-21
Thallium (Tl)-Dissolved			100.1		%		80-120	12-JUN-21
Tin (Sn)-Dissolved			98.2		%		80-120	12-JUN-21
Titanium (Ti)-Dissolved			83.9		%		80-120	12-JUN-21
Uranium (U)-Dissolved			95.1		%		80-120	12-JUN-21
Vanadium (V)-Dissolved			98.1		%		80-120	12-JUN-21
Zinc (Zn)-Dissolved			95.5		%		80-120	12-JUN-21
Zirconium (Zr)-Dissolved			89.2		%		80-120	12-JUN-21
<b>WG3553767-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-JUN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-JUN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-JUN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-JUN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-JUN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-JUN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-JUN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-JUN-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	12-JUN-21



## Quality Control Report

Workorder: L2598492

Report Date: 02-JUL-21

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487948</b>							
<b>WG3553767-5</b>	<b>MB</b>							
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-JUN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-JUN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-JUN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	12-JUN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-JUN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-JUN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-JUN-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5503217</b>							
<b>WG3562993-12</b>	<b>LCS</b>							
Ammonia as N			95.7		%		85-115	24-JUN-21
<b>WG3562993-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	24-JUN-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5482654</b>							
<b>WG3552137-3</b>	<b>DUP</b>	<b>L2598492-2</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	09-JUN-21
<b>WG3552137-2</b>	<b>LCS</b>							
Nitrite (as N)			100.3		%		90-110	09-JUN-21
<b>WG3552137-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	09-JUN-21
<b>WG3552137-4</b>	<b>MS</b>	<b>L2598492-2</b>						
Nitrite (as N)			102.6		%		75-125	09-JUN-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5482654</b>							
<b>WG3552137-3</b>	<b>DUP</b>	<b>L2598492-2</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	09-JUN-21
<b>WG3552137-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2598492

Report Date: 02-JUL-21

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
Batch R5482654								
WG3552137-2	LCS							
Nitrate (as N)			100.8		%		90-110	09-JUN-21
WG3552137-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	09-JUN-21
WG3552137-4	MS	L2598492-2						
Nitrate (as N)			102.0		%		75-125	09-JUN-21
<b>OH-CL</b>								
Batch R5493200								
WG3558241-1	MB							
Hydroxide (OH)			<5.0		mg/L		5	18-JUN-21
<b>ORP-CL</b>								
Batch R5488764								
WG3554011-1	CRM	CL-ORP						
ORP			219		mV		210-230	13-JUN-21
WG3554011-2	DUP	L2598492-1						
ORP		285	273	J	mV	11.8	15	13-JUN-21
<b>P-T-L-COL-CL</b>								
Batch R5490902								
WG3555561-2	LCS							
Phosphorus (P)-Total			97.7		%		80-120	15-JUN-21
WG3555561-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-JUN-21
<b>PH-CL</b>								
Batch R5493200								
WG3558241-2	LCS							
pH			7.05		pH		6.9-7.1	18-JUN-21
<b>PO4-DO-L-COL-CL</b>								
Batch R5480699								
WG3550490-5	DUP	L2598492-2						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	08-JUN-21
WG3550490-2	LCS							
Orthophosphate-Dissolved (as P)			103.0		%		80-120	08-JUN-21
WG3550490-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	08-JUN-21
WG3550490-6	MS	L2598492-2						



## Quality Control Report

Workorder: L2598492

Report Date: 02-JUL-21

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5480699</b>							
<b>WG3550490-6</b>	<b>MS</b>	<b>L2598492-2</b>						
Orthophosphate-Dissolved (as P)			102.6		%		70-130	08-JUN-21
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5482654</b>							
<b>WG3552137-3</b>	<b>DUP</b>	<b>L2598492-2</b>						
Sulfate (SO4)		22.6	22.6		mg/L	0.2	20	09-JUN-21
<b>WG3552137-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.6		%		90-110	09-JUN-21
<b>WG3552137-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	09-JUN-21
<b>WG3552137-4</b>	<b>MS</b>	<b>L2598492-2</b>						
Sulfate (SO4)			100.6		%		75-125	09-JUN-21
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5489827</b>							
<b>WG3554163-6</b>	<b>DUP</b>	<b>L2598492-1</b>						
Total Dissolved Solids		238	229		mg/L	4.1	20	14-JUN-21
<b>WG3554163-5</b>	<b>LCS</b>							
Total Dissolved Solids			101.5		%		85-115	14-JUN-21
<b>WG3554163-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	14-JUN-21
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5490493</b>							
<b>WG3554461-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			105.0		%		75-125	14-JUN-21
<b>WG3554461-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			90.0		%		75-125	14-JUN-21
<b>WG3554461-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-JUN-21
<b>WG3554461-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-JUN-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5483481</b>							
<b>WG3550850-6</b>	<b>LCS</b>							
Total Suspended Solids			93.9		%		85-115	09-JUN-21
<b>WG3550850-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	09-JUN-21
	<b>Water</b>							



## Quality Control Report

Workorder: L2598492

Report Date: 02-JUL-21

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5481506</b>							
<b>WG3551706-2</b>	<b>LCS</b>							
Turbidity			99.96		%		85-115	09-JUN-21
<b>WG3551706-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	09-JUN-21

# Quality Control Report

Workorder: L2598492

Report Date: 02-JUL-21

Page 9 of 10

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2598492

Report Date: 02-JUL-21

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	07-JUN-21 15:30	13-JUN-21 15:30	0.25	144	hours	EHTR-FM
	2	07-JUN-21 11:20	13-JUN-21 15:30	0.25	148	hours	EHTR-FM
pH	1	07-JUN-21 15:30	18-JUN-21 06:00	0.25	254	hours	EHTR-FM
	2	07-JUN-21 11:20	18-JUN-21 06:00	0.25	259	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2598492 were received on 08-JUN-21 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.







SNC-Lavalin  
ATTN: Bill Wilmot  
4500 Mennie Road  
Cranbrook BC V1C 4J6

Date Received: 08-JUN-21  
Report Date: 04-AUG-21 16:07 (MT)  
Version: FINAL REV. 2

Client Phone: 250-505-6493

## Certificate of Analysis

Lab Work Order #: L2598493  
Project P.O. #: 681764  
Job Reference: 673926  
C of C Numbers:  
Legal Site Desc: FRO-X BASELINE

Inayat Dhaliwal  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2598493-1 WG 07-JUN-21 15:10 FR_MW- FRRD1_WG_2021 _06_07_NP	L2598493-2 WG 07-JUN-21 10:50 FR_MW_CH2_WG _2021_06_07_NP (MW- TO MW_)	L2598493-3 WG 07-JUN-21 12:40 FR_MW-CASW6- A_WG_2021_06_0 7_NP	L2598493-4 WG 07-JUN-21 13:50 FR_MW-CASW6- B_WG_2021_06_0 7_NP	L2598493-5 WG 07-JUN-21 15:10 FR_MW_MC10A_ WG_2021_06_07_ NP (MW- TO MW_)	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	650	290	723	1110	641
	Hardness (as CaCO3) (mg/L)	349	167	329	488	346
	pH (pH)	7.93	8.27	8.24	8.12	7.98
	ORP (mV)	399	497	360	453	462
	Total Suspended Solids (mg/L)	1.0	<1.0	7.6	81.6	<1.0
	Total Dissolved Solids (mg/L)	421	161	443	659	416
	Turbidity (NTU)	1.08	0.95	41.0	309	0.92
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.9	<1.0	4.0	17.4	4.9
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	270	159	454	461	266
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	270	159	454	461	266
	Ammonia as N (mg/L)	0.0767	0.112	2.44	0.195	0.0081
	Bicarbonate (HCO3) (mg/L)	329	193	554	562	324
	Bromide (Br) (mg/L)	0.056	<0.050	<0.050	<0.25 <sup>DLDS</sup>	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	59.5	0.16	9.20	135	59.5
	Fluoride (F) (mg/L)	0.108	0.139	0.158	0.23	0.111
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	113	100	100	119 <sup>BL:INT</sup>	113
	Nitrate and Nitrite (as N) (mg/L)	0.207	0.0167	<0.0051	<0.025	0.202
	Nitrate (as N) (mg/L)	0.207	0.0167	<0.0050	<0.025 <sup>HTD</sup>	0.202
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0050 <sup>HTD</sup>	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.133	0.108	2.01	0.244	<0.050
	Total Nitrogen (mg/L)	0.340	0.125	2.01	0.244	0.202
	Orthophosphate-Dissolved (as P) (mg/L)	0.0023	<0.0010	0.0282	<0.0010	0.0023
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0026	0.0309	0.127	<0.0020
	Sulfate (SO4) (mg/L)	9.09	11.3	<0.30	15.2	9.05
	Anion Sum (meq/L)	7.28	3.41	9.33	13.3	7.19
	Cation Sum (meq/L)	8.26	3.41	9.36	15.9	8.16
	Cation - Anion Balance (%)	6.3	0.0	0.1	8.7	6.3
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.84	2.01	1.43	6.89	1.72
	Total Organic Carbon (mg/L)	1.67	1.97	1.52	8.42	1.48
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0011	0.0015	0.0013	0.0024	0.0016

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2598493-1	L2598493-2	L2598493-3	L2598493-4	L2598493-5
					WG	WG	WG	WG	WG
		07-JUN-21	15:10		07-JUN-21	07-JUN-21	07-JUN-21	07-JUN-21	07-JUN-21
					10:50	12:40	13:50	15:10	
					FR_MW-FRRD1_WG_2021_06_07_NP	FR_MW_CH2_WG_2021_06_07_NP (MW- TO MW_)	FR_MW-CASW6-A_WG_2021_06_07_NP	FR_MW-CASW6-B_WG_2021_06_07_NP	FR_MW_MC10A_WG_2021_06_07_NP (MW- TO MW_)
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00012	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00016	0.00029	0.0274 <sup>RRV</sup>	0.00693	0.00014			
	Barium (Ba)-Dissolved (mg/L)	0.382	0.535	13.0	0.920	0.382			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	0.115	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000133	<0.0000050	0.0000070	<0.0000050	0.0000147			
	Calcium (Ca)-Dissolved (mg/L)	102	47.7	95.7	130	101			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00014	0.00117	0.0170	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	0.00025	<0.00020	<0.00020	<0.00020	0.00219			
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.154	3.46	52.0	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0055	0.0069	0.305	0.0043	0.0055			
	Magnesium (Mg)-Dissolved (mg/L)	23.0	11.7	21.9	39.6	22.9			
	Manganese (Mn)-Dissolved (mg/L)	0.00056	0.0317	0.0935	2.12 <sup>RRV</sup>	0.00055			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000505	0.000966	0.00574	0.00375	0.000482			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00066	0.0106	0.0251	<0.00050			
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	0.151	<0.050			
	Potassium (K)-Dissolved (mg/L)	1.16	0.79	6.04	1.65	1.13			
	Selenium (Se)-Dissolved (mg/L)	0.000560	0.000651	<0.000050	0.000098	0.000495			
	Silicon (Si)-Dissolved (mg/L)	4.93	2.28	5.27	7.38	4.91			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	29.0	1.08	56.1 <sup>RRV</sup>	73.9	28.1			
	Strontium (Sr)-Dissolved (mg/L)	0.128	0.0661	1.81	0.355	0.129			
	Sulfur (S)-Dissolved (mg/L)	4.04	4.81	<0.50	1.05	3.99			
	Thallium (Tl)-Dissolved (mg/L)	0.000012	<0.000010	0.000016	<0.000010	0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000460	0.000948	0.000049	0.000137	0.000466			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0018	0.0056	<0.0010	0.0016			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2598493-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2598493-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2598493-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2598493-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2598493-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2598493-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration

## Reference Information

<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C



## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

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### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2598493

Report Date: 04-AUG-21

Page 1 of 13

Client: SNC-Lavalin  
 4500 Mennie Road  
 Cranbrook BC V1C 4J6

Contact: Bill Wilmot

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491189</b>							
<b>WG3555981-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			108.1		%		85-115	15-JUN-21
<b>WG3555981-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	15-JUN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493769</b>							
<b>WG3558615-3</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	18-JUN-21
<b>WG3558615-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-JUN-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487948</b>							
<b>WG3553767-11</b>	<b>DUP</b>	<b>L2598493-5</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	12-JUN-21
<b>WG3553767-10</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			95.9		%		80-120	12-JUN-21
<b>WG3553767-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			99.97		%		80-120	12-JUN-21
<b>WG3553767-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-JUN-21
<b>WG3553767-9</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-JUN-21
<b>WG3553767-12</b>	<b>MS</b>	<b>L2598493-5</b>						
Beryllium (Be)-Dissolved			95.0		%		70-130	12-JUN-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493769</b>							
<b>WG3558615-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	18-JUN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5482654</b>							
<b>WG3552137-2</b>	<b>LCS</b>							
Bromide (Br)			99.7		%		85-115	09-JUN-21
<b>WG3552137-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	09-JUN-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2598493

Report Date: 04-AUG-21

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5504381							
<b>WG3564370-8</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.4		%		80-120	26-JUN-21
<b>WG3564370-7</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-JUN-21
Batch	R5507443							
<b>WG3567804-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			115.6		%		80-120	01-JUL-21
<b>WG3567804-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5504381							
<b>WG3564370-8</b>	<b>LCS</b>							
Total Organic Carbon			103.4		%		80-120	26-JUN-21
<b>WG3564370-7</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	26-JUN-21
<b>CL-L-IC-N-CL</b> <b>Water</b>								
Batch	R5482654							
<b>WG3552137-2</b>	<b>LCS</b>							
Chloride (Cl)			100.3		%		85-115	09-JUN-21
<b>WG3552137-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	09-JUN-21
<b>CO3-CL</b> <b>Water</b>								
Batch	R5493769							
<b>WG3558615-1</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	18-JUN-21
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R5493769							
<b>WG3558615-3</b>	<b>LCS</b>							
Conductivity (@ 25C)			105.7		%		90-110	18-JUN-21
<b>WG3558615-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	18-JUN-21
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R5482654							
<b>WG3552137-2</b>	<b>LCS</b>							
Fluoride (F)			96.3		%		90-110	09-JUN-21
<b>WG3552137-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2598493

Report Date: 04-AUG-21

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R5482654</b>								
<b>WG3552137-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	09-JUN-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch R5490946</b>								
<b>WG3555580-2 LCS</b>								
Mercury (Hg)-Dissolved			105.0		%		80-120	15-JUN-21
<b>WG3555580-1 MB</b>								
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	15-JUN-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch R5487948</b>								
<b>WG3553767-11 DUP</b>								
		<b>L2598493-5</b>						
Aluminum (Al)-Dissolved		0.0016	0.0015		mg/L	5.1	20	12-JUN-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-JUN-21
Arsenic (As)-Dissolved		0.00014	0.00013		mg/L	4.2	20	12-JUN-21
Barium (Ba)-Dissolved		0.382	0.386		mg/L	1.1	20	12-JUN-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	12-JUN-21
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	12-JUN-21
Cadmium (Cd)-Dissolved		0.0000147	0.0000132		mg/L	11	20	12-JUN-21
Calcium (Ca)-Dissolved		101	102		mg/L	1.6	20	12-JUN-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-JUN-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-JUN-21
Copper (Cu)-Dissolved		0.00219	0.00206		mg/L	6.3	20	12-JUN-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	12-JUN-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	12-JUN-21
Lithium (Li)-Dissolved		0.0055	0.0057		mg/L	2.5	20	12-JUN-21
Magnesium (Mg)-Dissolved		22.9	23.0		mg/L	0.4	20	12-JUN-21
Manganese (Mn)-Dissolved		0.00055	0.00058		mg/L	5.6	20	12-JUN-21
Molybdenum (Mo)-Dissolved		0.000482	0.000489		mg/L	1.4	20	12-JUN-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	12-JUN-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	12-JUN-21
Potassium (K)-Dissolved		1.13	1.14		mg/L	0.8	20	12-JUN-21
Selenium (Se)-Dissolved		0.000495	0.000503		mg/L	1.6	20	12-JUN-21
Silicon (Si)-Dissolved		4.91	4.98		mg/L	1.4	20	12-JUN-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	12-JUN-21
Sodium (Na)-Dissolved		28.1	27.8		mg/L	1.2	20	12-JUN-21



## Quality Control Report

Workorder: L2598493

Report Date: 04-AUG-21

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487948</b>							
<b>WG3553767-11</b>	<b>DUP</b>	<b>L2598493-5</b>						
Strontium (Sr)-Dissolved		0.129	0.130		mg/L	1.3	20	12-JUN-21
Sulfur (S)-Dissolved		3.99	4.08		mg/L	2.2	20	12-JUN-21
Thallium (Tl)-Dissolved		0.000010	<0.000010	RPD-NA	mg/L	N/A	20	12-JUN-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-JUN-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	12-JUN-21
Uranium (U)-Dissolved		0.000466	0.000467		mg/L	0.4	20	12-JUN-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	12-JUN-21
Zinc (Zn)-Dissolved		0.0016	0.0016		mg/L	2.2	20	12-JUN-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	12-JUN-21
<b>WG3553767-10</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			106.1		%		80-120	12-JUN-21
Antimony (Sb)-Dissolved			102.9		%		80-120	12-JUN-21
Arsenic (As)-Dissolved			103.0		%		80-120	12-JUN-21
Barium (Ba)-Dissolved			103.2		%		80-120	12-JUN-21
Bismuth (Bi)-Dissolved			101.2		%		80-120	12-JUN-21
Boron (B)-Dissolved			105.4		%		80-120	12-JUN-21
Cadmium (Cd)-Dissolved			103.7		%		80-120	12-JUN-21
Calcium (Ca)-Dissolved			97.2		%		80-120	12-JUN-21
Chromium (Cr)-Dissolved			105.3		%		80-120	12-JUN-21
Cobalt (Co)-Dissolved			102.4		%		80-120	12-JUN-21
Copper (Cu)-Dissolved			102.7		%		80-120	12-JUN-21
Iron (Fe)-Dissolved			97.3		%		80-120	12-JUN-21
Lead (Pb)-Dissolved			101.8		%		80-120	12-JUN-21
Lithium (Li)-Dissolved			97.0		%		80-120	12-JUN-21
Magnesium (Mg)-Dissolved			109.9		%		80-120	12-JUN-21
Manganese (Mn)-Dissolved			102.1		%		80-120	12-JUN-21
Molybdenum (Mo)-Dissolved			99.3		%		80-120	12-JUN-21
Nickel (Ni)-Dissolved			103.7		%		80-120	12-JUN-21
Phosphorus (P)-Dissolved			108.1		%		70-130	12-JUN-21
Potassium (K)-Dissolved			104.2		%		80-120	12-JUN-21
Selenium (Se)-Dissolved			103.7		%		80-120	12-JUN-21
Silicon (Si)-Dissolved			103.9		%		60-140	12-JUN-21
Silver (Ag)-Dissolved			91.4		%		80-120	12-JUN-21
Sodium (Na)-Dissolved			100.6		%		80-120	12-JUN-21



## Quality Control Report

Workorder: L2598493

Report Date: 04-AUG-21

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487948</b>							
<b>WG3553767-10</b>	<b>LCS</b>	<b>TMRM</b>						
Strontium (Sr)-Dissolved			101.3		%		80-120	12-JUN-21
Sulfur (S)-Dissolved			110.1		%		80-120	12-JUN-21
Thallium (Tl)-Dissolved			99.3		%		80-120	12-JUN-21
Tin (Sn)-Dissolved			101.2		%		80-120	12-JUN-21
Titanium (Ti)-Dissolved			99.7		%		80-120	12-JUN-21
Uranium (U)-Dissolved			97.2		%		80-120	12-JUN-21
Vanadium (V)-Dissolved			103.1		%		80-120	12-JUN-21
Zinc (Zn)-Dissolved			99.99		%		80-120	12-JUN-21
Zirconium (Zr)-Dissolved			89.4		%		80-120	12-JUN-21
<b>WG3553767-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			103.4		%		80-120	12-JUN-21
Antimony (Sb)-Dissolved			100.4		%		80-120	12-JUN-21
Arsenic (As)-Dissolved			96.9		%		80-120	12-JUN-21
Barium (Ba)-Dissolved			102.3		%		80-120	12-JUN-21
Bismuth (Bi)-Dissolved			100.3		%		80-120	12-JUN-21
Boron (B)-Dissolved			99.6		%		80-120	12-JUN-21
Cadmium (Cd)-Dissolved			99.99		%		80-120	12-JUN-21
Calcium (Ca)-Dissolved			97.6		%		80-120	12-JUN-21
Chromium (Cr)-Dissolved			97.1		%		80-120	12-JUN-21
Cobalt (Co)-Dissolved			97.7		%		80-120	12-JUN-21
Copper (Cu)-Dissolved			96.5		%		80-120	12-JUN-21
Iron (Fe)-Dissolved			93.4		%		80-120	12-JUN-21
Lead (Pb)-Dissolved			100.1		%		80-120	12-JUN-21
Lithium (Li)-Dissolved			105.1		%		80-120	12-JUN-21
Magnesium (Mg)-Dissolved			107.8		%		80-120	12-JUN-21
Manganese (Mn)-Dissolved			98.9		%		80-120	12-JUN-21
Molybdenum (Mo)-Dissolved			97.2		%		80-120	12-JUN-21
Nickel (Ni)-Dissolved			96.9		%		80-120	12-JUN-21
Phosphorus (P)-Dissolved			109.2		%		70-130	12-JUN-21
Potassium (K)-Dissolved			99.4		%		80-120	12-JUN-21
Selenium (Se)-Dissolved			99.1		%		80-120	12-JUN-21
Silicon (Si)-Dissolved			106.2		%		60-140	12-JUN-21
Silver (Ag)-Dissolved			89.2		%		80-120	12-JUN-21
Sodium (Na)-Dissolved			98.7		%		80-120	12-JUN-21



## Quality Control Report

Workorder: L2598493

Report Date: 04-AUG-21

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5487948</b>							
<b>WG3553767-6</b>	<b>LCS</b>	<b>TMRM</b>						
Strontium (Sr)-Dissolved			98.6		%		80-120	12-JUN-21
Sulfur (S)-Dissolved			117.1		%		80-120	12-JUN-21
Thallium (Tl)-Dissolved			100.1		%		80-120	12-JUN-21
Tin (Sn)-Dissolved			98.2		%		80-120	12-JUN-21
Titanium (Ti)-Dissolved			83.9		%		80-120	12-JUN-21
Uranium (U)-Dissolved			95.1		%		80-120	12-JUN-21
Vanadium (V)-Dissolved			98.1		%		80-120	12-JUN-21
Zinc (Zn)-Dissolved			95.5		%		80-120	12-JUN-21
Zirconium (Zr)-Dissolved			89.2		%		80-120	12-JUN-21
<b>WG3553767-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-JUN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-JUN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-JUN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-JUN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-JUN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-JUN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-JUN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-JUN-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	12-JUN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-JUN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-JUN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-JUN-21



## Quality Control Report

Workorder: L2598493

Report Date: 04-AUG-21

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5487948</b>							
<b>WG3553767-5 MB</b>								
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	12-JUN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-JUN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-JUN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-JUN-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-21
<b>WG3553767-9 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-JUN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-JUN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-JUN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-JUN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-JUN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-JUN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-JUN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-JUN-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	12-JUN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-JUN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-JUN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-JUN-21





## Quality Control Report

Workorder: L2598493

Report Date: 04-AUG-21

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487948</b>							
<b>WG3553767-9 MB</b>								
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	12-JUN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-JUN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-JUN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-JUN-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-21
<b>WG3553767-12 MS</b>		<b>L2598493-5</b>						
Aluminum (Al)-Dissolved			97.1		%		70-130	12-JUN-21
Antimony (Sb)-Dissolved			93.0		%		70-130	12-JUN-21
Arsenic (As)-Dissolved			95.7		%		70-130	12-JUN-21
Barium (Ba)-Dissolved			N/A	MS-B	%		-	12-JUN-21
Bismuth (Bi)-Dissolved			93.9		%		70-130	12-JUN-21
Boron (B)-Dissolved			104.8		%		70-130	12-JUN-21
Cadmium (Cd)-Dissolved			99.7		%		70-130	12-JUN-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	12-JUN-21
Chromium (Cr)-Dissolved			96.7		%		70-130	12-JUN-21
Cobalt (Co)-Dissolved			96.8		%		70-130	12-JUN-21
Copper (Cu)-Dissolved			97.1		%		70-130	12-JUN-21
Iron (Fe)-Dissolved			97.6		%		70-130	12-JUN-21
Lead (Pb)-Dissolved			93.7		%		70-130	12-JUN-21
Lithium (Li)-Dissolved			94.3		%		70-130	12-JUN-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	12-JUN-21
Manganese (Mn)-Dissolved			96.8		%		70-130	12-JUN-21
Molybdenum (Mo)-Dissolved			95.6		%		70-130	12-JUN-21
Nickel (Ni)-Dissolved			97.7		%		70-130	12-JUN-21
Phosphorus (P)-Dissolved			100.5		%		70-130	12-JUN-21
Potassium (K)-Dissolved			86.7		%		70-130	12-JUN-21
Selenium (Se)-Dissolved			101.2		%		70-130	12-JUN-21
Silicon (Si)-Dissolved			92.4		%		70-130	12-JUN-21
Silver (Ag)-Dissolved			91.0		%		70-130	12-JUN-21
Sodium (Na)-Dissolved			N/A	MS-B	%		-	12-JUN-21



## Quality Control Report

Workorder: L2598493

Report Date: 04-AUG-21

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487948</b>							
<b>WG3553767-12</b>	<b>MS</b>	<b>L2598493-5</b>						
Strontium (Sr)-Dissolved			97.3		%		70-130	12-JUN-21
Thallium (Tl)-Dissolved			92.5		%		70-130	12-JUN-21
Tin (Sn)-Dissolved			90.0		%		70-130	12-JUN-21
Titanium (Ti)-Dissolved			96.3		%		70-130	12-JUN-21
Uranium (U)-Dissolved			95.7		%		70-130	12-JUN-21
Vanadium (V)-Dissolved			95.5		%		70-130	12-JUN-21
Zinc (Zn)-Dissolved			99.4		%		70-130	12-JUN-21
Zirconium (Zr)-Dissolved			95.3		%		70-130	12-JUN-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5503217</b>							
<b>WG3562993-12</b>	<b>LCS</b>							
Ammonia as N			95.7		%		85-115	24-JUN-21
<b>WG3562993-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	24-JUN-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5482654</b>							
<b>WG3552137-2</b>	<b>LCS</b>							
Nitrite (as N)			100.3		%		90-110	09-JUN-21
<b>WG3552137-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	09-JUN-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5482654</b>							
<b>WG3552137-2</b>	<b>LCS</b>							
Nitrate (as N)			100.8		%		90-110	09-JUN-21
<b>WG3552137-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	09-JUN-21
<b>OH-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493769</b>							
<b>WG3558615-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	18-JUN-21
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5488764</b>							
<b>WG3554011-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			219		mV		210-230	13-JUN-21



## Quality Control Report

Workorder: L2598493

Report Date: 04-AUG-21

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>								
<b>Batch R5490902</b>								
<b>WG3555561-7</b>	<b>DUP</b>	<b>L2598493-5</b>						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	15-JUN-21
<b>WG3555561-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			97.6		%		80-120	15-JUN-21
<b>WG3555561-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-JUN-21
<b>WG3555561-8</b>	<b>MS</b>	<b>L2598493-5</b>						
Phosphorus (P)-Total			83.6		%		70-130	15-JUN-21
<b>PH-CL</b>								
<b>Batch R5493769</b>								
<b>WG3558615-3</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	18-JUN-21
<b>PO4-DO-L-COL-CL</b>								
<b>Batch R5481482</b>								
<b>WG3551568-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			103.0		%		80-120	09-JUN-21
<b>WG3551568-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-JUN-21
<b>SO4-IC-N-CL</b>								
<b>Batch R5482654</b>								
<b>WG3552137-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.6		%		90-110	09-JUN-21
<b>WG3552137-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	09-JUN-21
<b>SOLIDS-TDS-CL</b>								
<b>Batch R5489827</b>								
<b>WG3554163-5</b>	<b>LCS</b>							
Total Dissolved Solids			101.5		%		85-115	14-JUN-21
<b>WG3554163-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	14-JUN-21
<b>TKN-L-F-CL</b>								
<b>Batch R5490493</b>								
<b>WG3554461-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			105.0		%		75-125	14-JUN-21
<b>WG3554461-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			90.0		%		75-125	14-JUN-21



## Quality Control Report

Workorder: L2598493

Report Date: 04-AUG-21

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5490493							
<b>WG3554461-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-JUN-21
<b>WG3554461-3 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-JUN-21
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5483481							
<b>WG3550850-6 LCS</b>								
Total Suspended Solids			93.9		%		85-115	09-JUN-21
<b>WG3550850-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	09-JUN-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5481506							
<b>WG3551706-2 LCS</b>								
Turbidity			99.96		%		85-115	09-JUN-21
<b>WG3551706-1 MB</b>								
Turbidity			<0.10		NTU		0.1	09-JUN-21

# Quality Control Report

Workorder: L2598493

Report Date: 04-AUG-21

Page 12 of 13

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2598493

Report Date: 04-AUG-21

Page 13 of 13

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	07-JUN-21 15:10	13-JUN-21 15:30	0.25	144	hours	EHTR-FM
	2	07-JUN-21 10:50	13-JUN-21 15:30	0.25	149	hours	EHTR-FM
	3	07-JUN-21 12:40	13-JUN-21 15:30	0.25	147	hours	EHTR-FM
	4	07-JUN-21 13:50	13-JUN-21 15:30	0.25	146	hours	EHTR-FM
	5	07-JUN-21 15:10	13-JUN-21 15:30	0.25	144	hours	EHTR-FM
pH	1	07-JUN-21 15:10	18-JUN-21 21:00	0.25	270	hours	EHTR-FM
	2	07-JUN-21 10:50	18-JUN-21 21:00	0.25	274	hours	EHTR-FM
	3	07-JUN-21 12:40	18-JUN-21 21:00	0.25	272	hours	EHTR-FM
	4	07-JUN-21 13:50	18-JUN-21 21:00	0.25	271	hours	EHTR-FM
	5	07-JUN-21 15:10	18-JUN-21 21:00	0.25	270	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Nitrate in Water by IC (Low Level)	4	07-JUN-21 13:50	21-JUN-21 13:00	3	14	days	EHT
Nitrite in Water by IC (Low Level)	4	07-JUN-21 13:50	21-JUN-21 13:00	3	14	days	EHT

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2598493 were received on 08-JUN-21 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.





SNC-Lavalin  
ATTN: Bill Wilmot  
4500 Mennie Road  
Cranbrook BC V1C 4J6

Date Received: 09-JUN-21  
Report Date: 02-JUL-21 16:29 (MT)  
Version: FINAL

Client Phone: 250-505-6493

## Certificate of Analysis

Lab Work Order #: L2599280  
Project P.O. #: 681764  
Job Reference: 673926  
C of C Numbers:  
Legal Site Desc: FRO-X BASELINE

Inayat Dhaliwal  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2599280-1	L2599280-2	L2599280-3
		Description	WG	WG	WG
		Sampled Date	08-JUN-21	08-JUN-21	08-JUN-21
		Sampled Time	10:25	09:30	11:00
		Client ID	FR_MW-CH1- A_WG_2021_06_08_NP	FR_MW_MC10B_ WG_2021_06_08_NP	FR_MW_MC10C_ WG_2021_06_08_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	278	<2.0	<2.0	
	Hardness (as CaCO3) (mg/L)	149	<0.50	<0.50	
	pH (pH)	8.10	5.12	4.04	
	ORP (mV)	343	447	519	
	Total Suspended Solids (mg/L)	18.8	<1.0	<1.0	
	Total Dissolved Solids (mg/L)	169	<10	<10	
	Turbidity (NTU)	12.2	<0.10	<0.10	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	1.1	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	138	<1.0	<1.0	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	138 <sup>HTD</sup>	<1.0	<1.0	
	Ammonia as N (mg/L)	0.0159	<0.0050	<0.0050	
	Bicarbonate (HCO3) (mg/L)	208	<5.0	<5.0	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	1.86	<0.10	<0.10	
	Fluoride (F) (mg/L)	0.160	<0.020	<0.020	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	96.1	0.0	0.0	
	Nitrate and Nitrite (as N) (mg/L)	0.0914	<0.0051	<0.0051	
	Nitrate (as N) (mg/L)	0.0914	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.122	<0.050	<0.050	
	Total Nitrogen (mg/L)	0.213	<0.050	<0.050	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0018	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0531	<0.0020	<0.0020	
	Sulfate (SO4) (mg/L)	16.6	<0.30	<0.30	
	Anion Sum (meq/L)	3.17	<0.10	<0.10	
	Cation Sum (meq/L)	3.05	<0.10	<0.10	
Cation - Anion Balance (%)	-2.0	0.0	0.0		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0026	<0.0010	<0.0010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2599280-1	L2599280-2	L2599280-3
		Description	WG	WG	WG
		Sampled Date	08-JUN-21	08-JUN-21	08-JUN-21
		Sampled Time	10:25	09:30	11:00
		Client ID	FR_MW-CH1- A_WG_2021_06_0 8_NP	FR_MW_MC10B_ WG_2021_06_08_ NP	FR_MW_MC10C_ WG_2021_06_08_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0653	<0.00010	<0.00010
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.0000118	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)		40.8	<0.050	<0.050
	Chromium (Cr)-Dissolved (mg/L)		0.00051	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00011	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)		0.00235	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)		0.028	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0033	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)		11.4	<0.0050	<0.0050
	Manganese (Mn)-Dissolved (mg/L)		0.00420	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000827	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)		0.00188	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		0.34	<0.10	<0.10
	Selenium (Se)-Dissolved (mg/L)		0.000791	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)		1.82	<0.050	<0.050
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		1.41	<0.050	<0.050
	Strontium (Sr)-Dissolved (mg/L)		0.0699	<0.00020	<0.00020
	Sulfur (S)-Dissolved (mg/L)		6.33	<0.50	<0.50
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		0.00016	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.000595	<0.000010	<0.000010
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0014	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Phosphorus (P)-Total	MS-B	L2599280-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

## Reference Information

<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			

## Reference Information

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2599280

Report Date: 02-JUL-21

Page 1 of 10

Client: SNC-Lavalin  
 4500 Mennie Road  
 Cranbrook BC V1C 4J6

Contact: Bill Wilmot

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491189</b>							
<b>WG3555981-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			108.1		%		85-115	15-JUN-21
<b>WG3555981-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	15-JUN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493959</b>							
<b>WG3559031-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			112.0		%		85-115	19-JUN-21
<b>WG3559031-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-JUN-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			103.4		%		80-120	16-JUN-21
<b>WG3556476-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-JUN-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493959</b>							
<b>WG3559031-7</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	19-JUN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487689</b>							
<b>WG3553644-10</b>	<b>LCS</b>							
Bromide (Br)			104.8		%		85-115	10-JUN-21
<b>WG3553644-2</b>	<b>LCS</b>							
Bromide (Br)			99.4		%		85-115	10-JUN-21
<b>WG3553644-6</b>	<b>LCS</b>							
Bromide (Br)			103.9		%		85-115	10-JUN-21
<b>WG3553644-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-JUN-21
<b>WG3553644-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-JUN-21
<b>WG3553644-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-JUN-21
<b>WG3553644-4</b>	<b>MS</b>	<b>L2599280-3</b>						
Bromide (Br)			98.6		%		75-125	10-JUN-21
	<b>Water</b>							



## Quality Control Report

Workorder: L2599280

Report Date: 02-JUL-21

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5507438							
<b>WG3567803-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			111.1		%		80-120	01-JUL-21
<b>WG3567803-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5507438							
<b>WG3567803-2</b>	<b>LCS</b>							
Total Organic Carbon			112.0		%		80-120	01-JUL-21
<b>WG3567803-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>CL-L-IC-N-CL</b> <b>Water</b>								
Batch	R5487689							
<b>WG3553644-10</b>	<b>LCS</b>							
Chloride (Cl)			101.8		%		85-115	10-JUN-21
<b>WG3553644-2</b>	<b>LCS</b>							
Chloride (Cl)			101.4		%		85-115	10-JUN-21
<b>WG3553644-6</b>	<b>LCS</b>							
Chloride (Cl)			101.9		%		85-115	10-JUN-21
<b>WG3553644-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	10-JUN-21
<b>WG3553644-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	10-JUN-21
<b>WG3553644-9</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	10-JUN-21
<b>WG3553644-4</b>	<b>MS</b>	<b>L2599280-3</b>						
Chloride (Cl)			103.1		%		75-125	10-JUN-21
<b>CO3-CL</b> <b>Water</b>								
Batch	R5493959							
<b>WG3559031-7</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	19-JUN-21
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R5493959							
<b>WG3559031-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.3		%		90-110	19-JUN-21
<b>WG3559031-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-JUN-21
	<b>Water</b>							



## Quality Control Report

Workorder: L2599280

Report Date: 02-JUL-21

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487689</b>							
<b>WG3553644-10</b>	<b>LCS</b>							
Fluoride (F)			100.5		%		90-110	10-JUN-21
<b>WG3553644-2</b>	<b>LCS</b>							
Fluoride (F)			99.3		%		90-110	10-JUN-21
<b>WG3553644-6</b>	<b>LCS</b>							
Fluoride (F)			100.1		%		90-110	10-JUN-21
<b>WG3553644-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-JUN-21
<b>WG3553644-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-JUN-21
<b>WG3553644-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-JUN-21
<b>WG3553644-4</b>	<b>MS</b>	<b>L2599280-3</b>						
Fluoride (F)			101.2		%		75-125	10-JUN-21
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5490946</b>							
<b>WG3555580-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			101.0		%		80-120	15-JUN-21
<b>WG3555580-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-JUN-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			102.5		%		80-120	16-JUN-21
Antimony (Sb)-Dissolved			107.8		%		80-120	16-JUN-21
Arsenic (As)-Dissolved			100.7		%		80-120	16-JUN-21
Barium (Ba)-Dissolved			98.5		%		80-120	16-JUN-21
Bismuth (Bi)-Dissolved			103.2		%		80-120	16-JUN-21
Boron (B)-Dissolved			105.3		%		80-120	16-JUN-21
Cadmium (Cd)-Dissolved			97.0		%		80-120	16-JUN-21
Calcium (Ca)-Dissolved			98.4		%		80-120	16-JUN-21
Chromium (Cr)-Dissolved			102.4		%		80-120	16-JUN-21
Cobalt (Co)-Dissolved			102.0		%		80-120	16-JUN-21
Copper (Cu)-Dissolved			98.6		%		80-120	16-JUN-21
Iron (Fe)-Dissolved			100.9		%		80-120	16-JUN-21
Lead (Pb)-Dissolved			101.5		%		80-120	16-JUN-21
Lithium (Li)-Dissolved			104.7		%		80-120	16-JUN-21





## Quality Control Report

Workorder: L2599280

Report Date: 02-JUL-21

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-6</b>	<b>LCS</b>	<b>TMRM</b>						
Magnesium (Mg)-Dissolved			98.3		%		80-120	16-JUN-21
Manganese (Mn)-Dissolved			99.8		%		80-120	16-JUN-21
Molybdenum (Mo)-Dissolved			101.3		%		80-120	16-JUN-21
Nickel (Ni)-Dissolved			99.6		%		80-120	16-JUN-21
Phosphorus (P)-Dissolved			104.1		%		70-130	16-JUN-21
Potassium (K)-Dissolved			104.3		%		80-120	16-JUN-21
Selenium (Se)-Dissolved			101.3		%		80-120	16-JUN-21
Silicon (Si)-Dissolved			107.1		%		60-140	16-JUN-21
Silver (Ag)-Dissolved			108.5		%		80-120	16-JUN-21
Sodium (Na)-Dissolved			105.5		%		80-120	16-JUN-21
Strontium (Sr)-Dissolved			101.8		%		80-120	16-JUN-21
Sulfur (S)-Dissolved			113.1		%		80-120	16-JUN-21
Thallium (Tl)-Dissolved			102.3		%		80-120	16-JUN-21
Tin (Sn)-Dissolved			101.0		%		80-120	16-JUN-21
Titanium (Ti)-Dissolved			94.0		%		80-120	16-JUN-21
Uranium (U)-Dissolved			101.6		%		80-120	16-JUN-21
Vanadium (V)-Dissolved			102.3		%		80-120	16-JUN-21
Zinc (Zn)-Dissolved			106.1		%		80-120	16-JUN-21
Zirconium (Zr)-Dissolved			101.9		%		80-120	16-JUN-21
<b>WG3556476-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-JUN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-JUN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-JUN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21



## Quality Control Report

Workorder: L2599280

Report Date: 02-JUL-21

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-5</b>	<b>MB</b>							
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-JUN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-JUN-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	16-JUN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-JUN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-JUN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5503269</b>							
<b>WG3562999-10</b>	<b>LCS</b>							
Ammonia as N			98.1		%		85-115	24-JUN-21
<b>WG3562999-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	24-JUN-21
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5487689</b>							
<b>WG3553644-10</b>	<b>LCS</b>							
Nitrite (as N)			98.7		%		90-110	10-JUN-21
<b>WG3553644-2</b>	<b>LCS</b>							
Nitrite (as N)			98.3		%		90-110	10-JUN-21
<b>WG3553644-6</b>	<b>LCS</b>							
Nitrite (as N)			100.5		%		90-110	10-JUN-21
<b>WG3553644-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	10-JUN-21



## Quality Control Report

Workorder: L2599280

Report Date: 02-JUL-21

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487689</b>							
<b>WG3553644-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	10-JUN-21
<b>WG3553644-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	10-JUN-21
<b>WG3553644-4</b>	<b>MS</b>	<b>L2599280-3</b>						
Nitrite (as N)			100.3		%		75-125	10-JUN-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487689</b>							
<b>WG3553644-10</b>	<b>LCS</b>							
Nitrate (as N)			101.3		%		90-110	10-JUN-21
<b>WG3553644-2</b>	<b>LCS</b>							
Nitrate (as N)			100.6		%		90-110	10-JUN-21
<b>WG3553644-6</b>	<b>LCS</b>							
Nitrate (as N)			101.4		%		90-110	10-JUN-21
<b>WG3553644-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	10-JUN-21
<b>WG3553644-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	10-JUN-21
<b>WG3553644-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	10-JUN-21
<b>WG3553644-4</b>	<b>MS</b>	<b>L2599280-3</b>						
Nitrate (as N)			102.4		%		75-125	10-JUN-21
<b>OH-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493959</b>							
<b>WG3559031-7</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	19-JUN-21
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5488764</b>							
<b>WG3554011-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			219		mV		210-230	13-JUN-21
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5490902</b>							
<b>WG3555561-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			103.0		%		80-120	15-JUN-21
<b>WG3555561-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-JUN-21



## Quality Control Report

Workorder: L2599280

Report Date: 02-JUL-21

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>								
<b>Water</b>								
Batch	R5493959							
WG3559031-8	LCS							
pH			7.00		pH		6.9-7.1	19-JUN-21
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch	R5483216							
WG3552083-10	LCS							
Orthophosphate-Dissolved (as P)			100.5		%		80-120	10-JUN-21
WG3552083-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	10-JUN-21
WG3552083-12	MS	L2599280-3						
Orthophosphate-Dissolved (as P)			100.4		%		70-130	10-JUN-21
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch	R5487689							
WG3553644-10	LCS							
Sulfate (SO4)			100.9		%		90-110	10-JUN-21
WG3553644-2	LCS							
Sulfate (SO4)			101.3		%		90-110	10-JUN-21
WG3553644-6	LCS							
Sulfate (SO4)			101.2		%		90-110	10-JUN-21
WG3553644-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	10-JUN-21
WG3553644-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	10-JUN-21
WG3553644-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	10-JUN-21
WG3553644-4	MS	L2599280-3						
Sulfate (SO4)			103.1		%		75-125	10-JUN-21
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R5491369							
WG3554990-2	LCS							
Total Dissolved Solids			91.7		%		85-115	15-JUN-21
WG3554990-1	MB							
Total Dissolved Solids			<10		mg/L		10	15-JUN-21
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R5490913							
WG3555117-2	LCS							
Total Kjeldahl Nitrogen			83.0		%		75-125	15-JUN-21
WG3555117-4	LCS							



## Quality Control Report

Workorder: L2599280

Report Date: 02-JUL-21

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5490913</b>							
<b>WG3555117-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.0		%		75-125	15-JUN-21
<b>WG3555117-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-21
<b>WG3555117-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-21
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5491405</b>							
<b>WG3554986-8</b>	<b>LCS</b>							
Total Suspended Solids			91.4		%		85-115	15-JUN-21
<b>WG3554986-7</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	15-JUN-21
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5484417</b>							
<b>WG3552583-2</b>	<b>LCS</b>							
Turbidity			99.0		%		85-115	10-JUN-21
<b>WG3552583-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	10-JUN-21

# Quality Control Report

Workorder: L2599280

Report Date: 02-JUL-21

Page 9 of 10

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2599280

Report Date: 02-JUL-21

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	08-JUN-21 10:25	13-JUN-21 15:30	0.25	125	hours	EHTR-FM
	2	08-JUN-21 09:30	13-JUN-21 15:30	0.25	126	hours	EHTR-FM
	3	08-JUN-21 11:00	13-JUN-21 15:30	0.25	125	hours	EHTR-FM
pH	1	08-JUN-21 10:25	21-JUN-21 09:00	0.25	311	hours	EHTR-FM
	2	08-JUN-21 09:30	19-JUN-21 09:00	0.25	264	hours	EHTR-FM
	3	08-JUN-21 11:00	19-JUN-21 09:00	0.25	262	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2599280 were received on 09-JUN-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2599280-COFC

C Number: 681764

Page 1 of 1

- 20210608 -01

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Report To Contact and company name below will appear on the final report		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)	
Company:	SNC-Lavalin Inc.	Select Report Format:	<input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)	Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply	
Contact:	Bill Wilmot	Quality Control (QC) Report with Report	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Priority (Business Days)	4 day [P4-20%] <input type="checkbox"/>
Phone:	250-464-5054	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked	Select Distribution:		3 day [P3-25%] <input type="checkbox"/>
Company address below will appear on the final report		SNC Emails: "Bill.Wilmot", "Alex.Heathcott"		EMERGENCY	Same Day, Weekend or Statutory holiday [E2 -200%] <input type="checkbox"/>
Street:	520 Lake Street	Date and Time Required for all E&P TATs:			
City/Province:	Nelson, BC	Teck Emails: chelsea.jensen@teck.com		For tests that can not be performed according to the service level selected, you will be contacted.	
Postal Code:	V1L 4C6	Vicky.Lipinski @snclavalin.com		Analysis Request	
Invoice To	Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	
	Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO	Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		F/P	P
Company:		SNC Emails: Bill.Wilmot & payables @snclavalin.com			
Contact:					
Project Information		Oil and Gas Required Fields (client use)			
ALS Account # / Quote #:	MOR125 / Q78197	AFE/Cost Center:	PO#		
Job #:	673926	Major/Minor Code:	Routing Code:		
PO / AFE:	681764	Requisitioner:			
LSD:	FRO-X Baseline	Location:			
ALS Lab Work Order # (lab use only):	280	ALS Contact:	Inayat Dhaliwal 403-407-1784	Sampler:	Gavin G.
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type
	<del>FR_MW_FRD1_WG_2021_06_08_NF</del>	<del>FR_MW_FRD1</del>			WG
	FR_MW-CH1-A_WG_2021_06_08_NP	FR_MW-CH1-A	08-Jun-21	10:25	WG
	<del>FR_MW-CH2_WG_2021_06_08_NP</del>	<del>FR_MW-CH2</del>			WG
	<del>FR_MW-CASW6-A_WG_2021_06_08_NP</del>	<del>FR_MW-CASW6-A</del>			WG
	<del>FR_MW-CASW6-B_WG_2021_06_08_NP</del>	<del>FR_MW-CASW6-B</del>			WG
	<del>FR_MW-MC10A_WG_2021_06_08_NP</del>	<del>FR_MW-MC10A</del>			WG
	FR_MW_MC10B_WG_2021_06_08_NP	FR_MW_MC10B	08-Jun-21	09:30	WG
	FR_MW_MC10C_WG_2021_06_08_NP	FR_MW_MC10C	08-Jun-21	11:00	WG
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)	
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		cc/ gavin.grundy @snclavalin.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>	
		GH0-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input type="checkbox"/>	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)	
Released by:	Date:	Time:	Received by:	Date:	Time:
Gavin Grundy	2021/06/08	1500	[Signature]	6/9	08

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.





SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 10-JUN-21  
Report Date: 03-NOV-21 15:39 (MT)  
Version: FINAL REV. 2

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2599881  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Milica Papic  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2599881-1 WG 09-JUN-21 09:55 GH_MW-MC- 1D_WG_2021_06_ 09_NP	L2599881-2 WG 09-JUN-21 11:55 GH_MW-MC- 2S_WG_2021_06_ 09_NP	L2599881-3 WG 09-JUN-21 13:50 GH_MW-MC- 2D_WG_2021_06_ 09_NP	L2599881-4 WG 09-JUN-21 15:45 GH_MW-WILLOW- 2S_WG_2021_06_ 09_NP	L2599881-5 WG 09-JUN-21 12:00 GH_MW-MC10- A_WG_2021_06_0 9_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	325	490	1720	327	1810
	Hardness (as CaCO3) (mg/L)	126	235	20.1	193	19.8
	pH (pH)	7.92	7.84	8.92	7.75	8.71
	ORP (mV)	440	395	-278 <sup>RRV</sup>	467	-279 <sup>RRV</sup>
	Total Suspended Solids (mg/L)	<1.0	<1.0	4.9	15.7	4.5
	Total Dissolved Solids (mg/L)	212	303	1110	212	1090
	Turbidity (NTU)	1.13	0.72	21.1	9.44	21.0
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	4.9	<1.0	1.2	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	222	237	480	218	529
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	87.6	<1.0	57.8
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	222	237 <sup>HTD</sup>	567	218	586
	Ammonia as N (mg/L)	0.0368	0.0692	0.631	0.0060	0.711
	Bicarbonate (HCO3) (mg/L)	270	325	585	266	645
	Bromide (Br) (mg/L)	<0.050	<0.050	0.58	<0.050	0.33
	Carbonate (CO3) (mg/L)	<5.0	<5.0	52.6	<5.0	34.7
	Chloride (Cl) (mg/L)	18.7	1.43	256	0.35	260
	Fluoride (F) (mg/L)	0.686	0.153	2.99	0.163	3.08
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	87.9	89.3	100	91.0	94.8
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	0.494	0.556	0.119	<0.025
	Nitrate (as N) (mg/L)	<0.0050	0.494	0.539	0.119	<0.025
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.0164	<0.0010	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.310	0.163	0.564	0.237	0.555
	Total Nitrogen (mg/L)	0.310	0.657	1.12	0.356	0.555
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0042	0.0634	<0.0010	0.0619
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0062	0.213	0.0878	0.205
	Sulfate (SO4) (mg/L)	<0.30	56.9	17.3	8.01	15.2
	Anion Sum (meq/L)	5.00	6.01	19.1	4.55	19.5
	Cation Sum (meq/L)	4.39	5.37	19.2	4.14	18.5
Cation - Anion Balance (%)	-6.4	-5.7	0.1	-4.7	-2.7	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	2.18	1.54	4.12	0.74
	Total Organic Carbon (mg/L)	<0.50	2.64	1.98	4.62	1.91
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0064	0.0198	0.0017	0.0242

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2599881-6 WG 09-JUN-21 12:00 GH_MW_MC10- B_WG_2021_06_0 9_NP	L2599881-7 WG 09-JUN-21 12:00 GH_MW_MC10- C_WG_2021_06_0 9_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	<2.0	<2.0		
	Hardness (as CaCO3) (mg/L)	<0.50	<0.50		
	pH (pH)	3.95	4.01		
	ORP (mV)	452	518		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	<10	<10		
	Turbidity (NTU)	<0.10	<0.10		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.9	1.9		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	<1.0		
	Ammonia as N (mg/L)	<0.0050	<0.0050		
	Bicarbonate (HCO3) (mg/L)	<5.0	<5.0		
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	<0.10	<0.10		
	Fluoride (F) (mg/L)	<0.020	<0.020		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	0.0	0.0		
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	<0.0051		
	Nitrate (as N) (mg/L)	<0.0050	<0.0050		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.092	0.148		
	Total Nitrogen (mg/L)	0.092	0.148		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010		
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020		
	Sulfate (SO4) (mg/L)	<0.30	<0.30		
	Anion Sum (meq/L)	<0.10	<0.10		
	Cation Sum (meq/L)	0.11	<0.10		
	Cation - Anion Balance (%)	0.0	0.0		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.52		
	Total Organic Carbon (mg/L)	<0.50	0.56		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	<0.0010		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2599881-1	L2599881-2	L2599881-3	L2599881-4	L2599881-5
					WG	WG	WG	WG	WG
		09-JUN-21	09:55		09-JUN-21	09-JUN-21	09-JUN-21	09-JUN-21	09-JUN-21
					11:55	13:50	15:45	12:00	
					GH_MW-MC-1D_WG_2021_06_09_NP	GH_MW-MC-2S_WG_2021_06_09_NP	GH_MW-MC-2D_WG_2021_06_09_NP	GH_MW-WILLOW-2S_WG_2021_06_09_NP	GH_MW-MC10-A_WG_2021_06_09_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00050 <sup>DLDS</sup>	0.00011	<0.00010	<0.00050 <sup>DLDS</sup>	0.00080	0.00017	0.00071
	Arsenic (As)-Dissolved (mg/L)	0.807	0.0846	0.138	0.170	0.127			
	Barium (Ba)-Dissolved (mg/L)	<0.000020	<0.00010 <sup>DLDS</sup>	<0.000020	<0.000020	<0.00010 <sup>DLDS</sup>	<0.000020	<0.000020	<0.00010 <sup>DLDS</sup>
	Beryllium (Be)-Dissolved (mg/L)	<0.000050	<0.00025 <sup>DLDS</sup>	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>
	Bismuth (Bi)-Dissolved (mg/L)	0.093	<0.050 <sup>DLDS</sup>	0.713	0.025	0.752			
	Boron (B)-Dissolved (mg/L)	<0.0000050	0.000043	<0.0000050	0.0000120	<0.000025 <sup>DLDS</sup>			
	Cadmium (Cd)-Dissolved (mg/L)	27.2	63.9	3.33	49.3	3.29			
	Calcium (Ca)-Dissolved (mg/L)	<0.00010	<0.00050 <sup>DLDS</sup>	0.00012	<0.00010	<0.00050 <sup>DLDS</sup>			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>			
	Cobalt (Co)-Dissolved (mg/L)	<0.00020	<0.0010 <sup>DLDS</sup>	<0.00020	0.00043	<0.0010 <sup>DLDS</sup>			
	Copper (Cu)-Dissolved (mg/L)	0.164	<0.050 <sup>DLDS</sup>	<0.010	<0.010	<0.050 <sup>DLDS</sup>			
	Iron (Fe)-Dissolved (mg/L)	<0.000050	<0.00025 <sup>DLDS</sup>	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>			
	Lead (Pb)-Dissolved (mg/L)	0.0856	0.0202	1.51	0.0116	1.04			
	Lithium (Li)-Dissolved (mg/L)	14.0	18.3	2.85	16.9	2.81			
	Magnesium (Mg)-Dissolved (mg/L)	0.129	0.0175	0.0387	<0.00010	0.0368			
	Manganese (Mn)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Mercury (Hg)-Dissolved (mg/L)	0.00641	0.00149	0.000490	0.000667	0.00053			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.00050	<0.0025 <sup>DLDS</sup>	<0.00050	<0.00050	<0.0025 <sup>DLDS</sup>			
	Nickel (Ni)-Dissolved (mg/L)	<0.050	<0.25 <sup>DLDS</sup>	0.192	<0.050	<0.25 <sup>DLDS</sup>			
	Phosphorus (P)-Dissolved (mg/L)	1.34	1.00	1.88	1.04	1.76			
	Potassium (K)-Dissolved (mg/L)	<0.000050	0.00268	0.00258	0.000774	0.00619			
	Selenium (Se)-Dissolved (mg/L)	3.42	3.45	3.21	3.47	3.05			
	Silicon (Si)-Dissolved (mg/L)	<0.000010	<0.000050 <sup>DLDS</sup>	<0.000010	<0.000010	<0.000050 <sup>DLDS</sup>			
	Silver (Ag)-Dissolved (mg/L)	42.2	14.9	430	6.04	416			
	Sodium (Na)-Dissolved (mg/L)	0.396	0.215	0.238	0.127	0.233			
	Strontium (Sr)-Dissolved (mg/L)	<0.50	21.0	364	4.32	461			
	Sulfur (S)-Dissolved (mg/L)	0.000036	<0.000050 <sup>DLDS</sup>	<0.000010	<0.000010	<0.000050 <sup>DLDS</sup>			
	Thallium (Tl)-Dissolved (mg/L)	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>			
	Tin (Sn)-Dissolved (mg/L)	<0.00030	<0.0015 <sup>DLDS</sup>	<0.00030	<0.00030	<0.0015 <sup>DLDS</sup>			
	Titanium (Ti)-Dissolved (mg/L)	0.000070	0.000832	0.000562	0.000468	0.000527			
	Uranium (U)-Dissolved (mg/L)	<0.00050	<0.0025 <sup>DLDS</sup>	<0.00050	<0.00050	<0.0025 <sup>DLDS</sup>			
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0010	<0.0050 <sup>DLDS</sup>			
	Zinc (Zn)-Dissolved (mg/L)	<0.00030	<0.0010 <sup>DLDS</sup>	<0.00030	<0.00030	<0.0010 <sup>DLDS</sup>			
	Zirconium (Zr)-Dissolved (mg/L)								

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2599881-6 WG 09-JUN-21 12:00 GH_MW_MC10- B_WG_2021_06_0 9_NP	L2599881-7 WG 09-JUN-21 12:00 GH_MW_MC10- C_WG_2021_06_0 9_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.00021 <sup>RRV</sup>	<0.00010		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010		
	Cadmium (Cd)-Dissolved (mg/L)	0.0000068 <sup>RRV</sup>	<0.0000050		
	Calcium (Ca)-Dissolved (mg/L)	<0.050	<0.050		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010		
	Magnesium (Mg)-Dissolved (mg/L)	<0.0050	<0.0050		
	Manganese (Mn)-Dissolved (mg/L)	0.00016 <sup>RRV</sup>	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050		
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		
	Potassium (K)-Dissolved (mg/L)	<0.10	<0.10		
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050		
	Silicon (Si)-Dissolved (mg/L)	<0.050	<0.050		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	<0.050	<0.050		
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	<0.00020		
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030		
	Uranium (U)-Dissolved (mg/L)	<0.000010	<0.000010		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0025 <sup>RRV</sup>	<0.0010		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2599881-1, -2, -3, -4, -5, -6, -7

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 1 of 15

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5492013</b>							
<b>WG3556961-3</b>	<b>DUP</b>	<b>L2599881-5</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	16-JUN-21
<b>WG3556961-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			107.9		%		85-115	16-JUN-21
<b>WG3556961-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	16-JUN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493959</b>							
<b>WG3559031-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			112.3		%		85-115	19-JUN-21
<b>WG3559031-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			111.0		%		85-115	19-JUN-21
<b>WG3559031-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-JUN-21
<b>WG3559031-16</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-JUN-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-11</b>	<b>DUP</b>	<b>L2599881-7</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	16-JUN-21
<b>WG3556476-10</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			110.4		%		80-120	16-JUN-21
<b>WG3556476-14</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			97.3		%		80-120	16-JUN-21
<b>WG3556476-13</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-JUN-21
<b>WG3556476-9</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-JUN-21
<b>WG3556476-12</b>	<b>MS</b>	<b>L2599881-7</b>						
Beryllium (Be)-Dissolved			104.0		%		70-130	16-JUN-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493959</b>							
<b>WG3559031-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	19-JUN-21
<b>WG3559031-16</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	19-JUN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 2 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5488068</b>							
<b>WG3553805-3</b>	<b>DUP</b>	<b>L2599881-7</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	10-JUN-21
<b>WG3553805-2</b>	<b>LCS</b>							
Bromide (Br)			101.5		%		85-115	10-JUN-21
<b>WG3553805-7</b>	<b>LCS</b>							
Bromide (Br)			99.1		%		85-115	10-JUN-21
<b>WG3553805-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-JUN-21
<b>WG3553805-6</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-JUN-21
<b>WG3553805-4</b>	<b>MS</b>	<b>L2599881-7</b>						
Bromide (Br)			99.8		%		75-125	10-JUN-21
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5507437</b>							
<b>WG3567802-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			90.7		%		80-120	01-JUL-21
<b>WG3567802-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>Batch</b>	<b>R5507438</b>							
<b>WG3567803-5</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.7		%		80-120	01-JUL-21
<b>WG3567803-4</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5507437</b>							
<b>WG3567802-2</b>	<b>LCS</b>							
Total Organic Carbon			95.2		%		80-120	01-JUL-21
<b>WG3567802-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>Batch</b>	<b>R5507438</b>							
<b>WG3567803-5</b>	<b>LCS</b>							
Total Organic Carbon			103.7		%		80-120	01-JUL-21
<b>WG3567803-4</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 3 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5488068</b>							
<b>WG3553805-3</b>	<b>DUP</b>	<b>L2599881-7</b>						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	10-JUN-21
<b>WG3553805-2</b>	<b>LCS</b>							
Chloride (Cl)			100.9		%		85-115	10-JUN-21
<b>WG3553805-7</b>	<b>LCS</b>							
Chloride (Cl)			100.9		%		85-115	10-JUN-21
<b>WG3553805-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	10-JUN-21
<b>WG3553805-6</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	10-JUN-21
<b>WG3553805-4</b>	<b>MS</b>	<b>L2599881-7</b>						
Chloride (Cl)			103.2		%		75-125	10-JUN-21
<b>CO3-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5493959</b>							
<b>WG3559031-13</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	19-JUN-21
<b>WG3559031-16</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	19-JUN-21
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5493959</b>							
<b>WG3559031-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.8		%		90-110	19-JUN-21
<b>WG3559031-17</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.2		%		90-110	19-JUN-21
<b>WG3559031-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-JUN-21
<b>WG3559031-16</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-JUN-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5488068</b>							
<b>WG3553805-3</b>	<b>DUP</b>	<b>L2599881-7</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	10-JUN-21
<b>WG3553805-2</b>	<b>LCS</b>							
Fluoride (F)			102.1		%		90-110	10-JUN-21
<b>WG3553805-7</b>	<b>LCS</b>							
Fluoride (F)			105.0		%		90-110	10-JUN-21
<b>WG3553805-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-JUN-21



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 4 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5488068</b>							
<b>WG3553805-6</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-JUN-21
<b>WG3553805-4</b>	<b>MS</b>	<b>L2599881-7</b>						
Fluoride (F)			105.4		%		75-125	10-JUN-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5492447</b>							
<b>WG3557408-3</b>	<b>DUP</b>	<b>L2599881-7</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	17-JUN-21
<b>WG3557408-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			107.0		%		80-120	17-JUN-21
<b>WG3557408-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.6		%		80-120	17-JUN-21
<b>WG3557408-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-JUN-21
<b>WG3557408-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-JUN-21
<b>WG3557408-4</b>	<b>MS</b>	<b>L2599881-7</b>						
Mercury (Hg)-Dissolved			102.0		%		70-130	17-JUN-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-11</b>	<b>DUP</b>	<b>L2599881-7</b>						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	16-JUN-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUN-21
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUN-21
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUN-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-JUN-21
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-JUN-21
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	16-JUN-21
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-JUN-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUN-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUN-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	16-JUN-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-JUN-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-JUN-21
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	16-JUN-21
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	16-JUN-21
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUN-21



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 5 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-11</b>	<b>DUP</b>	<b>L2599881-7</b>						
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-JUN-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	16-JUN-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-JUN-21
Potassium (K)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	16-JUN-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-JUN-21
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-JUN-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-JUN-21
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-JUN-21
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	16-JUN-21
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	16-JUN-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-JUN-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUN-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	16-JUN-21
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-JUN-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	16-JUN-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	16-JUN-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	16-JUN-21
<b>WG3556476-10</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			102.5		%		80-120	16-JUN-21
Antimony (Sb)-Dissolved			109.2		%		80-120	16-JUN-21
Arsenic (As)-Dissolved			101.4		%		80-120	16-JUN-21
Barium (Ba)-Dissolved			100.8		%		80-120	16-JUN-21
Bismuth (Bi)-Dissolved			106.4		%		80-120	16-JUN-21
Boron (B)-Dissolved			117.0		%		80-120	16-JUN-21
Cadmium (Cd)-Dissolved			99.9		%		80-120	16-JUN-21
Calcium (Ca)-Dissolved			99.3		%		80-120	16-JUN-21
Chromium (Cr)-Dissolved			99.4		%		80-120	16-JUN-21
Cobalt (Co)-Dissolved			102.0		%		80-120	16-JUN-21
Copper (Cu)-Dissolved			99.0		%		80-120	16-JUN-21
Iron (Fe)-Dissolved			103.6		%		80-120	16-JUN-21
Lead (Pb)-Dissolved			103.5		%		80-120	16-JUN-21
Lithium (Li)-Dissolved			106.1		%		80-120	16-JUN-21
Magnesium (Mg)-Dissolved			101.1		%		80-120	16-JUN-21
Manganese (Mn)-Dissolved			100.5		%		80-120	16-JUN-21



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 6 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-10</b>	<b>LCS</b>	<b>TMRM</b>						
Molybdenum (Mo)-Dissolved			103.7		%		80-120	16-JUN-21
Nickel (Ni)-Dissolved			100.3		%		80-120	16-JUN-21
Phosphorus (P)-Dissolved			116.9		%		70-130	16-JUN-21
Potassium (K)-Dissolved			103.9		%		80-120	16-JUN-21
Selenium (Se)-Dissolved			101.5		%		80-120	16-JUN-21
Silicon (Si)-Dissolved			110.3		%		60-140	16-JUN-21
Silver (Ag)-Dissolved			114.1		%		80-120	16-JUN-21
Sodium (Na)-Dissolved			104.0		%		80-120	16-JUN-21
Strontium (Sr)-Dissolved			102.5		%		80-120	16-JUN-21
Sulfur (S)-Dissolved			113.3		%		80-120	16-JUN-21
Thallium (Tl)-Dissolved			103.3		%		80-120	16-JUN-21
Tin (Sn)-Dissolved			102.7		%		80-120	16-JUN-21
Titanium (Ti)-Dissolved			105.1		%		80-120	16-JUN-21
Uranium (U)-Dissolved			103.2		%		80-120	16-JUN-21
Vanadium (V)-Dissolved			102.9		%		80-120	16-JUN-21
Zinc (Zn)-Dissolved			102.3		%		80-120	16-JUN-21
Zirconium (Zr)-Dissolved			103.2		%		80-120	16-JUN-21
<b>WG3556476-14</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			106.7		%		80-120	16-JUN-21
Antimony (Sb)-Dissolved			113.3		%		80-120	16-JUN-21
Arsenic (As)-Dissolved			103.5		%		80-120	16-JUN-21
Barium (Ba)-Dissolved			103.7		%		80-120	16-JUN-21
Bismuth (Bi)-Dissolved			106.1		%		80-120	16-JUN-21
Boron (B)-Dissolved			111.6		%		80-120	16-JUN-21
Cadmium (Cd)-Dissolved			102.6		%		80-120	16-JUN-21
Calcium (Ca)-Dissolved			103.9		%		80-120	16-JUN-21
Chromium (Cr)-Dissolved			103.3		%		80-120	16-JUN-21
Cobalt (Co)-Dissolved			106.8		%		80-120	16-JUN-21
Copper (Cu)-Dissolved			101.8		%		80-120	16-JUN-21
Iron (Fe)-Dissolved			103.6		%		80-120	16-JUN-21
Lead (Pb)-Dissolved			105.5		%		80-120	16-JUN-21
Lithium (Li)-Dissolved			109.5		%		80-120	16-JUN-21
Magnesium (Mg)-Dissolved			106.7		%		80-120	16-JUN-21
Manganese (Mn)-Dissolved			102.8		%		80-120	16-JUN-21



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 7 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-14</b>	<b>LCS</b>	<b>TMRM</b>						
Molybdenum (Mo)-Dissolved			107.1		%		80-120	16-JUN-21
Nickel (Ni)-Dissolved			103.9		%		80-120	16-JUN-21
Phosphorus (P)-Dissolved			110.6		%		70-130	16-JUN-21
Potassium (K)-Dissolved			106.9		%		80-120	16-JUN-21
Selenium (Se)-Dissolved			106.0		%		80-120	16-JUN-21
Silicon (Si)-Dissolved			110.3		%		60-140	16-JUN-21
Silver (Ag)-Dissolved			107.3		%		80-120	16-JUN-21
Sodium (Na)-Dissolved			107.9		%		80-120	16-JUN-21
Strontium (Sr)-Dissolved			106.1		%		80-120	16-JUN-21
Sulfur (S)-Dissolved			113.2		%		80-120	16-JUN-21
Thallium (Tl)-Dissolved			106.1		%		80-120	16-JUN-21
Tin (Sn)-Dissolved			105.3		%		80-120	16-JUN-21
Titanium (Ti)-Dissolved			107.4		%		80-120	16-JUN-21
Uranium (U)-Dissolved			106.8		%		80-120	16-JUN-21
Vanadium (V)-Dissolved			105.1		%		80-120	16-JUN-21
Zinc (Zn)-Dissolved			109.8		%		80-120	16-JUN-21
Zirconium (Zr)-Dissolved			105.1		%		80-120	16-JUN-21
<b>WG3556476-13</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-JUN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-JUN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-JUN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-JUN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 8 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-13 MB</b>								
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-JUN-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	16-JUN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-JUN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-JUN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
<b>WG3556476-9 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-JUN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-JUN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-JUN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-JUN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21





## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 9 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-9</b>	<b>MB</b>							
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-JUN-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	16-JUN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-JUN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-JUN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
<b>WG3556476-12</b>	<b>MS</b>	<b>L2599881-7</b>						
Aluminum (Al)-Dissolved			100.6		%		70-130	16-JUN-21
Antimony (Sb)-Dissolved			103.7		%		70-130	16-JUN-21
Arsenic (As)-Dissolved			95.6		%		70-130	16-JUN-21
Barium (Ba)-Dissolved			98.0		%		70-130	16-JUN-21
Bismuth (Bi)-Dissolved			98.9		%		70-130	16-JUN-21
Boron (B)-Dissolved			111.2		%		70-130	16-JUN-21
Cadmium (Cd)-Dissolved			99.3		%		70-130	16-JUN-21
Calcium (Ca)-Dissolved			93.7		%		70-130	16-JUN-21
Chromium (Cr)-Dissolved			98.0		%		70-130	16-JUN-21
Cobalt (Co)-Dissolved			99.6		%		70-130	16-JUN-21
Copper (Cu)-Dissolved			99.7		%		70-130	16-JUN-21
Iron (Fe)-Dissolved			98.8		%		70-130	16-JUN-21
Lead (Pb)-Dissolved			101.9		%		70-130	16-JUN-21
Lithium (Li)-Dissolved			110.4		%		70-130	16-JUN-21
Magnesium (Mg)-Dissolved			92.5		%		70-130	16-JUN-21
Manganese (Mn)-Dissolved			97.9		%		70-130	16-JUN-21



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 10 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-12</b>	<b>MS</b>	<b>L2599881-7</b>						
Molybdenum (Mo)-Dissolved			98.4		%		70-130	16-JUN-21
Nickel (Ni)-Dissolved			98.1		%		70-130	16-JUN-21
Phosphorus (P)-Dissolved			101.0		%		70-130	16-JUN-21
Potassium (K)-Dissolved			100.1		%		70-130	16-JUN-21
Selenium (Se)-Dissolved			100.9		%		70-130	16-JUN-21
Silicon (Si)-Dissolved			97.0		%		70-130	16-JUN-21
Silver (Ag)-Dissolved			105.1		%		70-130	16-JUN-21
Sodium (Na)-Dissolved			96.2		%		70-130	16-JUN-21
Strontium (Sr)-Dissolved			100.3		%		70-130	16-JUN-21
Thallium (Tl)-Dissolved			104.3		%		70-130	16-JUN-21
Tin (Sn)-Dissolved			98.6		%		70-130	16-JUN-21
Titanium (Ti)-Dissolved			102.1		%		70-130	16-JUN-21
Uranium (U)-Dissolved			100.0		%		70-130	16-JUN-21
Vanadium (V)-Dissolved			99.1		%		70-130	16-JUN-21
Zinc (Zn)-Dissolved			103.4		%		70-130	16-JUN-21
Zirconium (Zr)-Dissolved			100.7		%		70-130	16-JUN-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5503269</b>							
<b>WG3562999-6</b>	<b>LCS</b>							
Ammonia as N			104.9		%		85-115	24-JUN-21
<b>WG3562999-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	24-JUN-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5488068</b>							
<b>WG3553805-3</b>	<b>DUP</b>	<b>L2599881-7</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	10-JUN-21
<b>WG3553805-2</b>	<b>LCS</b>							
Nitrite (as N)			95.3		%		90-110	10-JUN-21
<b>WG3553805-7</b>	<b>LCS</b>							
Nitrite (as N)			95.4		%		90-110	10-JUN-21
<b>WG3553805-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	10-JUN-21
<b>WG3553805-6</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	10-JUN-21
<b>WG3553805-4</b>	<b>MS</b>	<b>L2599881-7</b>						
Nitrite (as N)			97.3		%		75-125	10-JUN-21



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 11 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
<b>Batch R5488068</b>								
<b>WG3553805-3</b>	<b>DUP</b>	<b>L2599881-7</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	10-JUN-21
<b>WG3553805-2</b>	<b>LCS</b>							
Nitrate (as N)			103.2		%		90-110	10-JUN-21
<b>WG3553805-7</b>	<b>LCS</b>							
Nitrate (as N)			102.2		%		90-110	10-JUN-21
<b>WG3553805-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	10-JUN-21
<b>WG3553805-6</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	10-JUN-21
<b>WG3553805-4</b>	<b>MS</b>	<b>L2599881-7</b>						
Nitrate (as N)			105.3		%		75-125	10-JUN-21
<b>OH-CL</b>								
<b>Batch R5493959</b>								
<b>WG3559031-13</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	19-JUN-21
<b>WG3559031-16</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	19-JUN-21
<b>ORP-CL</b>								
<b>Batch R5491707</b>								
<b>WG3556515-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			222		mV		210-230	16-JUN-21
<b>WG3556515-2</b>	<b>DUP</b>	<b>L2599881-1</b>						
ORP		440	427	J	mV	12.8	15	16-JUN-21
<b>P-T-L-COL-CL</b>								
<b>Batch R5491545</b>								
<b>WG3556040-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			102.1		%		80-120	16-JUN-21
<b>WG3556040-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			102.5		%		80-120	16-JUN-21
<b>WG3556040-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-JUN-21
<b>WG3556040-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-JUN-21
<b>PH-CL</b>								



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 12 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R5493959							
WG3559031-14	LCS							
pH			7.00		pH		6.9-7.1	19-JUN-21
WG3559031-17	LCS							
pH			7.00		pH		6.9-7.1	19-JUN-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5483216							
WG3552083-14	LCS							
Orthophosphate-Dissolved (as P)			101.6		%		80-120	10-JUN-21
WG3552083-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	10-JUN-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5488068							
WG3553805-3	DUP	L2599881-7						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	10-JUN-21
WG3553805-2	LCS							
Sulfate (SO4)			101.1		%		90-110	10-JUN-21
WG3553805-7	LCS							
Sulfate (SO4)			101.1		%		90-110	10-JUN-21
WG3553805-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	10-JUN-21
WG3553805-6	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	10-JUN-21
WG3553805-4	MS	L2599881-7						
Sulfate (SO4)			103.3		%		75-125	10-JUN-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5491369							
WG3554990-5	LCS							
Total Dissolved Solids			103.7		%		85-115	15-JUN-21
WG3554990-4	MB							
Total Dissolved Solids			<10		mg/L		10	15-JUN-21
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5491560							
WG3556014-2	LCS							
Total Kjeldahl Nitrogen			83.0		%		75-125	16-JUN-21
WG3556014-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-21
<b>TSS-L-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 13 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5491405							
<b>WG3554986-10</b>	<b>LCS</b>							
Total Suspended Solids			95.1		%		85-115	15-JUN-21
<b>WG3554986-9</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	15-JUN-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5484417							
<b>WG3552583-6</b>	<b>DUP</b>	<b>L2599881-3</b>						
Turbidity		21.1	20.5		NTU	2.9	15	10-JUN-21
<b>WG3552583-5</b>	<b>LCS</b>							
Turbidity			99.5		%		85-115	10-JUN-21
<b>WG3552583-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	10-JUN-21

# Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 14 of 15

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 15 of 15

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	09-JUN-21 09:55	16-JUN-21 14:00	0.25	172	hours	EHTR-FM
	2	09-JUN-21 11:55	16-JUN-21 14:00	0.25	170	hours	EHTR-FM
	3	09-JUN-21 13:50	16-JUN-21 14:00	0.25	168	hours	EHTR-FM
	4	09-JUN-21 15:45	16-JUN-21 14:00	0.25	166	hours	EHTR-FM
	5	09-JUN-21 12:00	16-JUN-21 14:00	0.25	170	hours	EHTR-FM
	6	09-JUN-21 12:00	16-JUN-21 14:00	0.25	170	hours	EHTR-FM
	7	09-JUN-21 12:00	16-JUN-21 14:00	0.25	170	hours	EHTR-FM
pH							
	1	09-JUN-21 09:55	19-JUN-21 09:00	0.25	239	hours	EHTR-FM
	2	09-JUN-21 11:55	21-JUN-21 09:00	0.25	285	hours	EHTR-FM
	3	09-JUN-21 13:50	19-JUN-21 09:00	0.25	235	hours	EHTR-FM
	4	09-JUN-21 15:45	19-JUN-21 09:00	0.25	233	hours	EHTR-FM
	5	09-JUN-21 12:00	19-JUN-21 09:00	0.25	237	hours	EHTR-FM
	6	09-JUN-21 12:00	19-JUN-21 09:00	0.25	237	hours	EHTR-FM
	7	09-JUN-21 12:00	19-JUN-21 09:00	0.25	237	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2599881 were received on 10-JUN-21 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2599881-COFC

COC Number:

Page 1 of 2

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<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>			
Company:	SNC-Lavalin	Select Report Format:	<input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)	<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply			
Contact:	Genevieve Pomerleau	Quality Control (QC) Report with Report	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<b>PRIORITY (Business Days)</b>	<input type="checkbox"/> 4 day [P4-20%]	<b>EMERGENCY</b>	<input type="checkbox"/> 1 Business day [E1 - 100%]
Phone:	Tel.:604-515-5151 x 129 Cell.: 250-464-5672	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			<input type="checkbox"/> 3 day [P3-25%]		<input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]
Company address below will appear on the final report		Select Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		<input type="checkbox"/> 2 day [P2-50%]		
Street:	520 Lake Street	Emails: SNC - 'genevieve.pomerleau', 'gavin.grundy', and vicky.lipinski@snclavalin.com		Date and Time Required for all E&P TATs:			
City/Province:	Nelson, BC	Teck - crystal.sabel@teck.com		For tests that can not be performed according to the service level selected, you will be contacted.			
Postal Code:	V1L 4C6			<b>Analysis Request</b>			

<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>Invoice Distribution</b>		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below			
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	F/P	P	F/P	P
Company:		Emails: tyler.gale@snclavalin.com					
Contact:		payables@snclavalin.com					

<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>	
ALS Account # / Quote #:	MOR125 / Q72340	AFE/Cost Center:	PO#
Job #:	Greenhills Operations	Major/Minor Code:	Routing Code:
PO / AFE:	658004	Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784	Sampler: JVG, JD

ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
1	GH_MW-MC-1D_WG_2021_06_09_NP	GH_MW-MC-1S	09 June 21		WG	X	X	X	X	X	X	X	X	X	X			5
2	GH_MW-MC-2S_WG_2021_06_09_NP	GH_MW-MC-2S	09 June 21	9:55	WG	X	X	X	X	X	X	X	X	X	X			5
3	GH_MW-MC-2D_WG_2021_06_09_NP	GH_MW-MC-2D	09 June 21	11:55	WG	X	X	X	X	X	X	X	X	X	X			5
	GH_MW-Willow-1S_WG_2021_06_09_NP	GH_MW-Willow-1S			WG													
4	GH_MW-Willow-1D_WG_2021_06_09_NP	GH_MW-Willow-1D			WG													
	GH_MW-Willow-2S_WG_2021_06_09_NP	GH_MW-Willow-2S	09 June 21	15:45	WG	X	X	X	X	X	X	X	X	X	X			5
	GH_MW-Willow-2D_WG_2021_06_09_NP	GH_MW-Willow-2D			WG													
	GH_MW-Willow-3S_WG_2021_06_09_NP	GH_MW-Willow-3S			WG													
	GH_MW-Willow-3D_WG_2021_06_09_NP	GH_MW-Willow-3D			WG													
	GH_MW-Wolf-1S_WG_2021_06_09_NP	GH_MW-Wolf-1S			WG													
	GH_MW-Wolf-1D_WG_2021_06_09_NP	GH_MW-Wolf-1D			WG													

<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>			
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>			
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>			
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input type="checkbox"/>			
				INITIAL COOLER TEMPERATURES °C: 4°C FINAL COOLER TEMPERATURES °C:			

<b>SHIPMENT RELEASE (client use)</b>			<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>		
Released by: Gen Vongrad	Date: 21/06/09	Time: 17:00	Received by: DK	Date: 6/10	Time: 08:44	Received by:	Date:	Time:





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<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>					
Company:	SNC-Lavalin	Select Report Format:	<input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)	<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply					
Contact:	Tyler Gale	Quality Control (QC) Report with Report	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<b>PRIORITY (Business Days)</b>	<b>4 day [P4-20%]</b> <input type="checkbox"/>		<b>EMERGENCY</b>	<b>1 Business day [E1 - 100%]</b> <input type="checkbox"/>	
Phone:	Tel.:604-515-5151 x 129 Cell.: 250-464-5672	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			<b>3 day [P3-25%]</b> <input type="checkbox"/>			<b>Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]</b> <input type="checkbox"/>	
Company address below will appear on the final report		Select Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		<b>2 day [P2-50%]</b> <input type="checkbox"/>				
Street:	520 Lake Street	Emails:	SNC - tyler.gale, gavin.grundy, and vicky.lipinski@snc-lavalin.com	Date and Time Required for all E&P TATs:					
City/Province:	Nelson, BC	Teck - jennifer.dane, crystal.sabel@teck.com		For tests that can not be performed according to the service level selected, you will be contacted.					
Postal Code:	V1L 4C6			<b>Analysis Request</b>					

<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>Invoice Distribution</b>		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	F/P	P	F/P	P									
Company:		Emails: tyler.gale@snc-lavalin.com		DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met. +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
Contact:		Emails: payables@snc-lavalin.com														
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>														
ALS Account # / Quote #:	MOR125 / Q72340	AFE/Cost Center:	PO#													
Job #:	Greenhills Operations	Major/Minor Code:	Routing Code:													
PO / AFE:	658004	Requisitioner:														
LSD:		Location:														

ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met. +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
5	GH_MW_MC10-A_WG_2021_06_09_NP	GH_MW_MC10-A	09 Jun 21	12:00	WG	X	X	X	X	X	X	X	X	X	X			5
	GH_MW_MC11-A_WG_2021_06_09_NP	GH_MW_MC11-A			WG													
6	GH_MW_MC10-B_WG_2021_06_09_NP	GH_MW_MC10-B	09 Jun 21	12:00	WG	X	X	X	X	X	X	X	X	X	X			
7	GH_MW_MC10-C_WG_2021_06_09_NP	GH_MW_MC10-C	09 Jun 21	12:00	WG	X	X	X	X	X	X	X	X	X	X			

<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)	<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>	
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO	<b>PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com</b>	Frozen <input type="checkbox"/>	SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/>	Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>
Teck Facility Name: (please select the applicable Facility)		INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
GHO-GREENHILLS OPERATION      FRO-FORDING RIVER OPERATION      EVO-ELKVIEW OPERATIONS		4°	

<b>SHIPMENT RELEASE (client use)</b>			<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Gen Nandanad	21/06/09	1700	NK	6/10	0845			



SNC-Lavalin  
ATTN: Tyler Gale  
4500 Mennie Road  
Cranbrook BC V1C 4J6

Date Received: 11-JUN-21  
Report Date: 02-JUL-21 10:35 (MT)  
Version: FINAL

Client Phone: 604-515-5151

## Certificate of Analysis

Lab Work Order #: L2600376  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Inayat Dhaliwal  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2600376-1	L2600376-2	L2600376-3	L2600376-4	L2600376-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	10-JUN-21	10-JUN-21	10-JUN-21	10-JUN-21	10-JUN-21
		Sampled Time	15:00	15:45	14:45	11:30	10:25
		Client ID	GH_MW_WC1-A_WG_2021_06_10_NP	GH_MW_WC1-B_WG_2021_06_10_NP	GH_MW_WC1-C_WG_2021_06_10_NP	GH_MW-WILLOW-1D_WG_2021_06_10_NP	GH_MW-WILLOW-2D_WG_2021_06_10_NP
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	322	342	298	480	667	
	Hardness (as CaCO3) (mg/L)	156	181	163	128	124	
	pH (pH)	8.18	8.13	8.25	8.16	8.31	
	ORP (mV)	406	323	445	430	447	
	Total Suspended Solids (mg/L)	<1.0	7.4	<1.0	5.0	8.7	
	Total Dissolved Solids (mg/L)	191	200	174	262	390	
	Turbidity (NTU)	1.54	3.00	0.10	9.61	9.52	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	161	164	154	258	385	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	3.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	161	164	154	258	388	
	Ammonia as N (mg/L)	0.0968	0.0465	<0.0050	0.0919	0.234	
	Bicarbonate (HCO3) (mg/L)	196	200	187	315	469	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	0.064	0.087	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	0.68	0.72	0.40	11.4	14.5	
	Fluoride (F) (mg/L)	0.252	0.160	0.122	0.850	1.21	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	
	Ion Balance (%)	93.8	95.8	96.6	94.2	86.9	
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	0.336	0.0719	<0.0051	<0.0051	
	Nitrate (as N) (mg/L)	<0.0050	0.336	0.0719	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.149	0.089	<0.050	0.196	0.259	
	Total Nitrogen (mg/L)	0.149	0.425	0.072	0.196	0.259	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0018	<0.0010	0.0011	0.0021	0.0045	
	Phosphorus (P)-Total (mg/L)	0.0026	0.0173	<0.0020	0.0133	0.0526	
	Sulfate (SO4) (mg/L)	23.6	29.8	16.2	7.22	0.81	
	Anion Sum (meq/L)	3.74	3.94	3.43	5.67	8.23	
	Cation Sum (meq/L)	3.51	3.78	3.31	5.34	7.16	
Cation - Anion Balance (%)	-3.2	-2.2	-1.7	-3.0	-7.0		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.67	0.95	1.15	1.38	1.35	
	Total Organic Carbon (mg/L)	0.64	0.86	1.16	1.32	1.42	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0012	<0.0010	<0.0010	0.0023	0.0023	

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2600376-6	L2600376-7	L2600376-8
		Description	WG	WG	WG
		Sampled Date	10-JUN-21	10-JUN-21	10-JUN-21
		Sampled Time	12:45	12:35	12:00
		Client ID	GH_MW-WILLOW-3S_WG_2021_06_10_NP	GH_MW-WILLOW-3D_WG_2021_06_10_NP	GH_MW_MC10-A_WG_2021_06_10_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	421	450	485	
	Hardness (as CaCO3) (mg/L)	225	196	133	
	pH (pH)	7.99	8.12	8.15	
	ORP (mV)	430	380	449	
	Total Suspended Solids (mg/L)	16.2	12.9	4.5	
	Total Dissolved Solids (mg/L)	241	249	269	
	Turbidity (NTU)	15.3	13.5	10.8	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	3.1	<1.0	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	245	264	258	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	245	264	258	
	Ammonia as N (mg/L)	0.0051	0.249	0.0947	
	Bicarbonate (HCO3) (mg/L)	299	323	315	
	Bromide (Br) (mg/L)	<0.050	<0.050	0.063	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	0.28	1.16	11.5	
	Fluoride (F) (mg/L)	0.101	0.569	0.850	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	91.1	96.6	97.6	
	Nitrate and Nitrite (as N) (mg/L)	0.107	<0.0051	<0.0051	
	Nitrate (as N) (mg/L)	0.107	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.091	0.252	0.114	
	Total Nitrogen (mg/L)	0.198	0.252	0.114	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0034	0.0036	0.0019	
	Phosphorus (P)-Total (mg/L)	0.0213	0.0408	0.0125	
	Sulfate (SO4) (mg/L)	10.6	7.80	7.22	
	Anion Sum (meq/L)	5.14	5.51	5.68	
	Cation Sum (meq/L)	4.68	5.32	5.54	
Cation - Anion Balance (%)	-4.6	-1.7	-1.2		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.09	1.14	0.86	
	Total Organic Carbon (mg/L)	2.21	1.50	0.86	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0015	0.0070	0.0045	

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2600376-1 WG 10-JUN-21 15:00 GH_MW_WC1- A_WG_2021_06_1 0_NP	L2600376-2 WG 10-JUN-21 15:45 GH_MW_WC1- B_WG_2021_06_1 0_NP	L2600376-3 WG 10-JUN-21 14:45 GH_MW_WC1- C_WG_2021_06_1 0_NP	L2600376-4 WG 10-JUN-21 11:30 GH_MW-WILLOW- 1D_WG_2021_06 _10_NP	L2600376-5 WG 10-JUN-21 10:25 GH_MW-WILLOW- 2D_WG_2021_06 _10_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00131	0.00107	<0.00010	0.00028	0.00117
	Barium (Ba)-Dissolved (mg/L)	0.0789	0.0834	0.0459	1.51	0.930
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.040	0.015	<0.010	0.153	0.273
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	0.0000051	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	38.5	48.3	46.7	26.6	25.1
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00022	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.192	0.216	<0.010	0.415	0.098
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0079	0.0081	0.0030	0.100	0.203
	Magnesium (Mg)-Dissolved (mg/L)	14.5	14.5	11.4	15.0	15.0
	Manganese (Mn)-Dissolved (mg/L)	0.0942	0.0246	<0.00010	0.0475	0.0162
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00285	0.00231	0.00105	0.00390	0.00393
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.92	0.67	0.37	0.93	1.93
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.00209	0.000886	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	5.05	4.72	1.81	3.14	4.19
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	8.22	3.18	0.869	62.9	106
	Strontium (Sr)-Dissolved (mg/L)	0.684	0.281	0.187	0.567	0.382
	Sulfur (S)-Dissolved (mg/L)	8.07	10.5	5.65	2.64	0.53
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000103	0.000183	0.000838	0.000142	0.000337
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2600376-6	L2600376-7	L2600376-8
		Description	WG	WG	WG
		Sampled Date	10-JUN-21	10-JUN-21	10-JUN-21
		Sampled Time	12:45	12:35	12:00
		Client ID	GH_MW-WILLOW-3S_WG_2021_06_10_NP	GH_MW-WILLOW-3D_WG_2021_06_10_NP	GH_MW_MC10-A_WG_2021_06_10_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00177	0.00031	
	Barium (Ba)-Dissolved (mg/L)	0.187	0.552	1.53	
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.014	0.128	0.159	
	Cadmium (Cd)-Dissolved (mg/L)	0.0000175	<0.000050	<0.000050	
	Calcium (Ca)-Dissolved (mg/L)	57.4	41.0	27.6	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00012	<0.00010	
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00036	<0.00010	
	Copper (Cu)-Dissolved (mg/L)	0.00025	<0.00020	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.600	0.425	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0071	0.0637	0.104	
	Magnesium (Mg)-Dissolved (mg/L)	19.9	22.6	15.7	
	Manganese (Mn)-Dissolved (mg/L)	0.00064	0.139	0.0491	
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.000467	0.00451	0.00396	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	
	Potassium (K)-Dissolved (mg/L)	0.83	1.80	0.93	
	Selenium (Se)-Dissolved (mg/L)	0.000603	<0.000050	<0.000050	
	Silicon (Si)-Dissolved (mg/L)	3.88	4.69	3.25	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	3.66	30.6	65.0	
	Strontium (Sr)-Dissolved (mg/L)	0.115	0.740	0.586	
	Sulfur (S)-Dissolved (mg/L)	3.47	2.82	2.65	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	
	Uranium (U)-Dissolved (mg/L)	0.000362	0.00139	0.000151	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0147	<0.0010	0.0015	
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	

## Reference Information

**QC Samples with Qualifiers & Comments:**

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
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**Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
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**ACIDITY-PCT-CL**      Water      Acidity by Automatic Titration      APHA 2310 Acidity  
 This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

**ALK-MAN-CL**      Water      Alkalinity (Species) by Manual Titration      APHA 2320 ALKALINITY  
 This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

**BE-D-L-CCMS-CL**      Water      Diss. Be (low) in Water by CRC ICPMS      APHA 3030B/6020A (mod)  
 Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**BIC-CL**      Water      Bicarbonate (HCO3)      APHA 2320 B-Pot. Titration

**BR-L-IC-N-CL**      Water      Bromide in Water by IC (Low Level)      EPA 300.1 (mod)  
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**C-DIS-ORG-LOW-CL**      Water      Dissolved Organic Carbon      APHA 5310 B-Instrumental

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.  
 TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**C-TOT-ORG-LOW-CL**      Water      Total Organic Carbon      APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.  
 TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-L-IC-N-CL**      Water      Chloride in Water by IC      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**CO3-CL**      Water      Carbonate (CO3)      APHA 2320 B-Potentiometric Titration

**EC-L-PCT-CL**      Water      Electrical Conductivity (EC)      APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL**      Water      Fluoride in Water by IC      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL**      Water      Hardness      APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL**      Water      Dissolved Mercury in Water by CVAAS      APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)  
 Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated  
 Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric



## Reference Information

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2600376

Report Date: 02-JUL-21

Page 1 of 10

Client: SNC-Lavalin  
 4500 Mennie Road  
 Cranbrook BC V1C 4J6

Contact: Tyler Gale

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R5493373							
<b>WG3558443-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.6		%		85-115	18-JUN-21
<b>WG3558443-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	18-JUN-21
Batch	R5494645							
<b>WG3559894-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.0		%		85-115	20-JUN-21
<b>WG3559894-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	20-JUN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R5493959							
<b>WG3559031-26</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			104.3		%		85-115	19-JUN-21
<b>WG3559031-25</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-JUN-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
Batch	R5492570							
<b>WG3557514-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			101.1		%		80-120	17-JUN-21
<b>WG3557514-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-JUN-21
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R5493959							
<b>WG3559031-25</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	19-JUN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R5490053							
<b>WG3554505-2</b>	<b>LCS</b>							
Bromide (Br)			100.9		%		85-115	12-JUN-21
<b>WG3554505-6</b>	<b>LCS</b>							
Bromide (Br)			101.4		%		85-115	12-JUN-21
<b>WG3554505-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-JUN-21
<b>WG3554505-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-JUN-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2600376

Report Date: 02-JUL-21

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5507437							
<b>WG3567802-2 LCS</b>								
Dissolved Organic Carbon			90.7		%		80-120	01-JUL-21
<b>WG3567802-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5507437							
<b>WG3567802-2 LCS</b>								
Total Organic Carbon			95.2		%		80-120	01-JUL-21
<b>WG3567802-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5490053							
<b>WG3554505-2 LCS</b>								
Chloride (Cl)			102.2		%		85-115	12-JUN-21
<b>WG3554505-6 LCS</b>								
Chloride (Cl)			102.3		%		85-115	12-JUN-21
<b>WG3554505-1 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	12-JUN-21
<b>WG3554505-5 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	12-JUN-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5493959							
<b>WG3559031-25 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	19-JUN-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5493959							
<b>WG3559031-26 LCS</b>								
Conductivity (@ 25C)			106.5		%		90-110	19-JUN-21
<b>WG3559031-25 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	19-JUN-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5490053							
<b>WG3554505-2 LCS</b>								
Fluoride (F)			95.5		%		90-110	12-JUN-21
<b>WG3554505-6 LCS</b>								
Fluoride (F)			97.6		%		90-110	12-JUN-21



## Quality Control Report

Workorder: L2600376

Report Date: 02-JUL-21

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5490053</b>							
<b>WG3554505-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-JUN-21
<b>WG3554505-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-JUN-21
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493173</b>							
<b>WG3557666-3</b>	<b>DUP</b>	<b>L2600376-8</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	18-JUN-21
<b>WG3557666-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.0		%		80-120	18-JUN-21
<b>WG3557666-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	18-JUN-21
<b>WG3557666-4</b>	<b>MS</b>	<b>L2600376-8</b>						
Mercury (Hg)-Dissolved			103.0		%		70-130	18-JUN-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5492570</b>							
<b>WG3557514-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			97.4		%		80-120	17-JUN-21
Antimony (Sb)-Dissolved			102.1		%		80-120	17-JUN-21
Arsenic (As)-Dissolved			97.6		%		80-120	17-JUN-21
Barium (Ba)-Dissolved			96.8		%		80-120	17-JUN-21
Bismuth (Bi)-Dissolved			96.1		%		80-120	17-JUN-21
Boron (B)-Dissolved			105.6		%		80-120	17-JUN-21
Cadmium (Cd)-Dissolved			93.8		%		80-120	17-JUN-21
Calcium (Ca)-Dissolved			92.9		%		80-120	17-JUN-21
Chromium (Cr)-Dissolved			98.3		%		80-120	17-JUN-21
Cobalt (Co)-Dissolved			98.0		%		80-120	17-JUN-21
Copper (Cu)-Dissolved			94.2		%		80-120	17-JUN-21
Iron (Fe)-Dissolved			96.3		%		80-120	17-JUN-21
Lead (Pb)-Dissolved			96.8		%		80-120	17-JUN-21
Lithium (Li)-Dissolved			100.7		%		80-120	17-JUN-21
Magnesium (Mg)-Dissolved			92.9		%		80-120	17-JUN-21
Manganese (Mn)-Dissolved			95.9		%		80-120	17-JUN-21
Molybdenum (Mo)-Dissolved			95.1		%		80-120	17-JUN-21
Nickel (Ni)-Dissolved			95.2		%		80-120	17-JUN-21
Phosphorus (P)-Dissolved			98.0		%		70-130	17-JUN-21



## Quality Control Report

Workorder: L2600376

Report Date: 02-JUL-21

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5492570</b>							
<b>WG3557514-2</b>	<b>LCS</b>	<b>TMRM</b>						
Potassium (K)-Dissolved			96.3		%		80-120	17-JUN-21
Selenium (Se)-Dissolved			95.4		%		80-120	17-JUN-21
Silicon (Si)-Dissolved			101.2		%		60-140	17-JUN-21
Silver (Ag)-Dissolved			96.2		%		80-120	17-JUN-21
Sodium (Na)-Dissolved			99.5		%		80-120	17-JUN-21
Strontium (Sr)-Dissolved			95.7		%		80-120	17-JUN-21
Sulfur (S)-Dissolved			99.4		%		80-120	17-JUN-21
Thallium (Tl)-Dissolved			95.8		%		80-120	17-JUN-21
Tin (Sn)-Dissolved			97.5		%		80-120	17-JUN-21
Titanium (Ti)-Dissolved			97.3		%		80-120	17-JUN-21
Uranium (U)-Dissolved			99.8		%		80-120	17-JUN-21
Vanadium (V)-Dissolved			95.9		%		80-120	17-JUN-21
Zinc (Zn)-Dissolved			92.8		%		80-120	17-JUN-21
Zirconium (Zr)-Dissolved			95.1		%		80-120	17-JUN-21
<b>WG3557514-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-JUN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-JUN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-JUN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-JUN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-JUN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-JUN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-JUN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-JUN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-JUN-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	17-JUN-21



## Quality Control Report

Workorder: L2600376

Report Date: 02-JUL-21

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5492570</b>							
<b>WG3557514-1</b>	<b>MB</b>							
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-JUN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-JUN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-JUN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-JUN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-JUN-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	17-JUN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-JUN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-JUN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-JUN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-JUN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-JUN-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	17-JUN-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5503297</b>							
<b>WG3563002-31</b>	<b>DUP</b>	<b>L2600376-1</b>						
Ammonia as N		0.0968	0.0985		mg/L	1.7	20	24-JUN-21
<b>WG3563002-30</b>	<b>LCS</b>							
Ammonia as N			88.7		%		85-115	24-JUN-21
<b>WG3563002-29</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	24-JUN-21
<b>WG3563002-32</b>	<b>MS</b>	<b>L2600376-1</b>						
Ammonia as N			121.1		%		75-125	24-JUN-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5490053</b>							
<b>WG3554505-2</b>	<b>LCS</b>							
Nitrite (as N)			102.5		%		90-110	12-JUN-21
<b>WG3554505-6</b>	<b>LCS</b>							
Nitrite (as N)			102.3		%		90-110	12-JUN-21
<b>WG3554505-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-JUN-21
<b>WG3554505-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-JUN-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2600376

Report Date: 02-JUL-21

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R5490053							
<b>WG3554505-2</b>	<b>LCS</b>							
Nitrate (as N)			102.6		%		90-110	12-JUN-21
<b>WG3554505-6</b>	<b>LCS</b>							
Nitrate (as N)			102.9		%		90-110	12-JUN-21
<b>WG3554505-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-JUN-21
<b>WG3554505-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-JUN-21
<b>OH-CL</b>								
<b>Water</b>								
Batch	R5493959							
<b>WG3559031-25</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	19-JUN-21
<b>ORP-CL</b>								
<b>Water</b>								
Batch	R5491707							
<b>WG3556515-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			222		mV		210-230	16-JUN-21
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch	R5492541							
<b>WG3557038-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			101.2		%		80-120	17-JUN-21
<b>WG3557038-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-JUN-21
<b>PH-CL</b>								
<b>Water</b>								
Batch	R5493959							
<b>WG3559031-26</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	19-JUN-21
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch	R5488587							
<b>WG3553964-3</b>	<b>DUP</b>	<b>L2600376-7</b>						
Orthophosphate-Dissolved (as P)		0.0036	0.0035		mg/L	0.3	20	12-JUN-21
<b>WG3553964-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			102.7		%		80-120	12-JUN-21
<b>WG3553964-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-JUN-21
<b>WG3553964-4</b>	<b>MS</b>	<b>L2600376-8</b>						



## Quality Control Report

Workorder: L2600376

Report Date: 02-JUL-21

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5488587							
<b>WG3553964-4 MS</b>		<b>L2600376-8</b>						
Orthophosphate-Dissolved (as P)			104.9		%		70-130	12-JUN-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5490053							
<b>WG3554505-2 LCS</b>								
Sulfate (SO4)			102.5		%		90-110	12-JUN-21
<b>WG3554505-6 LCS</b>								
Sulfate (SO4)			103.0		%		90-110	12-JUN-21
<b>WG3554505-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	12-JUN-21
<b>WG3554505-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	12-JUN-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5492168							
<b>WG3555970-2 LCS</b>								
Total Dissolved Solids			89.3		%		85-115	16-JUN-21
<b>WG3555970-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	16-JUN-21
Batch	R5492952							
<b>WG3556958-2 LCS</b>								
Total Dissolved Solids			96.6		%		85-115	17-JUN-21
<b>WG3556958-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	17-JUN-21
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5492393							
<b>WG3557115-2 LCS</b>								
Total Kjeldahl Nitrogen			94.0		%		75-125	17-JUN-21
<b>WG3557115-4 LCS</b>								
Total Kjeldahl Nitrogen			94.0		%		75-125	18-JUN-21
<b>WG3557115-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-21
<b>WG3557115-3 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-JUN-21
<b>WG3557115-6 MS</b>		<b>L2600376-1</b>						
Total Kjeldahl Nitrogen			87.0		%		70-130	18-JUN-21
<b>TSS-L-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2600376

Report Date: 02-JUL-21

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5491405</b>							
<b>WG3554986-10</b>	<b>LCS</b>							
Total Suspended Solids			95.1		%		85-115	15-JUN-21
<b>WG3554986-9</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	15-JUN-21
<b>Batch</b>	<b>R5492931</b>							
<b>WG3556957-2</b>	<b>LCS</b>							
Total Suspended Solids			94.3		%		85-115	17-JUN-21
<b>WG3556957-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	17-JUN-21
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5488618</b>							
<b>WG3553923-2</b>	<b>LCS</b>							
Turbidity			100.5		%		85-115	13-JUN-21
<b>WG3553923-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	13-JUN-21

# Quality Control Report

Workorder: L2600376

Report Date: 02-JUL-21

Page 9 of 10

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2600376

Report Date: 02-JUL-21

Page 10 of 10

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	10-JUN-21 15:00	16-JUN-21 14:00	0.25	143	hours	EHTR-FM
	2	10-JUN-21 15:45	16-JUN-21 14:00	0.25	142	hours	EHTR-FM
	3	10-JUN-21 14:45	16-JUN-21 14:00	0.25	143	hours	EHTR-FM
	4	10-JUN-21 11:30	16-JUN-21 14:00	0.25	146	hours	EHTR-FM
	5	10-JUN-21 10:25	16-JUN-21 14:00	0.25	148	hours	EHTR-FM
	6	10-JUN-21 12:45	16-JUN-21 14:00	0.25	145	hours	EHTR-FM
	7	10-JUN-21 12:35	16-JUN-21 14:00	0.25	145	hours	EHTR-FM
	8	10-JUN-21 12:00	16-JUN-21 14:00	0.25	146	hours	EHTR-FM
pH							
	1	10-JUN-21 15:00	19-JUN-21 09:00	0.25	210	hours	EHTR-FM
	2	10-JUN-21 15:45	19-JUN-21 09:00	0.25	209	hours	EHTR-FM
	3	10-JUN-21 14:45	19-JUN-21 09:00	0.25	210	hours	EHTR-FM
	4	10-JUN-21 11:30	19-JUN-21 09:00	0.25	214	hours	EHTR-FM
	5	10-JUN-21 10:25	19-JUN-21 09:00	0.25	215	hours	EHTR-FM
	6	10-JUN-21 12:45	19-JUN-21 09:00	0.25	212	hours	EHTR-FM
	7	10-JUN-21 12:35	19-JUN-21 09:00	0.25	212	hours	EHTR-FM
	8	10-JUN-21 12:00	19-JUN-21 09:00	0.25	213	hours	EHTR-FM

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2600376 were received on 11-JUN-21 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>Report To</b> Contact and company name below will appear on the final report.			<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>												
Company: SNC-Lavalin			Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply						<b>EMERGENCY</b> <input type="checkbox"/> <b>1 Business day [E1 - 100%]</b>						
Contact: Tyler Gale			Quality Control (QC) Report with Report: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			4 day [P4-20%] <input type="checkbox"/>						3 day [P3-25%] <input type="checkbox"/>						
Phone: Tel.:604-515-5151 x.129 Cell.: 250-464-5672			<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%] <input type="checkbox"/>						2 day [P2-50%] <input type="checkbox"/>						
Company address below will appear on the final report			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Date and Time Required for all E&P TATs:												
Street: 520 Lake Street			Emails: SNC - tyler.gale, gavin.grandy, and vicky.lipinski@snclavalin.com <i>Genevieve D. Power Learn</i>			For tests that can not be performed according to the service level selected, you will be contacted.												
City/Province: Nelson, BC			Teck - "jennifer.dane", crystal.sabel@teck.com			<b>Analysis Request</b>												
Postal Code: V1L 4C6						Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			<b>Invoice Distribution</b>			F/P P F/P P												
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			DOC (C-DIS-ORG-LOW-CL)												
Company:			Emails: tyler.gale@snclavalin.com			TOC (C-TOT-ORG-LOW-CL)												
Contact:			payables@snclavalin.com			BCMDG D-Met.+Hg (MET-D-BCMDG-CL)												
<b>Project Information</b>			<b>Oil and Gas Required Fields (client use)</b>			Total N Calc. (N-T-CALC-CL)												
ALS Account # / Quote #: MOR125 / Q72340			AFE/Cost Center: PO#			Nitrate + Nitrite Calc. (N2N3-CALC-CL)												
Job #: Greenhills Operations			Major/Minor Code: Routing Code:			Teck Routine (TECKCOAL-ROUTINE-CL)												
PO / AFE: 658004			Requisitioner:			TKN (TKN-L-F-CL)												
LSD:			Location:			Bicarbonate (BIC-CL)												
ALS Lab Work Order # (lab use only):			ALS Contact: Inayat Dhaliwal 403-407-1784			Carbonate (CO3-CL)												
			Sampler: JVG, TC			Hydroxide (OH-CL)												
						SAMPLES ON HOLD												
						Sample is hazardous (please provide further detail)												
						NUMBER OF CONTAINERS												
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
	GH_MW_Wolf-2B-WG-2021_06_10_NP	GH_MW_Wolf-2B			WG													
	GH_MW_Wolf-2B-WG-2021_06_10_NP	GH_MW_Wolf-2B			WG													
	GH_MW_LC1-A-WG-2021_06_10_NP	GH_MW_LC1-A			WG													
	GH_MW_LC1-B-WG-2021_06_10_NP	GH_MW_LC1-B			WG													
	GH_MW_LC2-A-WG-2021_06_10_NP	GH_MW_LC2-A			WG													
	GH_MW_LC2-B-WG-2021_06_10_NP	GH_MW_LC2-B			WG													
	GH_MW_WC1-A-WG-2021_06_10_NP	GH_MW_WC1-A	10 Jun 21	15:00	WG	X	X	X	X	X	X	X	X	X	X			5
	GH_MW_WC1-B-WG-2021_06_10_NP	GH_MW_WC1-B	10 Jun 21	15:45	WG	X	X	X	X	X	X	X	X	X	X			5
	GH_MW_WC1-C-WG-2021_06_10_NP	GH_MW_WC1-C	10 Jun 21	14:45	WG	X	X	X	X	X	X	X	X	X	X			5
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>			Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>												
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO			PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>												
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO			Teck Facility Name: (please select the applicable Facility) GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>												
						Cooling Initiated <input type="checkbox"/>												
						INITIAL COOLER TEMPERATURES °C												
						FINAL COOLER TEMPERATURES °C												
<b>SHIPMENT RELEASE (client use)</b>					<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>					<b>FINAL SHIPMENT RECEPTION (lab use only)</b>								
Released by: <i>Genevieve D. Power</i>		Date: 21/06/10	Time: 17:00	Received by: <i>DK</i>		Date: 6/11	Time: 08:30	Received by:		Date:			Time:					

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>															
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply															
Contact: Genevieve Pomerleau		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>PRIORITY (Business Days)</b>		<b>EMERGENCY</b>													
Phone: Tel.:604-515-5151 x 129 Cell.: 250-464-5672		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>													
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>													
Street: 520 Lake Street		Emails: SNC - Tyler Gole, Gavin Grundy, and Genevieve Pomerleau vicky.lipinski@snc-lavalin.com		2 day [P2-50%] <input type="checkbox"/>		Date and Time Required for all E&P TATs:													
City/Province: Nelson, BC		Teck - "jennifer.dane", crystal.sabel@teck.com		For tests that can not be performed according to the service level selected, you will be contacted.															
Postal Code: V1L 4C6		<b>Invoice Distribution</b>		<b>Analysis Request</b>															
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below															
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: Tyler Gole@snc-lavalin.com payables@snc-lavalin.com		F/P	P	F/P													
Company:		<b>Oil and Gas Required Fields (client use)</b>		DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2NS-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)						
Contact:		AFE/Cost Center: PO#																	
<b>Project Information</b>		Major/Minor Code: Routing Code:																	
ALS Account # / Quote #: MOR125 / Q72340		Requisitioner:																	
Job #: Greenhills Operations		Location:																	
PO / AFE: 658004		ALS Contact: Inayat Dhaliwal 403-407-1784		Sampler: JVG, TC															
LSD:		ALS Lab Work Order # (lab use only):																	
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type														
	GH_MW-MC-1S_WG_2021_06_07_NP	GH_MW-MC-1S			WG														
	GH_MW-MC-1D_WG_2021_06_07_NP	GH_MW-MC-1D			WG														
	GH_MW-MC-2S_WG_2021_06_07_NP	GH_MW-MC-2S			WG														
	GH_MW-MC-2D_WG_2021_06_07_NP	GH_MW-MC-2D			WG														
	GH_MW-Willow-1S_WG_2021_06_07_NP	GH_MW-Willow-1S			WG														
4	GH_MW-Willow-1D_WG_2021_06_07_NP	GH_MW-Willow-1D	10 Jun 21	11:30	WG														
	GH_MW-Willow-2S_WG_2021_06_07_NP	GH_MW-Willow-2S			WG														
3	GH_MW-Willow-2D_WG_2021_06_07_NP	GH_MW-Willow-2D	10 Jun 21	10:25	WG	X	X	X	X	X	X	X	X						5
6	GH_MW-Willow-3S_WG_2021_06_07_NP	GH_MW-Willow-3S	10 Jun 21	12:45	WG	X	X	X	X	X	X	X	X						5
7	GH_MW-Willow-3D_WG_2021_06_07_NP	GH_MW-Willow-3D	10 Jun 21	12:35	WG	X	X	X	X	X	X	X	X						5
	GH_MW-Wolf-1S_WG_2021_06_07_NP	GH_MW-Wolf-1S			WG														
	GH_MW-Wolf-1D_WG_2021_06_07_NP	GH_MW-Wolf-1D			WG														
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>															
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>															
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>															
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input type="checkbox"/>															
				INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C															
				1/2															
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>													
Released by: Gen Longard	Date: 21/06/10	Time: 17:00	Received by: DK	Date: 6/11	Time: 0830	Received by:	Date:	Time:											



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2600376-COFC

COC Number:

Page 3 of 3

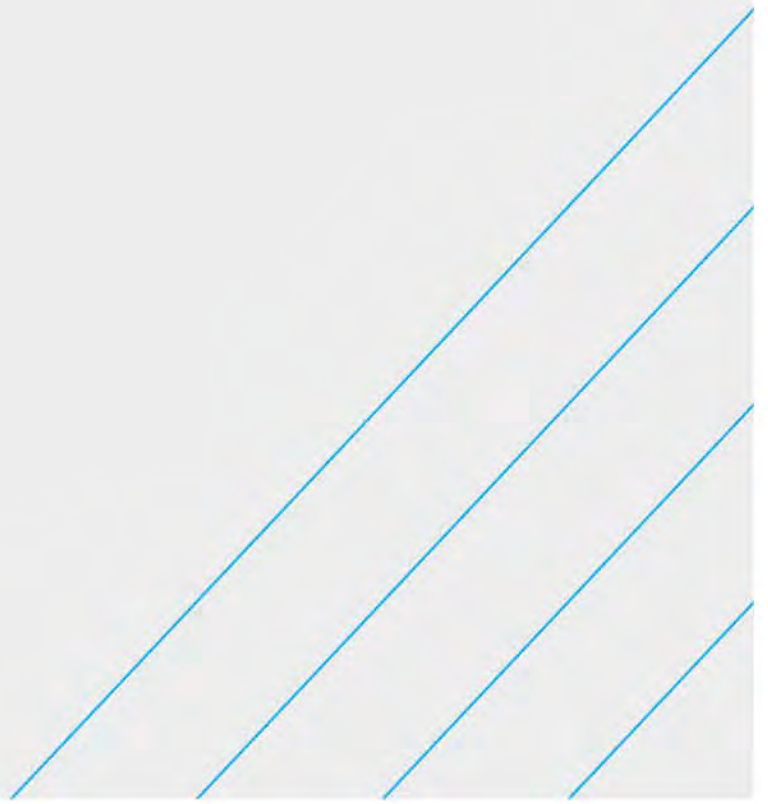
www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>													
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply													
Contact: Tyler Gale		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			PRIORITY (Business Days)		4 day [P4-20%] <input type="checkbox"/>		EMERGENCY		1 Business day [E1 - 100%] <input type="checkbox"/>							
Phone: Tel.: 604-515-5151 x 129 Cell.: 250-464-5672		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%] <input type="checkbox"/>		2 day [P2-50%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] <input type="checkbox"/>									
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Date and Time Required for all E&P TATs:													
Street: 520 Lake Street		Emails: SNC - Tyler Gale, Gavin Grundy, and <i>generiere parvina</i> vicky.lipinski@snc-lavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.													
City/Province: Nelson, BC		Teck - Jennifer Dene, crystal.sabel@teck.com			<b>Analysis Request</b>													
Postal Code: V1L 4C6		<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below													
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P P F/P P													
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: Tyler Gale@snc-lavalin.com payables@snc-lavalin.com			DOC (C-DIS-ORG-LOW-CL) TOC (C-TOT-ORG-LOW-CL) BCMDG D-Met.+Hg (MET-D-BCMDG-CL) Total N Calc. (N-T-CALC-CL) Nitrate + Nitrite Calc. (N2N3-CALC-CL) Teck Routine (TECKCOAL-ROUTINE-CL) TKN (TKN-L-F-CL) Bicarbonate (BIC-CL) Carbonate (CO3-CL) Hydroxide (OH-CL)													
Company:		Project Information			SAMPLES ON HOLD													
Contact:		Oil and Gas Required Fields (client use)			Sample is hazardous (please provide further detail)													
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#			NUMBER OF CONTAINERS													
Job #: Greenhills Operations		Major/Minor Code: Routing Code:																
PO / AFE: 658004		Requisitioner:																
LSD:		Location:																
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhalwal 403-407-1784			Sampler: <i>JUG, TC</i>													
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC	TOC	BCMDG	Total N	Nitrate + Nitrite	Teck Routine	TKN	Bicarbonate	Carbonate	Hydroxide	SAMPLES ON HOLD	Sample is hazardous	NUMBER OF CONTAINERS
<i>8</i>	GH_MW_MC10-A_WG_2021_06_10_NP	GH_MW_MC10-A	<i>10 Jun 21</i>	<i>12:00</i>	WG	X	X	X	X	X	X	X	X	X	X			<i>5</i>
	GH_MW_MC11-A_WG_2021_06_NP	GH_MW_MC11-A			WG													
	GH_MW_MC10-B-WG_2021_06_NP	GH_MW_MC10-B			WG													
	GH_MW_MC10-C-WG_2021_06_NP	GH_MW_MC10-C			WG													

<b>Drinking Water (DW) Samples (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>									
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>									
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)			Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>									
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Cooling Initiated <input type="checkbox"/>									
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C				
					<i>10</i>									
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>									
Released by: <i>Don Stogard</i>		Received by: <i>Dk</i>			Received by: <i>0830</i>									
Date: <i>2/06/10</i>		Date: <i>6/11</i>			Date: <i>0830</i>									
Time: <i>1700</i>		Time: <i>0830</i>			Time: <i>0830</i>									

# Certificates of Analysis 2021 SSGMP and RGMP Report

- › Fording River Operations





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100037**  
**Amendment** : **2**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : Fording River Operations PO BOX 100  
Elkford BC Canada V0B 1H0  
**Telephone** : 250-433-8467  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00683840  
**C-O-C number** : ALS-TTGW\_2021-01-13  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 14-Jan-2021 08:35  
**Date Analysis Commenced** : 14-Jan-2021  
**Issue Date** : 22-Sep-2021 11:36

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
James Diacon	Laboratory Analyst	Metals, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Metals, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_GCMW-1B-2 021-01-13	FR_GCMW-2-20 21-01-13	----	----	----
(Matrix: Water)					Client sampling date / time	13-Jan-2021 10:35	13-Jan-2021 12:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100037-001 Result	CG2100037-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	12.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	409	228	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	22.6	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	432	228	----	----	----	
conductivity	----	E100	2.0	µS/cm	770	1500	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	234	382	----	----	----	
pH	----	E108	0.10	pH units	8.60	8.03	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	490 <sup>DLHC</sup>	1220 <sup>DLHC</sup>	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.6	4.2	----	----	----	
turbidity	----	E121	0.10	NTU	5.20	3.20	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	61.8	907	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	499	278	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	13.6	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.192	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.108	<0.250 <sup>DLHC</sup>	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	20.6	1.30 <sup>DLHC</sup>	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	1.65	0.175 <sup>DLHC</sup>	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.303	<0.050	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0566	55.3 <sup>DLHC</sup>	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0010	<0.0050 <sup>DLHC</sup>	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0141	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0246	0.0058	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	2.98	590 <sup>DLHC</sup>	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	6.64	0.77	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	6.66	2.25	----	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_GCMW-1B-2 021-01-13	FR_GCMW-2-20 21-01-13	----	----	----
Client sampling date / time					13-Jan-2021 10:35	13-Jan-2021 12:00	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2100037-001	CG2100037-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.0	88.5	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.01	6.12	----	----	----	
<b>Total Metals</b>										
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0062	0.0020	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00039	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00229	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.134	0.0699	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.124	0.018	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0104	0.0642	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	17.5	203	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.14	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.364	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.200	0.162	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.39	97.1	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.246	0.00313	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0423	0.00194	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00090	0.00303	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.40	3.29	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.090	167	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.49	2.07	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	177	3.97	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.125	0.300	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_GCMW-1B-2 021-01-13	FR_GCMW-2-20 21-01-13	----	----	----
Client sampling date / time					13-Jan-2021 10:35	13-Jan-2021 12:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100037-001	CG2100037-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000239	0.00770	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0020	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: **ALS-TTGW\_2021-01-13**

TURNAROUND TIME:

RUSH:

**PROJECT/CLIENT INFO**

Facility Name / Job# **Fording River Operations**  
 Project Manager **Tom Jeffrey**  
 Email **Tom.Jeffrey@teck.com**  
 Address **Suite 1000, 205 - 9th Ave S.E.**

**LABORATORY**

Lab Name **ALS Calgary**  
 Lab Contact **Lynudnyla Sivets**  
 Email **Lynudnyla.Sivets@ALSglobal.com**  
 Address **2559 29 Street NE**

**OTHER INFO**

Report Format / Distribution  
 Email 1:  Excel  PDF  EDD  
 Email 2:  teckcoal@equisonline.com  X  X  
 Email 3:  bdeiry@srk.com  X  X  
 Email 4:  tom.jeffrey@teck.com  X  X  
 Email 5:  Scott.Routhead@teck.com  X  X  
 Email 6:  aune.hampson@teck.com  X  X

City **Calgary** Province **AB** Country **Canada**

Postal Code **T2G 0R3**

City **Calgary** Province **AB** Country **Canada**

Postal Code **T1Y 7B5**

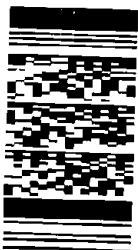
Phone Number **403 407 1794**

PO number **VP00063840**

**SAMPLE DETAILS**

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com P	# Of Cont.	ANALYSIS REQUESTED			
								ANALYSIS	PRESERV.	Filter	
FR_GCMW-1B-2021-01-13	FR_GCMW-1B	WG	N	1/13/2021	10:35	G	6	TECK COAL ROUTINE - CL	NONE	N	
FR_GCMW-2-2021-01-13	FR_GCMW-2	WG	N	1/13/2021	12:00	G	6	TECK COAL DOC	H2SO4	F	
								TECK COAL TOC/TKN	H2SO4	N	
								TECKCOAL-MET-D-CL	HNO3	F	
								HG-D-CVAF-CL	HNO3	F	
								HG-T-CVAF-CL	HNO3	N	

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2100037**



Telephone : +1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS  
 \*All samples field filtered and preserved as required.

DATE/TIME

AGGREGATED BY AFFILIATION

DATE/TIME

*PK*

*1/14*

*0825*

SERVICE REQUEST (rush - subject to availability)

Priority (2-3 business days) - 50% surcharge  
 Emergency (1 Business Day) - 100% surcharge

Regular (default)  X

Sampler's Name **Tyler Fortin**

Mobile #

Telephone #

Signature

Emergency (1 Business Day) - 100% surcharge

Sampler's Name

Tyler Fortin

Mobile #

Telephone #

Signature



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100109**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00741392  
**C-O-C number** : 2/4/2021  
**Sampler** : Jared Cayenne  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 9  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 05-Feb-2021 09:05  
**Date Analysis Commenced** : 05-Feb-2021  
**Issue Date** : 19-Sep-2021 11:46

---

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

---

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Brieanna Allen	Production/Validation Manager	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jeanie Mark	Laboratory Analyst	Organics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta





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-	No Unit
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µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

Sample	Client Id	Comment
CG2100109-001	FR_TRP_QTR_2021-01-04_N	Ultra-Low Mercury Total and Total Metals Bottle was not received .
CG2100109-003	FR_HMW2_QTR_2021-01-04_N	Ultra-Low Mercury Total and Total Metals bottle was not received.
CG2100109-005	FR_DC3_QTR_2021-01-04_N	FR_DC3 sample received . Sample was analyzed as per bottles received.

## Qualifiers

Qualifier	Description
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).



RRV *Reported result verified by repeat analysis.*  
TKNI *TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

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## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					FR_TRP_QTR_2 021-01-04_N	FR_HC3_MON_ 2021-02-01_N	FR_HMW2_QTR _2021-01-04_N	FR_HMW5_QTR _2021-01-04_N	FR_DC3_QTR_2 021-01-04_N
Client sampling date / time					04-Feb-2021 12:00	04-Feb-2021 01:15	04-Feb-2021 12:05	04-Feb-2021 13:56	04-Feb-2021 12:00
Analyte	CAS Number	Method	LOR	Unit	CG2100109-001	CG2100109-002	CG2100109-003	CG2100109-004	CG2100109-005
					Result	Result	Result	Result	Result
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	21.7	<2.0	<2.0
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	109	419	142	147
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	3.8	<1.0
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	109	419	145	147
conductivity	----	E100	2.0	µS/cm	<2.0	351	2760	353	349
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	<0.60	194	2040	188	190
oxidation-reduction potential [ORP]	----	E125	0.10	mV	347	284	319	166	163
pH	----	E108	0.10	pH units	5.50	8.12	7.51	8.30	8.20
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	208 <sup>DLHC</sup>	2700 <sup>DLHC</sup>	208 <sup>DLHC</sup>	208 <sup>DLHC</sup>
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	7.2	<1.0	<1.0
turbidity	----	E121	0.10	NTU	<0.10	<0.10	4.15	<0.10	<0.10
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	<1.0	----	511	173	179
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	----	<1.0	2.3	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	<1.0	<1.0	<1.0
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0367 <sup>RRV</sup>	0.0164	<0.0050	0.128	0.0522
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.250 <sup>DLHC</sup>	<0.050	<0.050
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	0.36	0.95 <sup>DLHC</sup>	0.34	0.39
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	0.341	0.127 <sup>DLHC</sup>	0.395	0.378
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.054	<0.050	0.176	<0.050
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.271	49.2 <sup>DLHC,TKNI</sup>	0.0314	0.0779
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0012	0.0156 <sup>DLHC</sup>	0.0016	0.0014
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0.0072	0.0211	0.0169
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0.0120	0.0177	0.0153
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	85.1	1420 <sup>DLHC</sup>	57.3	59.0
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	0.69	<0.50	1.43	<0.50
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	<0.50	1.63	<0.50
<b>Ion Balance</b>									



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_TRP_QTR_2 021-01-04_N	FR_HC3_MON_ 2021-02-01_N	FR_HMW2_QTR _2021-01-04_N	FR_HMW5_QTR _2021-01-04_N	FR_DC3_QTR_2 021-01-04_N
Client sampling date / time					04-Feb-2021 12:00	04-Feb-2021 01:15	04-Feb-2021 12:05	04-Feb-2021 13:56	04-Feb-2021 12:00	
Analyte	CAS Number	Method	LOR	Unit	CG2100109-001	CG2100109-002	CG2100109-003	CG2100109-004	CG2100109-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	4.00	41.5	4.12	4.20	
cation sum	----	EC101	0.10	meq/L	<0.10	3.90	41.1	3.98	4.03	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	97.5	99.0	96.6	96.0	
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	1.26	0.484	1.73	2.06	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	----	<0.0030	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	----	<0.00010	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	----	<0.00010	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	----	0.0149	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	----	<0.020	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	----	<0.000050	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	----	<0.010	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	----	0.0072	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	----	58.8	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	----	0.00016	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	----	<0.10	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	----	<0.00050	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	----	<0.010	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	----	<0.000050	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	----	<0.0010	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	----	15.3	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	----	<0.00010	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	----	<0.00050	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	----	0.000665	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	----	<0.00050	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	----	0.237	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	----	1.38	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	----	1.39	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	----	<0.000010	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	----	0.415	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	----	0.195	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_TRP_QTR_2 021-01-04_N	FR_HC3_MON_ 2021-02-01_N	FR_HMW2_QTR _2021-01-04_N	FR_HMW5_QTR _2021-01-04_N	FR_DC3_QTR_2 021-01-04_N
Client sampling date / time					04-Feb-2021 12:00	04-Feb-2021 01:15	04-Feb-2021 12:05	04-Feb-2021 13:56	04-Feb-2021 12:00	
Analyte	CAS Number	Method	LOR	Unit	CG2100109-001 Result	CG2100109-002 Result	CG2100109-003 Result	CG2100109-004 Result	CG2100109-005 Result	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	---	31.3	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	---	0.000012	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	---	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	---	<0.00030	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	---	0.000897	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	---	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	---	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0017	0.0040	0.0058	0.0051	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	0.0160	0.0123	0.227	0.219	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	---	<0.020	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	---	<0.000040 <sup>DLA</sup>	<0.000020	<0.000020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0.048	0.026	0.026	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	---	0.0055	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	---	0.000299	<0.0000050	<0.0000050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	54.2	412	42.2	43.3	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00016	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	---	<0.10	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	---	0.00022	<0.00010	<0.00010	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0.00496	<0.00020	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.020 <sup>DLA</sup>	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0.132	0.128	0.129	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	14.3	246	20.0	20.0	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0.186	0.0519	0.0514	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	0.000603	0.000374	<0.000050	<0.000050	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0.0125	<0.00050	<0.00050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_TRP_QTR_2 021-01-04_N	FR_HC3_MON_ 2021-02-01_N	FR_HMW2_QTR _2021-01-04_N	FR_HMW5_QTR _2021-01-04_N	FR_DC3_QTR_2 021-01-04_N
Client sampling date / time					04-Feb-2021 12:00	04-Feb-2021 01:15	04-Feb-2021 12:05	04-Feb-2021 13:56	04-Feb-2021 12:00	
Analyte	CAS Number	Method	LOR	Unit	CG2100109-001 Result	CG2100109-002 Result	CG2100109-003 Result	CG2100109-004 Result	CG2100109-005 Result	
<b>Dissolved Metals</b>										
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	0.227	6.96	0.715	0.695	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	---	1.29	---	---	---	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	---	0.385	0.00432	0.00400	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	1.31	1.88	2.49	2.49	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	0.411	2.47	4.59	4.66	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	0.186	0.246	0.416	0.421	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	29.7	575	28.5	28.1	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0.000045	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	0.000921	0.00902	0.000023	0.000023	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0014	0.0197	<0.0010	<0.0010	
dissolved mercury filtration location	---	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	---	EP421	-	-	Field	Field	Field	Field	Field	
<b>Hydrocarbons</b>										
EPH (C10-C19)	---	E601A	0.25	mg/L	---	<0.25	---	---	---	
EPH (C10-C32)	---	E601A	0.40	mg/L	---	<0.40	---	---	---	
EPH (C19-C32)	---	E601A	0.25	mg/L	---	<0.25	---	---	---	
TEH (C10-C30), BC	---	E601A	0.25	mg/L	---	<0.25	---	---	---	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%	---	96.3	---	---	---	
<b>Polycyclic Aromatic Hydrocarbons</b>										
acenaphthene	83-32-9	E641A	0.010	µg/L	---	<0.010	---	---	---	
acenaphthylene	208-96-8	E641A	0.010	µg/L	---	<0.010	---	---	---	
acridine	260-94-6	E641A	0.010	µg/L	---	<0.010	---	---	---	
anthracene	120-12-7	E641A	0.010	µg/L	---	<0.010	---	---	---	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	---	<0.010	---	---	---	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	---	<0.0050	---	---	---	
benzo(b+j)fluoranthene	---	E641A	0.010	µg/L	---	<0.010	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_TRP_QTR_2 021-01-04_N	FR_HC3_MON_ 2021-02-01_N	FR_HMW2_QTR _2021-01-04_N	FR_HMW5_QTR _2021-01-04_N	FR_DC3_QTR_2 021-01-04_N
Client sampling date / time					04-Feb-2021 12:00	04-Feb-2021 01:15	04-Feb-2021 12:05	04-Feb-2021 13:56	04-Feb-2021 12:00	
Analyte	CAS Number	Method	LOR	Unit	CG2100109-001	CG2100109-002	CG2100109-003	CG2100109-004	CG2100109-005	
					Result	Result	Result	Result	Result	
<b>Polycyclic Aromatic Hydrocarbons</b>										
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	----	<0.015	----	----	----	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	----	<0.010	----	----	----	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	----	<0.010	----	----	----	
chrysene	218-01-9	E641A	0.010	µg/L	----	<0.010	----	----	----	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	----	<0.0050	----	----	----	
fluoranthene	206-44-0	E641A	0.010	µg/L	----	<0.010	----	----	----	
fluorene	86-73-7	E641A	0.010	µg/L	----	<0.010	----	----	----	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	----	<0.010	----	----	----	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	----	<0.010	----	----	----	
methylnaphthalene, 1+2-	----	E641A	0.015	µg/L	----	<0.015	----	----	----	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	----	<0.010	----	----	----	
naphthalene	91-20-3	E641A	0.050	µg/L	----	<0.050	----	----	----	
phenanthrene	85-01-8	E641A	0.020	µg/L	----	<0.020	----	----	----	
pyrene	129-00-0	E641A	0.010	µg/L	----	<0.010	----	----	----	
quinoline	6027-02-7	E641A	0.050	µg/L	----	<0.050	----	----	----	
B(a)P total potency equivalents [B(a)P TPE]	----	E641A	0.010	µg/L	----	<0.010	----	----	----	
PAHs, high molecular weight (BC AWQ)	----	E641A	0.030	µg/L	----	<0.030	----	----	----	
PAHs, low molecular weight (BC AWQ)	----	E641A	0.060	µg/L	----	<0.060	----	----	----	
PAHs, total (EPA 16)	----	E641A	0.065	µg/L	----	<0.065	----	----	----	
<b>Polycyclic Aromatic Hydrocarbons Surrogates</b>										
chrysene-d12	1719-03-5	E641A	0.010	%	----	86.6	----	----	----	
naphthalene-d8	1146-65-2	E641A	0.010	%	----	89.2	----	----	----	
phenanthrene-d10	1517-22-2	E641A	0.010	%	----	99.9	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: 2/4/2021 TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO						
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD	
Project Manager	Scott Roughead			Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com			X	X	X
Email	scott.roughead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	brittlanderson@teck.com			X	X	X
Address				Address	2559 29 Street NE			Email 3:	scott.roughead@teck.com			X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equisonline.com			X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	jared.cayenne@teck.com			X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00741392					

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HC-D-CYAF-VA	HC-T-U-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	EPH	PAH	BOD / Colour	TSS / TURBIDITY	Sodium Bisulfate	Sodium Bisulfate	
FR_TRP_QTR_2021-01-04_N	FR_TRP	WS	NO	2/4/2021	12:00	G	5	1	1	1	1	1	1	1							
FR_HC3_MON_2021-02-01_N	FR_HC3	WS	NO	2/4/2021	13:15	G	9	1	1	1	1	1	1	1	1	1					
FR_HMW2_QTR_2021-01-04_N	FR_HMW2	WS	NO	2/4/2021	12:05	G	5	1	1	1	1	1	1	1							
FR_HMW5_QTR_2021-01-04_N	FR_HMW5	WS	NO	2/4/2021	13:56	G	5	1	1	1	1	1	1	1							

Environmental Division  
Calgary  
Work Order Reference  
**CG2100109**



Telephone : +1 403 407 1800

ONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
SECRET	Jared Cayenne	February 4, 2021	<i>[Signature]</i>	02/05 9:05

Regular (default) X	Sampler's Name	Jared Cayenne	Mobile #	250 421 9457
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	February 4, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

40





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100120**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : **Scott Roughead**  
**Address** : **PO BOX 100**  
**ELKFORD BC Canada V0B 1H0**  
**Telephone** : **----**  
**Project** : **FORDING RIVER OPERATION**  
**PO** : **VPO00741392**  
**C-O-C number** : **2/5/2021**  
**Sampler** : **Britt Anderson**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **8**  
**No. of samples analysed** : **8**

**Page** : **1 of 10**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
**Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **09-Feb-2021 08:30**  
**Date Analysis Commenced** : **09-Feb-2021**  
**Issue Date** : **14-Sep-2021 16:25**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

Sample	Client Id	Comment
CG2100120-008	FR_DC2_QTR_2021-01-04_N	Sample FR_DC2 received . Sample was analyzed as per bottles received.

## Qualifiers

Qualifier	Description
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_LMESEEP1_ WS_2021-02-0 5_NP	FR_PP1_MON_ 2021-02-01_N	FR_DC2_MON_ 2021-02-01_N	FR_HMW1D_QT R_2021-01-04_ N	FR_HMW1S_QT R_2021-01-04_ N
Client sampling date / time					05-Feb-2021 10:10	05-Feb-2021 14:00	05-Feb-2021 14:00	05-Feb-2021 13:30	05-Feb-2021 12:05	
Analyte	CAS Number	Method	LOR	Unit	CG2100120-001	CG2100120-002	CG2100120-003	CG2100120-004	CG2100120-005	
					Result	Result	Result	Result	Result	
<b>Sample Preparation</b>										
dissolved carbon filtration location	----	EP358	-	-	field	field	field	field	field	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	7.2	9.5	9.3	26.8	17.6	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	394	356	373	484	422	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	394	356	373	484	422	
conductivity	----	E100	2.0	µS/cm	707	1750	1750	3590	3490	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	385	1300	1280	2890	2820	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	409	335	301	350	349	
pH	----	E108	0.10	pH units	8.00	8.13	8.13	7.22	7.27	
solids, total dissolved [TDS]	----	E162	10	mg/L	410 <sup>DLHC</sup>	1530 <sup>DLHC</sup>	1520 <sup>DLHC</sup>	3510 <sup>DLHC</sup>	3580 <sup>DLHC</sup>	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	4.9	<1.0	<1.0	4.4	1.5	
turbidity	----	E121	0.10	NTU	4.24	0.31	0.34	1.67	0.67	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	481	435	456	590	514	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	7.17	0.0113	0.0117	0.0372	0.661	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.28	1.44 <sup>DLHC</sup>	1.37 <sup>DLHC</sup>	2.26 <sup>DLHC</sup>	2.04 <sup>DLHC</sup>	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.338	0.108 <sup>DLHC</sup>	<0.100 <sup>DLHC</sup>	0.152 <sup>DLHC</sup>	0.245 <sup>DLHC</sup>	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	5.12 <sup>DLHC</sup>	<0.050	<0.050	<0.050	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	6.77	48.1 <sup>DLHC</sup>	47.7 <sup>DLHC</sup>	112 <sup>DLHC</sup>	114 <sup>DLHC</sup>	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0094	<0.0050 <sup>DLHC</sup>	0.0170 <sup>DLHC</sup>	0.0246 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0017	0.0104	0.0035	0.0032	0.0012	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0054	0.0115	0.0106	0.0050	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	0.45	660 <sup>DLHC</sup>	656 <sup>DLHC</sup>	1900 <sup>DLHC</sup>	1820 <sup>DLHC</sup>	
<b>Organic / Inorganic Carbon</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_LMESEEP1_ WS_2021-02-05_NP	FR_PP1_MON_ 2021-02-01_N	FR_DC2_MON_ 2021-02-01_N	FR_HMW1D_QT R_2021-01-04_ N	FR_HMW1S_QT R_2021-01-04_ N
Client sampling date / time					05-Feb-2021 10:10	05-Feb-2021 14:00	05-Feb-2021 14:00	05-Feb-2021 13:30	05-Feb-2021 12:05	
Analyte	CAS Number	Method	LOR	Unit	CG2100120-001	CG2100120-002	CG2100120-003	CG2100120-004	CG2100120-005	
					Result	Result	Result	Result	Result	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.78	3.83	3.69	1.69	<0.50	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.37	3.90	4.22	1.29	1.02	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	8.39	24.3	24.6	57.3	54.5	
cation sum	----	EC101	0.10	meq/L	8.44	26.1	25.7	58.1	56.6	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	107	104	101	104	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.297	3.57	2.19	0.693	1.89	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.123	0.0085	0.0084	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00090	0.00075	0.00072	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00042	0.00036	0.00035	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	9.27	0.100	0.0992	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.020	0.012	0.011	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0340	0.552	0.505	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	91.7	308	308	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	2.44	0.22	0.21	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00100 <sup>DLA</sup>	0.00127	0.00125	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.076	<0.010	<0.010	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000135	<0.000050	<0.000050	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.122	0.0113	0.0111	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	40.1	117	115	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0171	0.0118	0.0114	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	0.00076	0.00085	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00127	0.00255	0.00255	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00662	0.0375	0.0372	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	5.87	4.20	4.15	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	0.355	132	130	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_LMESEEP1_ WS_2021-02-05_NP	FR_PP1_MON_ 2021-02-01_N	FR_DC2_MON_ 2021-02-01_N	FR_HMW1D_QT R_2021-01-04_N	FR_HMW1S_QT R_2021-01-04_N
Client sampling date / time					05-Feb-2021 10:10	05-Feb-2021 14:00	05-Feb-2021 14:00	05-Feb-2021 13:30	05-Feb-2021 12:05	
Analyte	CAS Number	Method	LOR	Unit	CG2100120-001	CG2100120-002	CG2100120-003	CG2100120-004	CG2100120-005	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
silicon, total	7440-21-3	E420	0.10	mg/L	3.03	3.94	3.91	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	3.55	1.41	1.39	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	1.88	0.238	0.236	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	<1.00 <sup>DLA</sup>	253	247	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000031	0.000056	0.000051	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00439	<0.00030	0.00032	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000186	0.00845	0.00844	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00100 <sup>DLA</sup>	0.00058	0.00059	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0071	0.0391	0.0376	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0020 <sup>DLA</sup>	0.0014	0.0020	<0.0050 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00086	0.00075	0.00073	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00035	0.00032	0.00033	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	8.17	0.0980	0.102	0.0107	0.00976	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	<0.020	<0.100 <sup>DLA</sup>	<0.100 <sup>DLA</sup>	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	<0.000250 <sup>DLA</sup>	<0.000250 <sup>DLA</sup>	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.024	0.011	0.010	0.051	<0.050 <sup>DLA</sup>	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0249	0.577	0.576	0.101	0.131	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	94.9	334	329	610	590	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	2.18	0.23	0.22	5.10	4.13	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	0.00121	0.00128	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.020 <sup>DLA</sup>	<0.010	<0.010	<0.050 <sup>DLA</sup>	<0.050 <sup>DLA</sup>	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	<0.000250 <sup>DLA</sup>	<0.000250 <sup>DLA</sup>	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.113	0.0115	0.0111	0.0911	0.0927	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	35.9	113	111	333	326	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0143	0.0112	0.0109	0.751	0.350	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_LMESEEP1_ WS_2021-02-0 5_NP	FR_PP1_MON_ 2021-02-01_N	FR_DC2_MON_ 2021-02-01_N	FR_HMW1D_QT R_2021-01-04_ N	FR_HMW1S_QT R_2021-01-04_ N
Client sampling date / time					05-Feb-2021 10:10	05-Feb-2021 14:00	05-Feb-2021 14:00	05-Feb-2021 13:30	05-Feb-2021 12:05	
Analyte	CAS Number	Method	LOR	Unit	CG2100120-001 Result	CG2100120-002 Result	CG2100120-003 Result	CG2100120-004 Result	CG2100120-005 Result	
<b>Dissolved Metals</b>										
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00112	0.00255	0.00256	0.000714	0.000931	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00632	0.0406	0.0394	0.0353	0.0449	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.60	3.85	3.88	5.82	6.51	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.434	129	132	52.1	234	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.50	3.80	3.79	2.77	2.36	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	<0.000050 <sup>DLA</sup>	<0.000050 <sup>DLA</sup>	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.78	1.30	1.28	2.14	2.02	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.67	0.231	0.232	0.335	0.313	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<1.00 <sup>DLA</sup>	232	227	702	657	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000030	0.000054	0.000056	<0.000050 <sup>DLA</sup>	<0.000050 <sup>DLA</sup>	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	<0.00150 <sup>DLA</sup>	<0.00150 <sup>DLA</sup>	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000177	0.00827	0.00685	0.0128	0.0125	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	<0.00250 <sup>DLA</sup>	<0.00250 <sup>DLA</sup>	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0052	0.0384	0.0381	0.0116	0.0062	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW3_QTR _2021-01-04_N	FR_FLD_QTR_2 021-01-04_N	FR_DC2_QTR_2 021-01-04_N	----	----
Client sampling date / time					05-Feb-2021 11:00	05-Feb-2021 12:05	05-Feb-2021 12:00	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100120-006	CG2100120-007	CG2100120-008	-----	-----	
					Result	Result	Result	----	----	
<b>Sample Preparation</b>										
dissolved carbon filtration location	----	EP358	-	-	field	field	field	----	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	221	<1.0	214	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	221	<1.0	214	----	----	
conductivity	----	E100	2.0	µS/cm	927	<2.0	938	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	630	<0.60	611	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	319	432	322	----	----	
pH	----	E108	0.10	pH units	7.66	5.58	7.65	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	716 <sup>DLHC</sup>	<10	718 <sup>DLHC</sup>	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.2	<1.0	4.4	----	----	
turbidity	----	E121	0.10	NTU	3.10	<0.10	3.67	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	269	<1.0	261	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.141	<0.0050	0.140	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.050	<0.250 <sup>DLHC</sup>	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.53 <sup>DLHC</sup>	<0.10	0.79 <sup>DLHC</sup>	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.269 <sup>DLHC</sup>	<0.020	0.270 <sup>DLHC</sup>	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.109	<0.050	<0.050	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	9.88 <sup>DLHC</sup>	<0.0050	9.36 <sup>DLHC</sup>	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0010	0.0080 <sup>DLHC</sup>	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0021	<0.0010	0.0020	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0060	<0.0020	0.0065	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	345 <sup>DLHC</sup>	<0.30	336 <sup>DLHC</sup>	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.59	<0.50	1.46	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.91	<0.50	1.00	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW3_QTR _2021-01-04_N	FR_FLD_QTR_2 021-01-04_N	FR_DC2_QTR_2 021-01-04_N	----	----
Client sampling date / time					05-Feb-2021 11:00	05-Feb-2021 12:05	05-Feb-2021 12:00	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100120-006 Result	CG2100120-007 Result	CG2100120-008 Result	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	12.3	<0.10	12.0	----	----	
cation sum	----	EC101	0.10	meq/L	12.7	<0.10	12.3	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	103	100	102	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.60	<0.010	1.23	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0037	<0.0010	0.0041	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00015	<0.00010	0.00016	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	<0.00010	0.00012	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0414	<0.00010	0.0415	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.016	<0.010	0.016	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0595	<0.0050	0.0542	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	151	<0.050	148	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.19	<0.10	0.20	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00042	<0.00020	0.00078	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.124	<0.010	0.124	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0330	<0.0010	0.0326	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	61.5	<0.0050	58.7	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.139	<0.00010	0.141	----	----	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000930	<0.000050	0.000928	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00169	<0.00050	0.00168	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.99	<0.050	1.96	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	79.2	<0.050	79.4	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.60	<0.050	1.62	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.27	<0.050	1.25	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.147	<0.00020	0.148	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW3_QTR _2021-01-04_N	FR_FLD_QTR_2 021-01-04_N	FR_DC2_QTR_2 021-01-04_N	----	----
Client sampling date / time					05-Feb-2021 11:00	05-Feb-2021 12:05	05-Feb-2021 12:00	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100120-006	CG2100120-007	CG2100120-008	-----	-----	
					Result	Result	Result	---	---	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	117	<0.50	118	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	<0.000010	0.000013	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00244	<0.000010	0.00231	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0039	<0.0010	0.0032	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100169**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 100  
ELKFORD BC Canada V0B 1H0  
**Telephone** : 250-433-8467  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00683840  
**C-O-C number** : ALS-Q1\_GW\_2021-02-18  
**Sampler** : TYLER FORTIN  
**Site** : ---  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 19-Feb-2021 09:27  
**Date Analysis Commenced** : 19-Feb-2021  
**Issue Date** : 14-Sep-2021 16:27

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
James Diacon	Laboratory Analyst	Metals, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	<i>Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.</i>
DLHC	<i>Detection Limit Raised: Dilution required due to high concentration of test analyte(s).</i>
IB:INT	<i>Ion Balance Reviewed: Imbalance is due to interference or non-measured component.</i>
RRV	<i>Reported result verified by repeat analysis.</i>



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_KB-5PW_20	FR_KB-1A_202	----	----	----
(Matrix: Water)						21-02-18	1-02-18			
Client sampling date / time						18-Feb-2021 10:15	18-Feb-2021 12:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100169-001	CG2100169-002	-----	-----	-----	
					Result	Result	----	----	----	
<b>Sample Preparation</b>										
dissolved carbon filtration location	----	EP358	-	-	field	field	----	----	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	29.4	33.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	399	410	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	399	410	----	----	----	
conductivity	----	E100	2.0	µS/cm	2310	2320	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	1380	1560	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	273	320	----	----	----	
pH	----	E108	0.10	pH units	7.51	7.49	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	2020 <sup>DLHC</sup>	2060 <sup>DLHC</sup>	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	0.14	0.10	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	487	500	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0114	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	5.85 <sup>DLHC</sup>	1.80 <sup>DLHC</sup>	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLHC</sup>	0.126 <sup>DLHC</sup>	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	100 <sup>DLHC</sup>	102 <sup>DLHC</sup>	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0025	0.0012	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020 <sup>RRV</sup>	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	880 <sup>DLHC</sup>	881 <sup>DLHC</sup>	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	----	----	----	



## Analytical Results

Sub-Matrix: Water					Client sample ID		FR_KB-5PW_20	FR_KB-1A_202	----	----	----
(Matrix: Water)							21-02-18	1-02-18			
Client sampling date / time							18-Feb-2021 10:15	18-Feb-2021 12:00	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100169-001	CG2100169-002	-----	-----	-----	-----	-----
					Result	Result	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>											
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	---	---	---	---	---
<b>Ion Balance</b>											
anion sum	----	EC101	0.10	meq/L	33.6	33.9	---	---	---	---	---
cation sum	----	EC101	0.10	meq/L	28.1	31.7	---	---	---	---	---
ion balance (cations/anions ratio)	----	EC101	0.010	%	83.6 <sup>IB:INT</sup>	93.5	---	---	---	---	---
ion balance (cation-anion difference)	----	EC101	0.010	%	8.91	3.35	---	---	---	---	---
<b>Total Metals</b>											
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	---	---
<b>Dissolved Metals</b>											
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	---	---	---	---	---
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	0.00055 <sup>DLDS</sup>	---	---	---	---	---
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>	---	---	---	---	---
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0394 <sup>DLDS</sup>	0.0457 <sup>DLDS</sup>	---	---	---	---	---
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.100 <sup>DLDS</sup>	<0.100 <sup>DLDS</sup>	---	---	---	---	---
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000250 <sup>DLDS</sup>	<0.000250 <sup>DLDS</sup>	---	---	---	---	---
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.050 <sup>DLDS</sup>	<0.050 <sup>DLDS</sup>	---	---	---	---	---
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.739 <sup>DLDS</sup>	0.875 <sup>DLDS</sup>	---	---	---	---	---
calcium, dissolved	7440-70-2	E421	0.050	mg/L	323 <sup>DLDS</sup>	369 <sup>DLDS</sup>	---	---	---	---	---
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>	---	---	---	---	---
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.50 <sup>DLDS</sup>	<0.50 <sup>DLDS</sup>	---	---	---	---	---
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00100 <sup>DLDS</sup>	<0.00100 <sup>DLDS</sup>	---	---	---	---	---
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.050 <sup>DLDS</sup>	<0.050 <sup>DLDS</sup>	---	---	---	---	---
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000250 <sup>DLDS</sup>	<0.000250 <sup>DLDS</sup>	---	---	---	---	---
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.153 <sup>DLDS</sup>	0.172 <sup>DLDS</sup>	---	---	---	---	---
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	140 <sup>DLDS</sup>	156 <sup>DLDS</sup>	---	---	---	---	---
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>	---	---	---	---	---
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	---	---
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00136 <sup>DLDS</sup>	0.00158 <sup>DLDS</sup>	---	---	---	---	---
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0374 <sup>DLDS</sup>	0.0441 <sup>DLDS</sup>	---	---	---	---	---
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.70 <sup>DLDS</sup>	5.21 <sup>DLDS</sup>	---	---	---	---	---
selenium, dissolved	7782-49-2	E421	0.050	µg/L	258 <sup>DLDS</sup>	312 <sup>DLDS</sup>	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-5PW_20 21-02-18	FR_KB-1A_202 1-02-18	----	----	----
Client sampling date / time					18-Feb-2021 10:15	18-Feb-2021 12:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100169-001 Result	CG2100169-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.68 <sup>DLDS</sup>	1.93 <sup>DLDS</sup>	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000050 <sup>DLDS</sup>	<0.000050 <sup>DLDS</sup>	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.21 <sup>DLDS</sup>	7.92 <sup>DLDS</sup>	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.296 <sup>DLDS</sup>	0.339 <sup>DLDS</sup>	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	224 <sup>DLDS</sup>	268 <sup>DLDS</sup>	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000050 <sup>DLDS</sup>	<0.000050 <sup>DLDS</sup>	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00150 <sup>DLDS</sup>	<0.00150 <sup>DLDS</sup>	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0125 <sup>DLDS</sup>	0.0149 <sup>DLDS</sup>	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00250 <sup>DLDS</sup>	<0.00250 <sup>DLDS</sup>	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0136 <sup>DLDS</sup>	0.0170 <sup>DLDS</sup>	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100172**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : 250-433-8467  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00683840  
**C-O-C number** : ALS-Q1\_GW\_2021-02-19  
**Sampler** : Tyler Fortin  
**Site** : ---  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Feb-2021 09:00  
**Date Analysis Commenced** : 20-Feb-2021  
**Issue Date** : 14-Sep-2021 16:23

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- Analytical Results

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**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Metals, Calgary, Alberta
James Diacon	Laboratory Analyst	Metals, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	<i>Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.</i>
DLHC	<i>Detection Limit Raised: Dilution required due to high concentration of test analyte(s).</i>
HTD	<i>Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.</i>



## Analytical Results

Sub-Matrix: Water					Client sample ID		FR_KB-7PW_20	FR_KB-2_2021-	----	----	----
(Matrix: Water)							21-02-19	02-19			
Client sampling date / time					19-Feb-2021	19-Feb-2021					
					11:00	09:05					
Analyte	CAS Number	Method	LOR	Unit	CG2100172-001	CG2100172-002	-----	-----	-----	-----	-----
					Result	Result	----	----	----	----	----
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	45.3	33.2	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	439	400	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	439	400	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	2350	2310	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	1520	1440	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	438	429	----	----	----	----	----
pH	----	E108	0.10	pH units	7.23	7.43	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	2100 <sup>DLHC</sup>	1940 <sup>DLHC</sup>	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	3.2	----	----	----	----	----
turbidity	----	E121	0.10	NTU	0.10	12.2	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	536	488	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	----
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0071	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.84 <sup>DLHC</sup>	1.45 <sup>DLHC</sup>	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.108 <sup>DLHC</sup>	0.100 <sup>DLHC</sup>	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	83.2 <sup>DLHC</sup>	99.3 <sup>DLHC</sup>	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0024 <sup>HTD</sup>	0.0021	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0138	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	849 <sup>DLHC</sup>	782 <sup>DLHC</sup>	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	----	----	----	----	----
<b>Ion Balance</b>											



## Analytical Results

Sub-Matrix: Water					Client sample ID		FR_KB-7PW_20	FR_KB-2_2021-	----	----	----
(Matrix: Water)						21-02-19	02-19				
Client sampling date / time						19-Feb-2021	19-Feb-2021	----	----	----	
						11:00	09:05	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100172-001	CG2100172-002	-----	-----	-----		
					Result	Result	---	---	---		
<b>Ion Balance</b>											
anion sum	----	EC101	0.10	meq/L	32.4	31.4	----	----	----		
cation sum	----	EC101	0.10	meq/L	30.7	29.2	----	----	----		
ion balance (cations/anions ratio)	----	EC101	0.010	%	94.8	93.0	----	----	----		
ion balance (cation-anion difference)	----	EC101	0.010	%	2.69	3.63	----	----	----		
<b>Total Metals</b>											
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----		
<b>Dissolved Metals</b>											
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0051 <sup>DLDS</sup>	0.0074 <sup>DLDS</sup>	----	----	----		
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>	----	----	----		
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>	----	----	----		
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0496 <sup>DLDS</sup>	0.0650 <sup>DLDS</sup>	----	----	----		
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.100 <sup>DLDS</sup>	<0.100 <sup>DLDS</sup>	----	----	----		
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000250 <sup>DLDS</sup>	<0.000250 <sup>DLDS</sup>	----	----	----		
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.050 <sup>DLDS</sup>	<0.050 <sup>DLDS</sup>	----	----	----		
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0920 <sup>DLDS</sup>	0.169 <sup>DLDS</sup>	----	----	----		
calcium, dissolved	7440-70-2	E421	0.050	mg/L	325 <sup>DLDS</sup>	330 <sup>DLDS</sup>	----	----	----		
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>	----	----	----		
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.50 <sup>DLDS</sup>	<0.50 <sup>DLDS</sup>	----	----	----		
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00100 <sup>DLDS</sup>	<0.00100 <sup>DLDS</sup>	----	----	----		
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.050 <sup>DLDS</sup>	<0.050 <sup>DLDS</sup>	----	----	----		
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000250 <sup>DLDS</sup>	<0.000250 <sup>DLDS</sup>	----	----	----		
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.120 <sup>DLDS</sup>	0.154 <sup>DLDS</sup>	----	----	----		
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	171 <sup>DLDS</sup>	150 <sup>DLDS</sup>	----	----	----		
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>	----	----	----		
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----		
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000612 <sup>DLDS</sup>	0.00148 <sup>DLDS</sup>	----	----	----		
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00250 <sup>DLDS</sup>	0.00870 <sup>DLDS</sup>	----	----	----		
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.28 <sup>DLDS</sup>	4.30 <sup>DLDS</sup>	----	----	----		
selenium, dissolved	7782-49-2	E421	0.050	µg/L	243 <sup>DLDS</sup>	292 <sup>DLDS</sup>	----	----	----		
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.68 <sup>DLDS</sup>	1.73 <sup>DLDS</sup>	----	----	----		
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000050 <sup>DLDS</sup>	<0.000050 <sup>DLDS</sup>	----	----	----		



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-7PW_20 21-02-19	FR_KB-2_2021- 02-19	----	----	----
Client sampling date / time					19-Feb-2021 11:00	19-Feb-2021 09:05	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100172-001	CG2100172-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.54 <sup>DLDS</sup>	7.21 <sup>DLDS</sup>	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.284 <sup>DLDS</sup>	0.303 <sup>DLDS</sup>	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	254 <sup>DLDS</sup>	228 <sup>DLDS</sup>	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000050 <sup>DLDS</sup>	<0.000050 <sup>DLDS</sup>	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00150 <sup>DLDS</sup>	<0.00150 <sup>DLDS</sup>	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0116 <sup>DLDS</sup>	0.0133 <sup>DLDS</sup>	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00250 <sup>DLDS</sup>	<0.00250 <sup>DLDS</sup>	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	0.0060 <sup>DLDS</sup>	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>CG2100183</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : <b>Scott Roughead</b> <b>Address</b> : <b>PO BOX 100</b> <b>ELKFORD BC Canada V0B 1H0</b> <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>FORDING RIVER OPERATIONS</b> <b>PO</b> : <b>VPO00741392</b> <b>C-O-C number</b> : <b>2/22/2021</b> <b>Sampler</b> : <b>Britt Anderson</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>Teck Coal Master Quote</b> <b>No. of samples received</b> : <b>3</b> <b>No. of samples analysed</b> : <b>3</b>	<b>Page</b> : <b>1 of 6</b>  <b>Laboratory</b> : <b>Calgary - Environmental</b> <b>Account Manager</b> : <b>Justine Buma-a</b> <b>Address</b> : <b>2559 29th Street NE</b> <b>Calgary AB Canada T1Y 7B5</b> <b>Telephone</b> : <b>+1 403 407 1800</b> <b>Date Samples Received</b> : <b>24-Feb-2021 08:35</b> <b>Date Analysis Commenced</b> : <b>24-Feb-2021</b> <b>Issue Date</b> : <b>14-Sep-2021 16:28</b>
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebeccah Baker	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-01-A_QT R_2021-01-04_ N	FR_09-01-B_QT R_2021-01-04_ N	FR_DC1_QTR_2 021-01-04_N	----	----
Client sampling date / time					22-Feb-2021 00:54	22-Feb-2021 13:23	22-Feb-2021 00:54	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100183-001 Result	CG2100183-002 Result	CG2100183-003 Result	----- ---	----- ---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	21.4	17.6	20.0	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	315	296	318	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	315	296	318	----	----	
conductivity	----	E100	2.0	µS/cm	1270	1290	1260	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	824	835	844	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	437	440	403	----	----	
pH	----	E108	0.10	pH units	7.81	7.87	7.77	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	980 <sup>DLHC</sup>	1020 <sup>DLHC</sup>	1020 <sup>DLHC</sup>	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.5	<1.0	----	----	
turbidity	----	E121	0.10	NTU	<0.10	0.82	<0.10	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	385	361	388	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0.0119	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.66 <sup>DLHC</sup>	3.99 <sup>DLHC</sup>	3.64 <sup>DLHC</sup>	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.105 <sup>DLHC</sup>	0.131 <sup>DLHC</sup>	<0.100 <sup>DLHC</sup>	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	<0.050	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	21.4 <sup>DLHC</sup>	24.2 <sup>DLHC</sup>	21.6 <sup>DLHC</sup>	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	0.0051 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0038	0.0095	0.0036	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0307	0.0071	0.0036	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	400 <sup>DLHC</sup>	398 <sup>DLHC</sup>	391 <sup>DLHC</sup>	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	<0.50	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	<0.50	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-01-A_QT R_2021-01-04_ N	FR_09-01-B_QT R_2021-01-04_ N	FR_DC1_QTR_2 021-01-04_N	----	----
Client sampling date / time					22-Feb-2021 00:54	22-Feb-2021 13:23	22-Feb-2021 00:54	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100183-001 Result	CG2100183-002 Result	CG2100183-003 Result	----- ----	----- ----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	16.3	16.0	16.1	----	----	
cation sum	----	EC101	0.10	meq/L	16.8	17.0	17.2	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	103	106	107	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.51	3.03	3.30	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00025	0.00016	0.00023	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0923	0.136	0.0929	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.021	0.020	0.021	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0492	0.0393	0.0586	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	189	193	197	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00017	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.31	0.28	0.29	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00051	0.00277	0.00044	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	0.000094	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0700	0.0649	0.0699	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	85.4	85.7	85.5	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00016	0.00018	0.00014	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000559	0.000818	0.000524	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00182	0.00145	0.00175	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.50	3.43	3.49	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	71.6	78.7	70.5	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.64	2.44	2.57	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.83	4.36	4.67	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-01-A_QT R_2021-01-04_ N	FR_09-01-B_QT R_2021-01-04_ N	FR_DC1_QTR_2 021-01-04_N	----	----
Client sampling date / time					22-Feb-2021 00:54	22-Feb-2021 13:23	22-Feb-2021 00:54	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100183-001 Result	CG2100183-002 Result	CG2100183-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.230	0.239	0.221	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	146	141	142	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00011	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00465	0.00503	0.00451	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0046	0.0021	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100200**  
**Amendment** : **2**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 2/25/2021  
**Sampler** : Jared Cayenne  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Feb-2021 08:50  
**Date Analysis Commenced** : 26-Feb-2021  
**Issue Date** : 14-Sep-2021 16:23

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Howie Ho		Organics, Calgary, Alberta
James Diacon	Laboratory Analyst	Metals, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maqsood Ul Hassan	Laboratory Analyst	Organics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebeccah Baker	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-1B_QT R_2021-01-04_ N	FR_TBSSMW-1 _QTR_2021-01- 04_N	FR_TBSSMW-2 _QTR_2021-01- 04_N	FR_CIL_MON_2 021-02-01_N	----
Client sampling date / time					25-Feb-2021 13:55	25-Feb-2021 11:56	25-Feb-2021 12:45	25-Feb-2021 10:30	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100200-001 Result	CG2100200-002 Result	CG2100200-003 Result	CG2100200-004 Result	----- ----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	6.2	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	190	168	154	406	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	190	168	154	406	----	
conductivity	----	E100	2.0	µS/cm	996	299	686	1280	----	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	616	143	435	756	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	368	310	383	318	----	
pH	----	E108	0.10	pH units	7.95	8.18	7.99	7.83	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	702 <sup>DLHC</sup>	146 <sup>DLHC</sup>	469 <sup>DLHC</sup>	909 <sup>DLHC</sup>	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.1	<1.0	<1.0	85.0	----	
turbidity	----	E121	0.10	NTU	1.06	1.14	0.25	17.0	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	232	205	188	495	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	2.94 <sup>DLM</sup>	<0.0050	7.12 <sup>DLM</sup>	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.050	<0.050	<0.250 <sup>DLHC</sup>	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.33 <sup>DLHC</sup>	0.29	0.47	2.05 <sup>DLHC</sup>	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.118 <sup>DLHC</sup>	0.435	0.196	0.275 <sup>DLHC</sup>	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	2.70	0.113	5.96 <sup>DLHC</sup>	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	20.3 <sup>DLHC</sup>	0.0061	6.00	11.3 <sup>DLHC</sup>	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0059 <sup>DLHC</sup>	<0.0010	<0.0010	0.0493 <sup>DLHC</sup>	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0024	<0.0010	0.0017	0.0014	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	0.0248	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	238 <sup>DLHC</sup>	15.2	218	376 <sup>DLHC</sup>	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	0.77	<0.50	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	0.92	<0.50	1.06	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-1B_QT R_2021-01-04_ N	FR_TBSSMW-1 _QTR_2021-01- 04_N	FR_TBSSMW-2 _QTR_2021-01- 04_N	FR_CIL_MON_2 021-02-01_N	----
Client sampling date / time					25-Feb-2021 13:55	25-Feb-2021 11:56	25-Feb-2021 12:45	25-Feb-2021 10:30	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100200-001 Result	CG2100200-002 Result	CG2100200-003 Result	CG2100200-004 Result	----- ----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	10.3	3.70	8.07	16.8	----	
cation sum	----	EC101	0.10	meq/L	12.4	3.69	8.74	15.9	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	120	99.7	108	94.6	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	9.25	0.135	3.98	2.75	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0083	0.0012	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00021	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	0.00118	0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.164	2.00	0.0852	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	<0.010	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0207	<0.0050	0.0103	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	153	11.4	108	154	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	<0.00010	0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.11	<0.10	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0.00095	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.251	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000060	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0460	0.212	0.0112	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	56.7	27.9	40.1	90.1	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.0274	<0.00010	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00124	0.0160	0.000867	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.52	6.90	0.812	3.65	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	72.6	<0.050	39.0	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.84	2.35	1.47	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.27	9.95	0.816	3.46	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-1B_QT R_2021-01-04_ N	FR_TBSSMW-1 _QTR_2021-01- 04_N	FR_TBSSMW-2 _QTR_2021-01- 04_N	FR_CIL_MON_2 021-02-01_N	----
Client sampling date / time					25-Feb-2021 13:55	25-Feb-2021 11:56	25-Feb-2021 12:45	25-Feb-2021 10:30	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100200-001 Result	CG2100200-002 Result	CG2100200-003 Result	CG2100200-004 Result	----- ----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.233	0.217	0.173	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	105	5.22	74.8	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00348	0.000100	0.00170	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0016	0.0015	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Laboratory	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	----	----	----	<0.25	----	
EPH (C10-C32)	----	E601A	0.4	mg/L	----	----	----	<0.4	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	----	----	----	<0.25	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	----	----	----	<0.25	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%	----	----	----	104	----	
<b>Polycyclic Aromatic Hydrocarbons</b>										
acenaphthene	83-32-9	E641A	0.010	µg/L	----	----	----	<0.010	----	
acenaphthylene	208-96-8	E641A	0.010	µg/L	----	----	----	<0.010	----	
acridine	260-94-6	E641A	0.010	µg/L	----	----	----	<0.020 <sup>DLO</sup>	----	
anthracene	120-12-7	E641A	0.010	µg/L	----	----	----	<0.010	----	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	----	----	----	<0.010	----	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	----	----	----	<0.0050	----	
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	----	----	----	<0.010	----	
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	----	----	----	<0.015	----	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	----	----	----	<0.010	----	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	----	----	----	<0.010	----	
chrysene	218-01-9	E641A	0.010	µg/L	----	----	----	<0.010	----	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	----	----	----	<0.0050	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-1B_QT R_2021-01-04_ N	FR_TBSSMW-1 _QTR_2021-01- 04_N	FR_TBSSMW-2 _QTR_2021-01- 04_N	FR_CIL_MON_2 021-02-01_N	----
Client sampling date / time					25-Feb-2021 13:55	25-Feb-2021 11:56	25-Feb-2021 12:45	25-Feb-2021 10:30	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100200-001 Result	CG2100200-002 Result	CG2100200-003 Result	CG2100200-004 Result	----- ----	
<b>Polycyclic Aromatic Hydrocarbons</b>										
fluoranthene	206-44-0	E641A	0.010	µg/L	----	----	----	<0.010	----	
fluorene	86-73-7	E641A	0.010	µg/L	----	----	----	0.022	----	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	----	----	----	<0.010	----	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	----	----	----	0.102	----	
methylnaphthalene, 1+2-	----	E641A	0.015	µg/L	----	----	----	0.267	----	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	----	----	----	0.165	----	
naphthalene	91-20-3	E641A	0.050	µg/L	----	----	----	0.072	----	
phenanthrene	85-01-8	E641A	0.020	µg/L	----	----	----	0.040	----	
pyrene	129-00-0	E641A	0.010	µg/L	----	----	----	0.010	----	
quinoline	6027-02-7	E641A	0.050	µg/L	----	----	----	<0.050	----	
B(a)P total potency equivalents [B(a)P TPE]	----	E641A	0.010	µg/L	----	----	----	<0.010	----	
PAHs, high molecular weight (BC AWQ)	----	E641A	0.030	µg/L	----	----	----	<0.030	----	
PAHs, low molecular weight (BC AWQ)	----	E641A	0.060	µg/L	----	----	----	0.134	----	
PAHs, total (EPA 16)	----	E641A	0.065	µg/L	----	----	----	0.144	----	
<b>Polycyclic Aromatic Hydrocarbons Surrogates</b>										
chrysene-d12	1719-03-5	E641A	0.010	%	----	----	----	97.3	----	
naphthalene-d8	1146-65-2	E641A	0.010	%	----	----	----	97.5	----	
phenanthrene-d10	1517-22-2	E641A	0.010	%	----	----	----	104	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100305**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : ----  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 10-Mar-2021 15:21  
**Date Analysis Commenced** : 10-Mar-2021  
**Issue Date** : 14-Sep-2021 16:24

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
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Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					FR_POTWELLS _QTR_2021-01- 04_N	FR_FRNTP_WS _2021-03-09_N P	FR_SHANDLEY_ WS_2021-03-0 9_NP	FR_LMDW_WS _2021-03-08_N P	----
Client sampling date / time					08-Mar-2021 14:00	08-Mar-2021 14:30	08-Mar-2021 13:03	08-Mar-2021 13:30	----
Analyte	CAS Number	Method	LOR	Unit	CG2100305-001	CG2100305-002	CG2100305-003	CG2100305-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	2.5	23.4	13.4	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	160	230	530	450	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	160	230	530	450	----
conductivity	----	E100	2.0	µS/cm	662	1120	1540	715	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	410	729	1240	421	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	449	433	423	433	----
pH	----	E108	0.10	pH units	8.14	7.64	7.71	7.56	----
solids, total dissolved [TDS]	----	E162	10	mg/L	490 <sup>DLHC</sup>	886 <sup>DLHC</sup>	1340 <sup>DLHC</sup>	421 <sup>DLHC</sup>	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	2.6	10.0	88.7	----
turbidity	----	E121	0.10	NTU	0.15	1.88	9.56	34.5	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	196	281	646	549	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0783	0.252	7.12 <sup>DLM</sup>	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.96 <sup>DLHC</sup>	3.89 <sup>DLHC</sup>	2.19 <sup>DLHC</sup>	0.20	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.192 <sup>DLHC</sup>	0.191 <sup>DLHC</sup>	0.342 <sup>DLHC</sup>	0.506	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.569	<0.050	0.564	7.99 <sup>DLHC</sup>	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	5.69 <sup>DLHC</sup>	26.7 <sup>DLHC</sup>	1.53 <sup>DLHC</sup>	0.0401	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0085 <sup>DLHC</sup>	0.0453 <sup>DLHC</sup>	0.0152 <sup>DLHC</sup>	0.0025	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0024	0.0018	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0043	0.0080	0.0417	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	210 <sup>DLHC</sup>	354 <sup>DLHC</sup>	521 <sup>DLHC</sup>	1.68	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.60	0.80	0.64	<0.50	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.60	0.95	0.95	3.21	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_POTWELLS_QTR_2021-01-04_N	FR_FRNTP_WS_2021-03-09_N_P	FR_SHANDLEY_WS_2021-03-09_NP	FR_LMDW_WS_2021-03-08_N_P	----
Client sampling date / time					08-Mar-2021 14:00	08-Mar-2021 14:30	08-Mar-2021 13:03	08-Mar-2021 13:30	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100305-001	CG2100305-002	CG2100305-003	CG2100305-004	-----	
					Result	Result	Result	Result	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	8.01	14.0	21.6	9.06	----	
cation sum	----	EC101	0.10	meq/L	8.24	14.8	25.3	9.60	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	103	106	117	106	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.42	2.78	7.89	2.89	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	----	0.0205	0.0298	1.07	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	----	0.00042	0.00040	0.00016	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	----	0.00013	0.00045	0.00037	----	
barium, total	7440-39-3	E420	0.00010	mg/L	----	0.118	0.0279	3.58	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	----	<0.020	<0.020	0.042	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	----	<0.000050	<0.000050	<0.000050	----	
boron, total	7440-42-8	E420	0.010	mg/L	----	0.015	0.058	0.120	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	----	0.0858	0.621	0.0977	----	
calcium, total	7440-70-2	E420	0.050	mg/L	----	149	215	105	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	----	0.00011	<0.00010	0.00189	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	----	0.59	13.6	0.34	----	
copper, total	7440-50-8	E420	0.00050	mg/L	----	<0.00050	<0.00050	0.00131	----	
iron, total	7439-89-6	E420	0.010	mg/L	----	0.022	0.332	4.21	----	
lead, total	7439-92-1	E420	0.000050	mg/L	----	<0.000050	0.000155	0.00142	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	----	0.0792	0.116	0.260	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	----	71.8	140	23.8	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	----	0.0176	0.670	0.162	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	----	0.00055	0.00082	<0.0040 <sup>DLM</sup>	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	----	0.00245	0.00221	0.000490	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	----	0.00909	0.0418	0.00228	----	
potassium, total	7440-09-7	E420	0.050	mg/L	----	2.91	7.10	19.5	----	
selenium, total	7782-49-2	E420	0.050	µg/L	----	78.7	2.71	0.126	----	
silicon, total	7440-21-3	E420	0.10	mg/L	----	2.15	3.85	6.11	----	
silver, total	7440-22-4	E420	0.000010	mg/L	----	<0.000010	<0.000010	0.000097	----	
sodium, total	17341-25-2	E420	0.050	mg/L	----	3.68	5.42	2.58	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_POTWELLS_QTR_2021-01-04_N	FR_FRNTP_WS_2021-03-09_N_P	FR_SHANDLEY_WS_2021-03-09_NP	FR_LMDW_WS_2021-03-08_N_P	----
Client sampling date / time					08-Mar-2021 14:00	08-Mar-2021 14:30	08-Mar-2021 13:03	08-Mar-2021 13:30	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100305-001	CG2100305-002	CG2100305-003	CG2100305-004	-----	
					Result	Result	Result	Result	----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	----	0.245	0.447	0.270	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	----	139	204	0.75	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	----	0.000011	0.000093	0.000018	----	
tin, total	7440-31-5	E420	0.00010	mg/L	----	<0.00010	<0.00010	0.00013	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	----	0.00046	0.00061	0.0161	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	----	0.00486	0.00828	0.000305	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	----	<0.00050	<0.00050	0.00124	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	----	0.0039	0.0316	0.0131	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0011	<0.0010	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00042	0.00044	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00010	0.00041	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0892	0.104	0.0240	3.44	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.015	0.060	0.122	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0114	0.0731	0.579	<0.0050	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	106	176	256	128	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.56	13.8	0.15	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00052	<0.00020	0.00022	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0.087	1.06	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000059	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0096	0.0848	0.133	0.307	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	35.2	70.4	146	24.6	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00019	0.0155	0.652	0.102	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000624	0.00230	0.00233	0.000276	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00914	0.0424	0.00105	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.691	2.83	7.68	21.1	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_POTWELLS_QTR_2021-01-04_N	FR_FRNTP_WS_2021-03-09_N_P	FR_SHANDLEY_WS_2021-03-09_NP	FR_LMDW_WS_2021-03-08_N_P	----
Client sampling date / time					08-Mar-2021 14:00	08-Mar-2021 14:30	08-Mar-2021 13:03	08-Mar-2021 13:30	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100305-001	CG2100305-002	CG2100305-003	CG2100305-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	37.6	82.1	3.57	<0.050	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.44	1.91	3.69	2.99	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.767	3.40	5.74	2.38	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.166	0.235	0.456	0.262	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	73.7	127	206	0.65	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000012	0.000100	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00133	0.00459	0.00850	0.000083	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0037	0.0042	0.0310	0.0028	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100344**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00741392  
**C-O-C number** : 3/11/2021  
**Sampler** : Britt Anderson  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 12-Mar-2021 08:50  
**Date Analysis Commenced** : 13-Mar-2021  
**Issue Date** : 14-Sep-2021 16:29

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebeccah Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-02-A_QT R_2021-01-04_ N	FR_09-02-B_QT R_2021-01-04_ N	FR_MW-SK1B_ QTR_2021-01-0 4_N	----	----
Client sampling date / time					11-Mar-2021 13:33	11-Mar-2021 14:03	11-Mar-2021 12:50	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100344-001 Result	CG2100344-002 Result	CG2100344-003 Result	----- ---	----- ---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	6.1	3.1	5.3	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	250	236	288	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	250	236	288	----	----	
conductivity	----	E100	2.0	µS/cm	1240	1110	965	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	756	653	571	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	329	340	296	----	----	
pH	----	E108	0.10	pH units	8.02	8.04	7.97	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	941 <sup>DLHC</sup>	848 <sup>DLHC</sup>	664 <sup>DLHC</sup>	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	24.8	12.8	1.0	----	----	
turbidity	----	E121	0.10	NTU	15.4	3.00	0.74	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	304	287	352	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0050	0.0244	<0.0050	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.08 <sup>DLHC</sup>	3.64 <sup>DLHC</sup>	5.13 <sup>DLHC</sup>	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.183 <sup>DLHC</sup>	0.178 <sup>DLHC</sup>	0.137 <sup>DLHC</sup>	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	<0.050	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	23.2 <sup>DLHC</sup>	22.4 <sup>DLHC</sup>	7.49 <sup>DLHC</sup>	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	0.108 <sup>DLHC</sup>	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0024	0.0017	<0.0010	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0318	0.0037	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	438 <sup>DLHC</sup>	343 <sup>DLHC</sup>	287 <sup>DLHC</sup>	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	<0.50	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	<0.50	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-02-A_QT R_2021-01-04_ N	FR_09-02-B_QT R_2021-01-04_ N	FR_MW-SK1B_ QTR_2021-01-0 4_N	----	----
Client sampling date / time					11-Mar-2021 13:33	11-Mar-2021 14:03	11-Mar-2021 12:50	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100344-001 Result	CG2100344-002 Result	CG2100344-003 Result	----- ----	----- ----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	15.9	13.6	12.4	----	----	
cation sum	----	EC101	0.10	meq/L	15.3	13.2	11.6	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.2	97.0	93.5	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.92	1.49	3.33	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.310	0.0312	0.0058	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00020	0.00010	0.00043	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00020	<0.00010	0.00019	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.177	0.185	0.0389	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0.014	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0618	0.0281	0.0417	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	151	139	146	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00071	0.00013	<0.00010	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.20	0.11	1.12	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00080	<0.00050	<0.00050	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.385	0.020	0.088	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000202	<0.000050	<0.000050	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0524	0.0393	0.0114	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	75.4	61.7	47.8	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0181	0.00117	0.518	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00179	0.000936	0.000404	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00081	<0.00050	0.00394	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.93	1.95	1.21	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	86.5	58.6	7.79	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.21	1.91	3.05	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	3.21	2.94	4.86	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.226	0.226	0.264	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-02-A_QT R_2021-01-04_ N	FR_09-02-B_QT R_2021-01-04_ N	FR_MW-SK1B_ QTR_2021-01-0 4_N	----	----
Client sampling date / time					11-Mar-2021 13:33	11-Mar-2021 14:03	11-Mar-2021 12:50	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100344-001 Result	CG2100344-002 Result	CG2100344-003 Result	----- ----	----- ----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	146	118	91.6	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0.000019	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00870 <sup>DLM</sup>	0.00081	<0.00030	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00464	0.00376	0.00514	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00135	<0.00050	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0036	<0.0030	0.0036	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0055	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00020	0.00012	0.00043	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00013	0.00012	0.00017	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.154	0.176	0.0360	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0.013	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0302	0.0224	0.0371	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	166	152	152	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00010	0.00015	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.11	1.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00080	0.00229 <sup>DTC</sup>	0.00140 <sup>DTC</sup>	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	0.000072	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0545	0.0412	0.0113	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	82.9	66.4	46.5	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00083	0.00038	0.509	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00197	0.00102	0.000436	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00050	0.00390	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.96	2.00	1.23	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	114	80.8	10.9	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-02-A_QT R_2021-01-04_ N	FR_09-02-B_QT R_2021-01-04_ N	FR_MW-SK1B_ QTR_2021-01-0 4_N	----	----
Client sampling date / time					11-Mar-2021 13:33	11-Mar-2021 14:03	11-Mar-2021 12:50	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100344-001 Result	CG2100344-002 Result	CG2100344-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.76	1.99	3.34	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.28	2.87	4.55	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.234	0.226	0.248	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	167	132	104	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0.000018	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00465	0.00369	0.00483	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0021	0.0034	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.





## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100446**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00741392  
**C-O-C number** : 3/18/2021  
**Sampler** : Britt Anderson  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 19-Mar-2021 09:05  
**Date Analysis Commenced** : 19-Mar-2021  
**Issue Date** : 14-Sep-2021 16:31

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

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## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
James Diacon	Laboratory Analyst	Metals, Calgary, Alberta
Jeanie Mark	Laboratory Analyst	Organics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_LMP1_WEK_2021-03-15_N	FR_MW-SK1A_QTR_2021-01-04_N	FR_SCCAT_WEK_2021-03-15_N	FR_CIL_MON_2021-03-01_N	FR_SCOUTDS_WEK_2021-03-15_N
Client sampling date / time					17-Mar-2021 11:15	17-Mar-2021 11:40	17-Mar-2021 12:36	17-Mar-2021 14:00	17-Mar-2021 12:58	
Analyte	CAS Number	Method	LOR	Unit	CG2100446-001	CG2100446-002	CG2100446-003	CG2100446-004	CG2100446-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	---	19.6	---	5.9	<2.0	
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	---	358	---	134	200	
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	---	<1.0	---	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	---	<1.0	---	<1.0	<1.0	
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	---	358	---	134	200	
conductivity	---	E100	2.0	µS/cm	---	1830	---	890	974	
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	---	1160	---	352	572	
oxidation-reduction potential [ORP]	---	E125	0.10	mV	---	448	---	442	464	
pH	---	E108	0.10	pH units	---	7.38	---	7.70	8.07	
solids, total dissolved [TDS]	---	E162	10	mg/L	---	1440 <sup>DLHC</sup>	---	526 <sup>DLHC</sup>	739 <sup>DLHC</sup>	
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	7.0	<1.0	3.6	93.7	10.4	
turbidity	---	E121	0.10	NTU	12.6	<0.10	4.73	69.0	10.0	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	---	436	---	163	244	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	---	<1.0	---	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	---	<1.0	---	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	---	<0.0050	---	15.3 <sup>DLM</sup>	0.0551	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	---	<0.250 <sup>DLHC</sup>	---	0.417 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	---	2.58 <sup>DLHC</sup>	---	67.9 <sup>DLHC</sup>	2.92 <sup>DLHC</sup>	
fluoride	16984-48-8	E235.F	0.020	mg/L	---	0.106 <sup>DLHC</sup>	---	0.220 <sup>DLHC</sup>	0.189 <sup>DLHC</sup>	
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	---	<0.050	---	24.5 <sup>DLHC</sup>	0.162	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	---	72.7 <sup>DLHC</sup>	---	21.2 <sup>DLHC</sup>	18.1 <sup>DLHC</sup>	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	---	<0.0050 <sup>DLHC</sup>	---	0.128 <sup>DLHC</sup>	0.0358 <sup>DLHC</sup>	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	---	0.0016	---	0.0366 <sup>RRV</sup>	0.0028	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	---	<0.0020	---	0.155 <sup>DLHC</sup>	0.0133	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	---	549 <sup>DLHC</sup>	---	165 <sup>DLHC</sup>	327 <sup>DLHC</sup>	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	---	0.87	---	---	2.35	
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	---	<0.50	---	7.02	2.61	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_LMP1_WEK_2021-03-15_N	FR_MW-SK1A_QTR_2021-01-04_N	FR_SCCAT_WEK_2021-03-15_N	FR_CIL_MON_2021-03-01_N	FR_SCOUTDS_WEK_2021-03-15_N
Client sampling date / time					17-Mar-2021 11:15	17-Mar-2021 11:40	17-Mar-2021 12:36	17-Mar-2021 14:00	17-Mar-2021 12:58	
Analyte	CAS Number	Method	LOR	Unit	CG2100446-001	CG2100446-002	CG2100446-003	CG2100446-004	CG2100446-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	----	23.8	----	----	12.2	
cation sum	----	EC101	0.10	meq/L	----	23.6	----	----	11.6	
ion balance (cations/anions ratio)	----	EC101	0.010	%	----	99.2	----	----	95.1	
ion balance (cation-anion difference)	----	EC101	0.010	%	----	0.422	----	----	2.52	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	----	----	----	----	0.163	
antimony, total	7440-36-0	E420	0.00010	mg/L	----	----	----	----	0.00045	
arsenic, total	7440-38-2	E420	0.00010	mg/L	----	----	----	----	0.00026	
barium, total	7440-39-3	E420	0.00010	mg/L	----	----	----	----	0.0804	
beryllium, total	7440-41-7	E420	0.020	µg/L	----	----	----	----	<0.020	
bismuth, total	7440-69-9	E420	0.000050	mg/L	----	----	----	----	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	----	----	----	----	0.012	
cadmium, total	7440-43-9	E420	0.0050	µg/L	----	----	----	----	0.140	
calcium, total	7440-70-2	E420	0.050	mg/L	----	----	----	----	128	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	----	----	----	----	0.00040	
cobalt, total	7440-48-4	E420	0.10	µg/L	----	----	----	----	0.79	
copper, total	7440-50-8	E420	0.00050	mg/L	----	----	----	----	0.00090	
iron, total	7439-89-6	E420	0.010	mg/L	----	----	----	----	0.220	
lead, total	7439-92-1	E420	0.000050	mg/L	----	----	----	----	0.000176	
lithium, total	7439-93-2	E420	0.0010	mg/L	----	----	----	----	0.0520	
magnesium, total	7439-95-4	E420	0.0050	mg/L	----	----	----	----	65.1	
manganese, total	7439-96-5	E420	0.00010	mg/L	----	----	----	----	0.0258	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	----	----	----	----	0.00220 <sup>DLM</sup>	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	----	----	----	----	0.00262	
nickel, total	7440-02-0	E420	0.00050	mg/L	----	----	----	----	0.0119	
potassium, total	7440-09-7	E420	0.050	mg/L	----	----	----	----	2.56	
selenium, total	7782-49-2	E420	0.050	µg/L	----	----	----	----	79.9	
silicon, total	7440-21-3	E420	0.10	mg/L	----	----	----	----	2.55	
silver, total	7440-22-4	E420	0.000010	mg/L	----	----	----	----	0.000010	
sodium, total	17341-25-2	E420	0.050	mg/L	----	----	----	----	2.73	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_LMP1_WEK_2021-03-15_N	FR_MW-SK1A_QTR_2021-01-04_N	FR_SCCAT_WEK_2021-03-15_N	FR_CIL_MON_2021-03-01_N	FR_SCOUTDS_WEK_2021-03-15_N
Client sampling date / time					17-Mar-2021 11:15	17-Mar-2021 11:40	17-Mar-2021 12:36	17-Mar-2021 14:00	17-Mar-2021 12:58	
Analyte	CAS Number	Method	LOR	Unit	CG2100446-001	CG2100446-002	CG2100446-003	CG2100446-004	CG2100446-005	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	---	---	---	---	0.172	
sulfur, total	7704-34-9	E420	0.50	mg/L	---	---	---	---	128	
thallium, total	7440-28-0	E420	0.000010	mg/L	---	---	---	---	0.000021	
tin, total	7440-31-5	E420	0.00010	mg/L	---	---	---	---	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	---	---	---	---	<0.00270 <sup>DLM</sup>	
uranium, total	7440-61-1	E420	0.000010	mg/L	---	---	---	---	0.00378	
vanadium, total	7440-62-2	E420	0.00050	mg/L	---	---	---	---	0.00124	
zinc, total	7440-66-6	E420	0.0030	mg/L	---	---	---	---	0.0083	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	---	<0.0010	---	---	0.0063	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	---	0.00011	---	---	0.00039	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	---	<0.00010	---	---	0.00016	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	---	0.0739	---	---	0.0757	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	---	<0.020	---	---	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	---	<0.000050	---	---	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	---	0.018	---	---	0.011	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	---	0.0494	---	---	0.0983	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	---	269	---	90.5	124	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	---	0.00011	---	---	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	---	0.16	---	---	0.59	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	---	0.00199	---	---	0.00057	
iron, dissolved	7439-89-6	E421	0.010	mg/L	---	<0.010	---	---	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	---	<0.000050	---	---	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	---	0.0753	---	---	0.0508	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	---	119	---	30.5	63.8	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	---	0.00016	---	---	0.0149	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	---	<0.0000050	---	---	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	---	0.000412	---	---	0.00256	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	---	<0.00050	---	---	0.0107	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	---	2.92	---	2.42	2.41	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_LMP1_WEK_2021-03-15_N	FR_MW-SK1A_QTR_2021-01-04_N	FR_SCCAT_WEK_2021-03-15_N	FR_CIL_MON_2021-03-01_N	FR_SCOUDDS_WEK_2021-03-15_N
Client sampling date / time					17-Mar-2021 11:15	17-Mar-2021 11:40	17-Mar-2021 12:36	17-Mar-2021 14:00	17-Mar-2021 12:58	
Analyte	CAS Number	Method	LOR	Unit	CG2100446-001	CG2100446-002	CG2100446-003	CG2100446-004	CG2100446-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	----	272	----	----	84.1	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	----	3.11	----	----	2.13	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	----	<0.000010	----	----	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	----	6.21	----	33.9	2.60	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	----	0.264	----	----	0.166	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	----	216	----	----	120	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	----	<0.000010	----	----	0.000013	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	----	<0.00010	----	----	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	----	<0.00030	----	----	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	----	0.00630	----	----	0.00385	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	----	<0.00050	----	----	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	----	0.0032	----	----	0.0062	
dissolved mercury filtration location	----	EP509	-	-	----	Field	----	----	Field	
dissolved metals filtration location	----	EP421	-	-	----	Field	----	Laboratory	Field	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	----	----	----	<0.25	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	----	----	----	2.14	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	----	----	----	2.14	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	----	----	----	1.82	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%	----	----	----	86.3	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.









## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	<i>Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.</i>
DLHC	<i>Detection Limit Raised: Dilution required due to high concentration of test analyte(s).</i>



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					FR_KB-3A_202 1-03-24	FR_KB-3B_202 1-03-24	----	----	----
Client sampling date / time					24-Mar-2021 10:30	24-Mar-2021 09:40	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100529-001 Result	CG2100529-002 Result	-----	-----	-----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	16.2	14.8	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	399	388	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	399	388	----	----	----
conductivity	----	E100	2.0	µS/cm	1970	2200	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1210	1340	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	436	411	----	----	----
pH	----	E108	0.10	pH units	7.74	7.76	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	1620 <sup>DLHC</sup>	1810 <sup>DLHC</sup>	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.6	5.2	----	----	----
turbidity	----	E121	0.10	NTU	0.63	1.38	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	486	473	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0065	0.194	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.86 <sup>DLHC</sup>	2.59 <sup>DLHC</sup>	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLHC</sup>	<0.100 <sup>DLHC</sup>	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	71.4 <sup>DLHC</sup>	88.0 <sup>DLHC</sup>	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0118 <sup>DLHC</sup>	0.0055 <sup>DLHC</sup>	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0012	0.0011	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0028	0.0039	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	591 <sup>DLHC</sup>	672 <sup>DLHC</sup>	----	----	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	1.04	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.80	1.36	----	----	----
<b>Ion Balance</b>									



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-3A_202 1-03-24	FR_KB-3B_202 1-03-24	----	----	----
Client sampling date / time					24-Mar-2021 10:30	24-Mar-2021 09:40	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2100529-001	CG2100529-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	25.4	28.1	---	---	---	
cation sum	----	EC101	0.10	meq/L	24.4	27.2	---	---	---	
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.1	96.8	---	---	---	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.01	1.63	---	---	---	
<b>Total Metals</b>										
mercury, total	7439-97-6	E508	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	0.0229 <sup>DLDS</sup>	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0583 <sup>DLDS</sup>	0.0711 <sup>DLDS</sup>	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.100 <sup>DLDS</sup>	<0.100 <sup>DLDS</sup>	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000250 <sup>DLDS</sup>	<0.000250 <sup>DLDS</sup>	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.050 <sup>DLDS</sup>	<0.050 <sup>DLDS</sup>	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0440 <sup>DLDS</sup>	0.0534 <sup>DLDS</sup>	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	288 <sup>DLDS</sup>	304 <sup>DLDS</sup>	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.88 <sup>DLDS</sup>	<0.50 <sup>DLDS</sup>	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00100 <sup>DLDS</sup>	<0.00100 <sup>DLDS</sup>	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.050 <sup>DLDS</sup>	<0.050 <sup>DLDS</sup>	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000250 <sup>DLDS</sup>	<0.000250 <sup>DLDS</sup>	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0447 <sup>DLDS</sup>	0.0926 <sup>DLDS</sup>	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	119 <sup>DLDS</sup>	142 <sup>DLDS</sup>	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	0.00154 <sup>DLDS</sup>	---	---	---	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000269 <sup>DLDS</sup>	0.000456 <sup>DLDS</sup>	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00250 <sup>DLDS</sup>	<0.00250 <sup>DLDS</sup>	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.97 <sup>DLDS</sup>	3.12 <sup>DLDS</sup>	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	203 <sup>DLDS</sup>	269 <sup>DLDS</sup>	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.03 <sup>DLDS</sup>	2.49 <sup>DLDS</sup>	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000050 <sup>DLDS</sup>	<0.000050 <sup>DLDS</sup>	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-3A_202 1-03-24	FR_KB-3B_202 1-03-24	----	----	----
Client sampling date / time					24-Mar-2021 10:30	24-Mar-2021 09:40	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100529-001	CG2100529-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.14 <sup>DLDS</sup>	5.25 <sup>DLDS</sup>	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.332 <sup>DLDS</sup>	0.309 <sup>DLDS</sup>	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	189 <sup>DLDS</sup>	218 <sup>DLDS</sup>	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000050 <sup>DLDS</sup>	<0.000050 <sup>DLDS</sup>	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00150 <sup>DLDS</sup>	<0.00150 <sup>DLDS</sup>	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00624 <sup>DLDS</sup>	0.00956 <sup>DLDS</sup>	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00250 <sup>DLDS</sup>	<0.00250 <sup>DLDS</sup>	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100083**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00741392  
**C-O-C number** : 1/27/2021  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Page** : 1 of 11  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 28-Jan-2021 08:50  
**Date Analysis Commenced** : 28-Jan-2021  
**Issue Date** : 14-Sep-2021 16:23

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

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## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Amy Lazure	Analyst	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-04-A_QT R_2021-01-04_ N	FR_09-04-B_QT R_2021-01-04_ N	FR_TT43_QTR_ 2021-01-04_N	FR_SHANDLEY_ WS_2021-01-2 7_NP	FR_LP1_WS_2 021-01-27_N
Client sampling date / time					27-Jan-2021 00:50	27-Jan-2021 11:40	27-Jan-2021 13:55	27-Jan-2021 08:00	27-Jan-2021 08:30	
Analyte	CAS Number	Method	LOR	Unit	CG2100083-001 Result	CG2100083-002 Result	CG2100083-003 Result	CG2100083-004 Result	CG2100083-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	8.5	9.2	29.2	17.8	7.2	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	371	362	352	459	396	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	371	362	352	459	396	
conductivity	----	E100	2.0	µS/cm	1180	1190	2250	1400	1340	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	750	786	1550	1000	960	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	331	352	384	333	374	
pH	----	E108	0.10	pH units	8.07	7.98	7.67	7.85	8.05	
solids, total dissolved [TDS]	----	E162	10	mg/L	876 <sup>DLHC</sup>	916 <sup>DLHC</sup>	1930 <sup>DLHC</sup>	1170 <sup>DLHC</sup>	1070 <sup>DLHC</sup>	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	33.9	22.3	5.7	<1.0	
turbidity	----	E121	0.10	NTU	<0.10	7.92	13.3	3.41	1.08	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	453	441	430	559	483	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0076	0.0773	0.0475	0.625	0.482	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	7.63 <sup>DLHC</sup>	8.30 <sup>DLHC</sup>	2.09 <sup>DLHC</sup>	1.98 <sup>DLHC</sup>	1.97 <sup>DLHC</sup>	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.261 <sup>DLHC</sup>	0.232 <sup>DLHC</sup>	0.146 <sup>DLHC</sup>	0.261 <sup>DLHC</sup>	0.223 <sup>DLHC</sup>	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.073	<0.050 <sup>TKNI</sup>	0.506 <sup>TKNI</sup>	0.928	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0250 <sup>DLHC</sup>	0.106 <sup>DLHC</sup>	94.8 <sup>DLHC</sup>	5.98 <sup>DLHC</sup>	8.54 <sup>DLHC</sup>	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	0.0082 <sup>DLHC</sup>	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0041	0.0042	0.0021	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0654	0.0238	0.0029	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	375 <sup>DLHC</sup>	386 <sup>DLHC</sup>	770 <sup>DLHC</sup>	427 <sup>DLHC</sup>	444 <sup>DLHC</sup>	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	1.94	1.57	0.60	<0.50	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	1.99	2.18	2.36	0.55	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-04-A_QT R_2021-01-04_ N	FR_09-04-B_QT R_2021-01-04_ N	FR_TT43_QTR_ 2021-01-04_N	FR_SHANDLEY_ WS_2021-01-2 7_NP	FR_LP1_WS_2 021-01-27_N
Client sampling date / time					27-Jan-2021 00:50	27-Jan-2021 11:40	27-Jan-2021 13:55	27-Jan-2021 08:00	27-Jan-2021 08:30	
Analyte	CAS Number	Method	LOR	Unit	CG2100083-001 Result	CG2100083-002 Result	CG2100083-003 Result	CG2100083-004 Result	CG2100083-005 Result	
<b>Ion Balance</b>										
ion balance (cations/anions ratio)	----	EC101	0.010	%	101	104	105	110	110	
anion sum	----	EC101	0.10	meq/L	15.4	15.5	29.9	18.6	17.8	
cation sum	----	EC101	0.10	meq/L	15.5	16.2	31.4	20.4	19.5	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.324	2.21	2.45	4.62	4.56	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	----	----	----	0.0444	0.0221	
antimony, total	7440-36-0	E420	0.00010	mg/L	----	----	----	0.00063	0.00076	
arsenic, total	7440-38-2	E420	0.00010	mg/L	----	----	----	0.00020	0.00018	
barium, total	7440-39-3	E420	0.00010	mg/L	----	----	----	0.0267	0.0281	
beryllium, total	7440-41-7	E420	0.020	µg/L	----	----	----	<0.020	<0.020	
bismuth, total	7440-69-9	E420	0.000050	mg/L	----	----	----	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	----	----	----	0.046	0.048	
cadmium, total	7440-43-9	E420	0.0050	µg/L	----	----	----	0.288	0.0180	
calcium, total	7440-70-2	E420	0.050	mg/L	----	----	----	174	169	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	----	----	----	0.00101	0.00015	
cobalt, total	7440-48-4	E420	0.10	µg/L	----	----	----	6.74	4.76	
copper, total	7440-50-8	E420	0.00050	mg/L	----	----	----	0.00053	<0.00050	
iron, total	7439-89-6	E420	0.010	mg/L	----	----	----	0.064	0.023	
lead, total	7439-92-1	E420	0.000050	mg/L	----	----	----	0.000076	<0.000050	
lithium, total	7439-93-2	E420	0.0010	mg/L	----	----	----	0.111	0.104	
magnesium, total	7439-95-4	E420	0.0050	mg/L	----	----	----	114	116	
manganese, total	7439-96-5	E420	0.00010	mg/L	----	----	----	0.213	0.123	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	----	----	----	0.00076	<0.00050	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	----	----	----	0.00211	0.00262	
nickel, total	7440-02-0	E420	0.00050	mg/L	----	----	----	0.0342	0.0305	
potassium, total	7440-09-7	E420	0.050	mg/L	----	----	----	5.27	5.24	
selenium, total	7782-49-2	E420	0.050	µg/L	----	----	----	6.06	12.1	
silicon, total	7440-21-3	E420	0.10	mg/L	----	----	----	2.61	2.62	
silver, total	7440-22-4	E420	0.000010	mg/L	----	----	----	<0.000010	<0.000010	
sodium, total	17341-25-2	E420	0.050	mg/L	----	----	----	3.88	3.65	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-04-A_QT R_2021-01-04_ N	FR_09-04-B_QT R_2021-01-04_ N	FR_TT43_QTR_ 2021-01-04_N	FR_SHANDLEY_ WS_2021-01-2 7_NP	FR_LP1_WS_2 021-01-27_N
Client sampling date / time					27-Jan-2021 00:50	27-Jan-2021 11:40	27-Jan-2021 13:55	27-Jan-2021 08:00	27-Jan-2021 08:30	
Analyte	CAS Number	Method	LOR	Unit	CG2100083-001 Result	CG2100083-002 Result	CG2100083-003 Result	CG2100083-004 Result	CG2100083-005 Result	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	----	----	----	0.326	0.317	
thallium, total	7440-28-0	E420	0.000010	mg/L	----	----	----	0.000082	0.000084	
tin, total	7440-31-5	E420	0.00010	mg/L	----	----	----	0.00018	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	----	----	----	0.00148	0.00062	
uranium, total	7440-61-1	E420	0.000010	mg/L	----	----	----	0.00674	0.00674	
vanadium, total	7440-62-2	E420	0.00050	mg/L	----	----	----	<0.00050	<0.00050	
zinc, total	7440-66-6	E420	0.0030	mg/L	----	----	----	0.0162	0.0033	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0015	<0.0020 <sup>DLA</sup>	0.0028	0.0013	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	0.00010	0.00042	0.00053	0.00064	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	0.00018	0.00016	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0987	0.0909	0.0943	0.0249	0.0274	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.040 <sup>DLA</sup>	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.030	0.030	0.026	0.040	0.039	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.951	0.901	0.0773	0.290	0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	161	169	371	206	190	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	0.00087	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.98	0.96	<0.20 <sup>DLA</sup>	6.74	4.65	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00083	0.00217	<0.00040 <sup>DLA</sup>	0.00047	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.020 <sup>DLA</sup>	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0962	0.101	0.197	0.116	0.105	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	84.6	88.3	151	119	118	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.36	1.48	<0.00020 <sup>DLA</sup>	0.216	0.120	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00186	0.00174	0.00187	0.00214	0.00262	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00813	0.00905	0.00149	0.0336	0.0288	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.57	5.55	5.17	5.85	5.78	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.115	0.199	338	8.12	16.5	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-04-A_QT R_2021-01-04_ N	FR_09-04-B_QT R_2021-01-04_ N	FR_TT43_QTR_ 2021-01-04_N	FR_SHANDLEY_ WS_2021-01-2 7_NP	FR_LP1_WS_2 021-01-27_N
Client sampling date / time					27-Jan-2021 00:50	27-Jan-2021 11:40	27-Jan-2021 13:55	27-Jan-2021 08:00	27-Jan-2021 08:30	
Analyte	CAS Number	Method	LOR	Unit	CG2100083-001 Result	CG2100083-002 Result	CG2100083-003 Result	CG2100083-004 Result	CG2100083-005 Result	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.10	3.16	1.98	3.09	3.08	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLM</sup>	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.75	7.82	8.23	4.12	3.81	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.248	0.241	0.315	0.348	0.322	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000058	0.000057	<0.000020 <sup>DLA</sup>	0.000074	0.000076	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	0.00011	<0.00020 <sup>DLA</sup>	0.00203 <sup>DTC</sup>	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00700	0.00666	0.0139	0.00701	0.00698	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0044	0.0071	<0.0020 <sup>DLA</sup>	0.0222 <sup>DTC</sup>	0.0019	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MULTIPLAT E_WS_2021-01 -27_NP	----	----	----	----
Client sampling date / time					27-Jan-2021 14:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100083-006	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	201	----	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	2.4	----	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	204	----	----	----	----	
conductivity	----	E100	2.0	µS/cm	1060	----	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	650	----	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	378	----	----	----	----	
pH	----	E108	0.10	pH units	8.30	----	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	804 <sup>DLHC</sup>	----	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	----	----	----	----	
turbidity	----	E121	0.10	NTU	0.41	----	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	246	----	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	1.4	----	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.177	----	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	----	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.48 <sup>DLHC</sup>	----	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.131 <sup>DLHC</sup>	----	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	----	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	26.9 <sup>DLHC</sup>	----	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0140 <sup>DLHC</sup>	----	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0016	----	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	----	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	324 <sup>DLHC</sup>	----	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.57	----	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.51	----	----	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MULTIPLAT E_WS_2021-01 -27_NP	----	----	----	----
Client sampling date / time					27-Jan-2021 14:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100083-006	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
ion balance (cations/anions ratio)	----	EC101	0.010	%	103	----	----	----	----	
anion sum	----	EC101	0.10	meq/L	12.8	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	13.2	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.54	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0100	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00057	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00013	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.109	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.013	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0506	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	128	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.13	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.011	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0697	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	59.3	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00353	----	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00288	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00674	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.42	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	62.6	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	1.73	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	2.12	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MULTIPLAT E_WS_2021-01 -27_NP	----	----	----	----
Client sampling date / time					27-Jan-2021 14:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100083-006	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.222	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00415	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0035	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00051	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.112	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.011	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0571	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	155	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.12	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0757	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	64.0	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00321	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00299	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00670	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.72	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	88.2	----	----	----	----	



**Analytical Results**

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MULTIPLAT E_WS_2021-01 -27_NP	----	----	----	----
Client sampling date / time					27-Jan-2021 14:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100083-006	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.09	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.35	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.243	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00426	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0030	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100088**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 1/28/2021  
**Sampler** : Jared Cayenne  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-Jan-2021 08:50  
**Date Analysis Commenced** : 29-Jan-2021  
**Issue Date** : 14-Sep-2021 16:24

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Amy Lazure	Analyst	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_GCMW-2_Q TR_2021-01-04 _N	FR_GH_WELL4 _QTR_2021-01- 04_N	---	---	---
Client sampling date / time					28-Jan-2021 14:11	28-Jan-2021 12:40	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2100088-001 Result	CG2100088-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	7.1	6.1	---	---	---	
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	232	303	---	---	---	
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	232	303	---	---	---	
conductivity	---	E100	2.0	µS/cm	1580	1330	---	---	---	
hardness (as CaCO3), dissolved	---	EC100	0.60	mg/L	995	829	---	---	---	
oxidation-reduction potential [ORP]	---	E125	0.10	mV	479	457	---	---	---	
pH	---	E108	0.10	pH units	8.02	8.12	---	---	---	
solids, total dissolved [TDS]	---	E162	10	mg/L	1320 <sup>DLHC</sup>	1060 <sup>DLHC</sup>	---	---	---	
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	1.7	<1.0	---	---	---	
turbidity	---	E121	0.10	NTU	0.46	0.30	---	---	---	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	283	370	---	---	---	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0224	0.0531	---	---	---	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	---	---	---	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.04 <sup>DLHC</sup>	1.58 <sup>DLHC</sup>	---	---	---	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.121 <sup>DLHC</sup>	<0.100 <sup>DLHC</sup>	---	---	---	
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	---	---	---	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	57.2 <sup>DLHC</sup>	48.0 <sup>DLHC</sup>	---	---	---	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0065 <sup>DLHC</sup>	0.0267 <sup>DLHC</sup>	---	---	---	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0020	0.0010	---	---	---	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	---	---	---	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	557 <sup>DLHC</sup>	350 <sup>DLHC</sup>	---	---	---	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	1.09 <sup>DTC</sup>	1.53	---	---	---	
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	0.91 <sup>DTC</sup>	3.26	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_GCMW-2_Q TR_2021-01-04 _N	FR_GH_WELL4 _QTR_2021-01- 04_N	---	---	---
Client sampling date / time					28-Jan-2021 14:11	28-Jan-2021 12:40	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2100088-001 Result	CG2100088-002 Result	----- ---	----- ---	----- ---	
<b>Ion Balance</b>										
ion balance (cations/anions ratio)	----	EC101	0.010	%	99.0	100	----	----	----	
anion sum	----	EC101	0.10	meq/L	20.4	16.8	----	----	----	
cation sum	----	EC101	0.10	meq/L	20.2	16.8	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.493	<0.010	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00041	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0717	0.102	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.019	0.012	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0625	0.0478	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	222	193	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00014	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00033	0.00094	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.012	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.198	0.0377	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	107	84.2	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00162	0.00197	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00195	0.000360	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00324	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.84	1.86	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	145	153	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.18	2.98	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.24	3.60	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_GCMW-2_Q TR_2021-01-04 _N	FR_GH_WELL4 _QTR_2021-01- 04_N	----	----	----
Client sampling date / time					28-Jan-2021 14:11	28-Jan-2021 12:40	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100088-001 Result	CG2100088-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.350	0.254	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	195	124	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00873	0.00437	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0028	0.0206	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101072**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : **Scott Roughead**  
**Address** : **PO BOX 100**  
**ELKFORD BC Canada V0B 1H0**  
**Telephone** : **----**  
**Project** : **FORDING RIVER OPERATION**  
**PO** : **VPO00741392**  
**C-O-C number** : **4/26/2021**  
**Sampler** : **Britt Anderson**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **7**  
**No. of samples analysed** : **7**

**Page** : **1 of 10**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
**Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **27-Apr-2021 09:00**  
**Date Analysis Commenced** : **30-Apr-2021**  
**Issue Date** : **10-Nov-2021 12:19**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
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## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

CG2101072-001 to -007 : All samples were analyzed passed hold time for Nitrite,Nitrate,Turbidity, and Ortho-phosphate.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-04-A_QT R_2021-04-05_ N	FR_09-04-B_QT R_2021-04-05_ N	FR_DC1_QTR_2 021-04-05_N	FR_DC2_QTR_2 021-04-05_N	FR_TRP_QTR_2 021-04-05_N
Client sampling date / time					26-Apr-2021 13:40	26-Apr-2021 11:58	26-Apr-2021 11:36	26-Apr-2021 13:40	26-Apr-2021 12:00	
Analyte	CAS Number	Method	LOR	Unit	CG2101072-001 Result	CG2101072-002 Result	CG2101072-003 Result	CG2101072-004 Result	CG2101072-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	3.9	<2.0	5.2	19.4	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	378	369	375	347	<1.0	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	378	369	375	347	<1.0	
conductivity	----	E100	2.0	µS/cm	1220	1230	1210	2330	<2.0	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	687	707	707	1420	<0.50	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	226	407	402	258	304	
pH	----	E108	0.10	pH units	8.18	8.15	8.17	7.71	5.45	
solids, total dissolved [TDS]	----	E162	10	mg/L	894	846	802	1990	<10	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.7	<1.0	1.0	17.9	<1.0	
turbidity	----	E121	0.10	NTU	<0.10	0.14	<0.10	5.30	<0.10	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	462	450	457	423	<1.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0116	0.0055	0.0092	0.110	0.0279 <sup>RRV</sup>	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	7.99	8.16	8.07	3.18	<0.10	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.299	0.287	0.296	0.160	<0.020	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.062	0.058	<0.050 <sup>TKNI</sup>	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0250 <sup>DLHC</sup>	<0.0250 <sup>DLHC</sup>	0.0642	95.1	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	0.0057	<0.0050 <sup>DLHC</sup>	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	0.0114	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	376	385	379	774	<0.30	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.32	1.60	2.04	1.20	<0.50	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.24	1.22	1.30	1.23	<0.50	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-04-A_QT R_2021-04-05_ N	FR_09-04-B_QT R_2021-04-05_ N	FR_DC1_QTR_2 021-04-05_N	FR_DC2_QTR_2 021-04-05_N	FR_TRP_QTR_2 021-04-05_N
Client sampling date / time					26-Apr-2021 13:40	26-Apr-2021 11:58	26-Apr-2021 11:36	26-Apr-2021 13:40	26-Apr-2021 12:00	
Analyte	CAS Number	Method	LOR	Unit	CG2101072-001 Result	CG2101072-002 Result	CG2101072-003 Result	CG2101072-004 Result	CG2101072-005 Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	15.6	15.6	15.6	29.9	<0.10	
cation sum	----	EC101	0.10	meq/L	14.2	14.6	14.6	28.8	<0.10	
ion balance (cations/anions ratio)	----	EC101	0.010	%	91.0	93.6	93.6	96.3	100	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.70	3.31	3.31	1.87	<0.010	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0025	0.0021	0.0031	0.0012	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00011	0.00013	0.00011	0.00044	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.105	0.109	0.110	0.0952	<0.00010	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.033	0.033	0.036	0.029	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.840	0.804	0.829	0.0694	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	145	151	152	324	<0.050	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.86	0.84	0.90	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00035	0.00118	0.00041	0.00024	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0975	0.0961	0.0984	0.148	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	79.0	80.1	79.6	148	<0.0050	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.34	1.43	1.42	0.00161	<0.00010	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00189	0.00178	0.00195	0.00178	<0.000050	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00814	0.00845	0.00839	0.00195	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.44	5.30	5.66	5.37	<0.050	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.099	0.143	0.118	330	<0.050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.82	2.94	2.86	1.99	<0.050	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.52	7.53	7.60	7.47	<0.050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-04-A_QT R_2021-04-05_ N	FR_09-04-B_QT R_2021-04-05_ N	FR_DC1_QTR_2 021-04-05_N	FR_DC2_QTR_2 021-04-05_N	FR_TRP_QTR_2 021-04-05_N
Client sampling date / time					26-Apr-2021 13:40	26-Apr-2021 11:58	26-Apr-2021 11:36	26-Apr-2021 13:40	26-Apr-2021 12:00	
Analyte	CAS Number	Method	LOR	Unit	CG2101072-001 Result	CG2101072-002 Result	CG2101072-003 Result	CG2101072-004 Result	CG2101072-005 Result	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.235	0.242	0.248	0.300	<0.00020	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	134	138	138	279	<0.50	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000062	0.000060	0.000062	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00090 <sup>DLM</sup>	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00679	0.00648	0.00706	0.0143	<0.000010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0049	0.0059	0.0051	0.0017	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_TT43_QTR_2021-04-05_N	FR_GH_WELL4_QTR_2021-04-05_N	---	---	---
Client sampling date / time					26-Apr-2021 13:40	26-Apr-2021 14:32	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2101072-006 Result	CG2101072-007 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	17.0	2.1	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	345	321	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	345	321	----	----	----	
conductivity	----	E100	2.0	µS/cm	2340	1560	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1420	838	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	345	419	----	----	----	
pH	----	E108	0.10	pH units	7.76	8.12	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	2090	1190	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	5.4	1.8	----	----	----	
turbidity	----	E121	0.10	NTU	0.83	1.05	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	421	391	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0813	0.188	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.25	2.30	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.172	<0.100 <sup>DLHC</sup>	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	95.4	55.5	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	0.321	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0100	0.0026	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	780	403	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.06	1.27	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.87	1.28	----	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_TT43_QTR_2021-04-05_N	FR_GH_WELL4_QTR_2021-04-05_N	----	----	----
Client sampling date / time					26-Apr-2021 13:40	26-Apr-2021 14:32	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101072-006 Result	CG2101072-007 Result	-----	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	30.0	18.8	----	----	----	
cation sum	----	EC101	0.10	meq/L	28.8	16.9	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.0	89.9	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.04	5.32	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0022	0.0017	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00048	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0950	0.0709	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.030	0.012	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0778	0.0577	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	326	202	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00053	0.00877	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.020 <sup>DLA</sup>	0.018	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	0.000060	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.154	0.0352	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	147	80.9	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0122	0.00660	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00186	0.000318	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00195	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.24	1.65	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	316	163	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.06	2.87	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.54	3.49	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_TT43_QTR_2021-04-05_N	FR_GH_WELL4_QTR_2021-04-05_N	----	----	----
Client sampling date / time					26-Apr-2021 13:40	26-Apr-2021 14:32	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101072-006 Result	CG2101072-007 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.313	0.262	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	273	140	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0138	0.00470	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0020 <sup>DLA</sup>	0.140	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



COC ID:	4/26/2021	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Fording River Operation	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Scott Roughead	Lab Contact	Lyudmyla Shvets	Email 1:	david.burroughs@teck.com X X X
Email	scott.roughead@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com	Email 2:	brikt.anderson@teck.com X X X
Address		Address	2559 29 Street NE	Email 3:	scott.roughead@teck.com X X X
				Email 4:	teckcoal@equisonline.com X
	Elkford	Province	BC	City	Calgary
		Country	Canada	Province	AB
		Postal Code	T1Y 7B5	Country	Canada
	-6976	Phone Number	403 407 1794	Email 5:	
				Email 6:	ty.stone@teck.com X X X
				PO number	VPO00741392

Environmental Division  
Calgary  
Work Order Reference  
**CG2101072**



Telephone: +1 403 407 1800

**SAMPLE DETAILS** Filtered: F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED												
								F	N	F	N	F	N	N	N					
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET/HHG-T-CL	TECKCOAL-ROUTINE-VA	EPH	TSS Turbidity	ALS_Package-BOD	ALS_Package-Colour	ALS_Package-PAH	
FR_09-04-A_QTR_2021-04-05_N	FR_09-04-A	WG	NO	4/26/2021	13:40	G	5	1	1	1		1		1						
FR_09-04-B_QTR_2021-04-05_N	FR_09-04-B	WG	NO	4/26/2021	11:58	G	5	1	1	1		1		1						
FR_DC1_QTR_2021-04-05_N	FR_DC1	WG	NO	4/26/2021	11:36	G	5	1	1	1		1		1						
FR_DC2_QTR_2021-04-05_N	FR_DC2	WG	NO	4/27/2021	13:40	G	5	1	1	1		1		1						
FR_TRP_QTR_2021-04-05_N	FR_TRP	WG	NO	4/26/2021	12:00	G	5	1	1	1		1		1						
FR_TT43_QTR_2021-04-05_N	FR_TT43	WG	NO	4/26/2021	13:40	G	5	1	1	1		1		1						
FR_GH_WELL4_QTR_2021-04-05_N	FR_GH_WELL4	WG	NO	4/26/2021	14:32	G	5	1	1	1		1		1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Britt Anderson	April 26, 2021	<i>Dkc</i>	4/27/2021

SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name	Britt Anderson	Mobile #	250-425-5335	
Sampler's Signature	<i>[Signature]</i>	Date/Time	April 26, 2021	

*7c*



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101434**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 5/13/2021  
**Sampler** : Cruz Canlas  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 8  
**No. of samples analysed** : 8

**Page** : 1 of 9  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 15-May-2021 09:30  
**Date Analysis Commenced** : 15-May-2021  
**Issue Date** : 10-Nov-2021 12:27

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-SK1A_ QTR_2021-04-0 5_N	FR_MW-SK1B_ QTR_2021-04-0 5_N	FR_09-02-A_QT R_2021-04-05_ N	FR_09-02-B_QT R_2021-04-05_ N	FR_09-01-A_QT R_2021-04-05_ N
Client sampling date / time					13-May-2021 11:00	13-May-2021 11:30	13-May-2021 01:33	13-May-2021 13:42	13-May-2021 14:33	
Analyte	CAS Number	Method	LOR	Unit	CG2101434-001 Result	CG2101434-002 Result	CG2101434-003 Result	CG2101434-004 Result	CG2101434-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	9.6	3.7	4.3	2.1	6.9	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	328	247	246	199	289	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	328	247	246	199	289	
conductivity	----	E100	2.0	µS/cm	1980	980	1140	1020	1650	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1180	571	650	565	977	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	480	399	431	447	454	
pH	----	E108	0.10	pH units	8.06	7.99	8.04	8.17	8.10	
solids, total dissolved [TDS]	----	E162	10	mg/L	1530	749	854	758	1340	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.3	1.5	7.1	5.2	2.3	
turbidity	----	E121	0.10	NTU	0.15	0.60	1.53	2.04	<0.10	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	400	301	300	243	353	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0128	0.0306	0.0077	<0.0050	<0.0050	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.331	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	5.60	4.40	3.22	2.22	2.08	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLHC</sup>	0.103	0.129	0.107	0.105	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	78.3	9.27	21.6	22.7	59.0	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	0.0579	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0023	<0.0010	0.0025	0.0012	0.0011	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0044	<0.0020	0.0060	0.0045	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	636	290	350	317	513	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.06 <sup>DTC</sup>	1.26	1.18	2.47	2.90 <sup>DTC</sup>	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.18 <sup>DTC</sup>	0.85	1.22	1.51	1.36 <sup>DTC</sup>	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-SK1A_QTR_2021-04-05_N	FR_MW-SK1B_QTR_2021-04-05_N	FR_09-02-A_QTR_2021-04-05_N	FR_09-02-B_QTR_2021-04-05_N	FR_09-01-A_QTR_2021-04-05_N
Client sampling date / time					13-May-2021 11:00	13-May-2021 11:30	13-May-2021 01:33	13-May-2021 13:42	13-May-2021 14:33	
Analyte	CAS Number	Method	LOR	Unit	CG2101434-001	CG2101434-002	CG2101434-003	CG2101434-004	CG2101434-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	25.5	11.8	13.8	12.3	20.7	
cation sum	----	EC101	0.10	meq/L	24.0	11.6	13.2	11.5	19.8	
ion balance (cations/anions ratio)	----	EC101	0.010	%	94.1	98.3	95.6	93.5	95.6	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.03	0.855	2.22	3.36	2.22	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00016	0.00038	0.00015	<0.00010	0.00021	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00014	<0.00010	<0.00010	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0731	0.0324	0.105	0.150	0.117	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.019	0.015	0.015	<0.010	0.020	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0544	0.0676	0.0302	0.0179	0.0489	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	273	154	145	129	218	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.96	0.19	<0.10	0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00096	0.00128	<0.00020	0.00024	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	0.000086	0.000052	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0931	0.0114	0.0554	0.0464	0.0893	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	122	45.2	69.8	59.0	105	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00011	0.498	0.00024	<0.00010	<0.00010	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000540	0.000404	0.000638	0.000926	0.000521	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00342	0.00086	<0.00050	0.00088	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.35	1.15	2.76	1.74	3.79	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	270	11.1	67.8	69.1	205	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.45	3.29	2.18	1.74	2.36	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.91	4.57	4.29	3.23	5.40	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-SK1A_QTR_2021-04-05_N	FR_MW-SK1B_QTR_2021-04-05_N	FR_09-02-A_QTR_2021-04-05_N	FR_09-02-B_QTR_2021-04-05_N	FR_09-01-A_QTR_2021-04-05_N
Client sampling date / time					13-May-2021 11:00	13-May-2021 11:30	13-May-2021 01:33	13-May-2021 13:42	13-May-2021 14:33	
Analyte	CAS Number	Method	LOR	Unit	CG2101434-001	CG2101434-002	CG2101434-003	CG2101434-004	CG2101434-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.261	0.245	0.185	0.191	0.264	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	222	98.2	122	106	180	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000017	<0.000010	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00827	0.00441	0.00363	0.00307	0.00583	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0037	0.0037	0.0011	0.0013	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-01-B_QT R_2021-04-05_ N	FR_DC3_QTR_2 021-04-05_N	FR_FLD_QTR_2 021-04-05_N	----	----
Client sampling date / time					13-May-2021 14:33	13-May-2021	13-May-2021	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101434-006 Result	CG2101434-007 Result	CG2101434-008 Result	----- ----	----- ----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	3.6	<2.0	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	150	260	<1.0	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	1.6	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	152	260	1.0	----	----	
conductivity	----	E100	2.0	µS/cm	584	977	<2.0	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	547	568	<0.50	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	430	336	474	----	----	
pH	----	E108	0.10	pH units	8.31	8.06	5.51	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	730	710	<10	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	13.5	2.8	<1.0	----	----	
turbidity	----	E121	0.10	NTU	4.70	0.40	<0.10	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	183	318	<1.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0082	0.0352	<0.0050	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.43	4.46	<0.10	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.155	0.104	<0.020	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	<0.050	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	24.9	9.12	<0.0050	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0053	0.0607	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0026	<0.0010	<0.0010	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0096	<0.0020	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	300	292	<0.30	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.53	1.00	<0.50	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.44	0.90	<0.50	----	----	
<b>Ion Balance</b>										





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-01-B_QT R_2021-04-05_ N	FR_DC3_QTR_2 021-04-05_N	FR_FLD_QTR_2 021-04-05_N	----	----
Client sampling date / time					13-May-2021 14:33	13-May-2021	13-May-2021	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101434-006	CG2101434-007	CG2101434-008	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	11.1	12.1	<0.10	----	----	
cation sum	----	EC101	0.10	meq/L	11.1	11.6	<0.10	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	95.9	100	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	2.11	<0.010	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	<0.0010	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00022	0.00035	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	<0.00010	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.123	0.0327	0.00020 <sup>RRV</sup>	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.014	<0.010	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0218	0.0329	<0.0050	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	120	152	<0.050	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.96	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00111	<0.00020	<0.00020	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0469	0.0113	<0.0010	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	60.1	45.8	0.0069 <sup>RRV</sup>	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00024	0.512	<0.00010	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00176	0.000390	<0.000050	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00339	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.77	1.17	<0.050	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	77.8	10.6	<0.050	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.72	3.26	<0.050	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.82	4.62	<0.050	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-01-B_QT R_2021-04-05_ N	FR_DC3_QTR_2 021-04-05_N	FR_FLD_QTR_2 021-04-05_N	----	----
Client sampling date / time					13-May-2021 14:33	13-May-2021	13-May-2021	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101434-006	CG2101434-007	CG2101434-008	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.172	0.250	<0.00020	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	99.3	97.3	<0.50	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000017	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00346	0.00452	<0.000010	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0031	0.0031	<0.0010	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: **5/13/2021** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD		
Project Manager	Scott Roughead			Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com	X	X	X	
Email	scott.roughead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	britt.anderson@teck.com	X	X	X	
Address				Address	2559 29 Street NE			Email 3:	scott.roughead@teck.com	X	X	X	
City	Elkford		Province	BC		City	Calgary		Email 4:	teckcoal@ecuisonline.com			X
Postal Code			Country	Canada		Postal Code	T1Y 7B5		Email 5:	cruz.canlas@teck.com	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00741392				

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	THI	F	N	F	N	F	N	N	N				
								ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	EPH	TSS Turbidity	ALS Package-BOD	ALS Package-Colour	ALS Package-PAH	
FR_MW-SK1A_QTR_2021-04-05_N	FR_MW_SK1A	WS	NO	5/13/2021	11:00	G	5	1	1	1		1		1						
FR_MW-SK1B_QTR_2021-04-05_N	FR_MW_SK1B	WS	NO	5/13/2021	11:30	G	5	1	1	1		1		1						
FR_09-02-A_QTR_2021-04-05_N	FR_09_02_A	WS	NO	5/13/2021	13:33	G	5	1	1	1		1		1						
FR_09-02-B_QTR_2021-04-05_N	FR_09_02_B	WS	NO	5/13/2021	13:42	G	5	1	1	1		1		1						
FR_09-01-A_QTR_2021-04-05_N	FR_09_01_A	WS	NO	5/13/2021	14:33	G	5	1	1	1		1		1						
FR_09-01-B_QTR_2021-04-05_N	FR_09_01_B	WS	NO	5/13/2021	14:33	G	5	1	1	1		1		1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Cruz Canlas	May 13, 2021	<i>[Signature]</i>	5/15/2021

SERVICE REQUEST (rush - subject to availability)					
Regular (default)	X	Sampler's Name	Cruz Canlas	Mobile #	250-433-6166
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time	May 13, 2021
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

FR-083  
FR-FLD

Environmental Division  
Calgary

Work Order Reference  
**CG2101434**



Telephone: +1 403 407 1800

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>CG2101438</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : <b>Scott Roughead</b> <b>Address</b> : <b>PO BOX 100</b> <b>ELKFORD BC Canada V0B 1H0</b> <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>FORDING RIVER OPERATION</b> <b>PO</b> : <b>VPO00741392</b> <b>C-O-C number</b> : <b>5/14/2021</b> <b>Sampler</b> : <b>Jamie Walsh</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>Teck Coal Master Quote</b> <b>No. of samples received</b> : <b>4</b> <b>No. of samples analysed</b> : <b>4</b>	<b>Page</b> : <b>1 of 6</b>  <b>Laboratory</b> : <b>Calgary - Environmental</b> <b>Account Manager</b> : <b>Justine Buma-a</b> <b>Address</b> : <b>2559 29th Street NE</b> <b>Calgary AB Canada T1Y 7B5</b> <b>Telephone</b> : <b>+1 403 407 1800</b> <b>Date Samples Received</b> : <b>15-May-2021 09:35</b> <b>Date Analysis Commenced</b> : <b>15-May-2021</b> <b>Issue Date</b> : <b>10-Nov-2021 12:31</b>
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lisa Watt	Lab Supervisor - Environmental	Inorganics, Edmonton, Alberta
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					FR_HMW1D_QT R_2021-04-05_ N	FR_HMW1S_QT R_2021-04-05_ N	FR_HMW3_QTR _2021-04-05_N	FR_HMW5_QTR _2021-04-05_N	----
Client sampling date / time					14-May-2021 12:17	14-May-2021 11:52	14-May-2021 10:57	14-May-2021 10:05	----
Analyte	CAS Number	Method	LOR	Unit	CG2101438-001 Result	CG2101438-002 Result	CG2101438-003 Result	CG2101438-004 Result	----- ----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	17.2	13.4	<2.0	<2.0	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	328	313	194	144	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	328	313	194	144	----
conductivity	----	E100	2.0	µS/cm	3110	3040	953	333	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	2730	2600	612	175	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	377	420	370	284	----
pH	----	E108	0.10	pH units	7.83	7.89	8.24	8.23	----
solids, total dissolved [TDS]	----	E162	10	mg/L	4000	3210	873	212	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	5.5	6.7	9.6	1.0	----
turbidity	----	E121	0.10	NTU	1.32	1.26	4.16	0.15	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	400	382	236	176	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0278	0.584 <sup>TKNI</sup>	0.0650	0.0801	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.15	1.95	1.56	1.72	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.169	0.184	0.209	0.436	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050 <sup>TKNI</sup>	<0.050	0.134	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	119	118	13.6	0.0719	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0263	<0.0050	0.0097	0.0011	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0033	<0.0010	0.0031	0.0178	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0045	0.0026	0.0067	0.0149 <sup>DLM</sup>	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1950	1850	353	52.6	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.64 <sup>DTC</sup>	1.40	1.20	0.73	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.14 <sup>DTC</sup>	1.38	1.10	0.59	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW1D_QT R_2021-04-05_ N	FR_HMW1S_QT R_2021-04-05_ N	FR_HMW3_QTR _2021-04-05_N	FR_HMW5_QTR _2021-04-05_N	----
Client sampling date / time					14-May-2021 12:17	14-May-2021 11:52	14-May-2021 10:57	14-May-2021 10:05	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101438-001 Result	CG2101438-002 Result	CG2101438-003 Result	CG2101438-004 Result	----- ----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	55.7	53.2	12.2	4.05	----	
cation sum	----	EC101	0.10	meq/L	54.8	52.4	12.3	3.90	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	98.4	98.5	101	96.3	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.814	0.758	0.408	1.89	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0049	0.0021	0.0013	0.0047	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00035	0.00030	0.00015	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0123	0.0110	0.0427	0.214	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.050	0.044	0.016	0.037	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0974	0.123	0.0482	<0.0050	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	566	522	138	39.3	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	4.64	3.82	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	<0.00040 <sup>DLA</sup>	0.00037	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	<0.010	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0916	0.0904	0.0331	0.172	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	319	316	64.9	18.6	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.764	0.342	0.0890	0.0468	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000668	0.000913	0.000861	<0.000050	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0301	0.0400	0.00165	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	6.77	7.77	2.19	0.731	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	8.96	242	98.0	0.367	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.84	2.37	1.51	2.64	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.36	2.29	1.14	8.84	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW1D_QT R_2021-04-05_ N	FR_HMW1S_QT R_2021-04-05_ N	FR_HMW3_QTR _2021-04-05_N	FR_HMW5_QTR _2021-04-05_N	----
Client sampling date / time					14-May-2021 12:17	14-May-2021 11:52	14-May-2021 10:57	14-May-2021 10:05	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101438-001 Result	CG2101438-002 Result	CG2101438-003 Result	CG2101438-004 Result	----- ----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.332	0.305	0.145	0.399	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	780	741	138	38.6	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0122	0.0120	0.00236	0.000014	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0098	0.0074	0.0039	<0.0010	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: 5/14/2021 TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO								
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD					
Project Manager	Scott Roughhead			Lab Contact	Lyudmyla Shvets			Email 1:	David.burroughs@teck.com	X	X	X				
Email	scott.roughhead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	britt.anderson@teck.com	X	X	X				
Address				Address	2559 29 Street NE			Email 3:	scott.roughhead@teck.com	X	X	X				
City	Elkford		Province	BC		City	Calgary		Province	AB		Email 4:	teckcoal@equisonline.com		X	
Postal Code			Country	Canada		Postal Code	T1Y 7B5		Country	Canada		Email 5:	cruz.carlas@teck.com	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00741392							

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G-Grab C-Comp	# Of Cont.	F	N	F	N	F	N	N	N						
								H2SO4	H2SO4	HCL	NONE	HNO3	HNO3	NONE	Sodium Bisulfate						
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	EPH	TSS Turbidity	ALS_Package-BOD	ALS_Package-Colour	ALS_Package-PAH		
FR_HMW1D_QTR_2021-04-05_N	FR_HMW1D	WS	NO	5/14/2021	12:17	G	5	1	1	1		1		1							
FR_HMW1S_QTR_2021-04-05_N	FR_HMW1S	WS	NO	5/14/2021	11:52	G	5	1	1	1		1		1							
FR_HMW3_QTR_2021-04-05_N	FR_HMW3	WS	NO	5/14/2021	10:57	G	5	1	1	1		1		1							
FR_HMW5_QTR_2021-04-05_N	FR_HMW5	WS	NO	5/14/2021	10:05	G	5	1	1	1		1		1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jamie Walsh	May 14, 2021	<i>[Signature]</i>	15/05/2021 9:35

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	Jaime Walsh
Priority (2-3 business days) - 50% surcharge		Mobile #	250-433-6168
Emergency (1 Business Day) - 100% surcharge		Sampler's Signature	<i>[Signature]</i>
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Date/Time	May 14, 2021

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2101438**



119



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101550**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : **Scott Roughead**  
**Address** : **PO BOX 100**  
**ELKFORD BC Canada V0B 1H0**  
**Telephone** : **----**  
**Project** : **FORDING RIVER OPERATION**  
**PO** : **VPO00741392**  
**C-O-C number** : **5/20/2021**  
**Sampler** : **Cruz Canlas, Cruz Canlas**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **2**  
**No. of samples analysed** : **2**

**Page** : **1 of 6**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
**Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **21-May-2021 08:40**  
**Date Analysis Commenced** : **21-May-2021**  
**Issue Date** : **10-Nov-2021 12:37**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-1B_QT R_2021-04-05_ N	FR_POTWELLS _QTR_2021-04- 05_N	----	----	----
Client sampling date / time					20-May-2021 11:30	20-May-2021 10:10	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101550-001 Result	CG2101550-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	3.1	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	164	141	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	164	141	----	----	----	
conductivity	----	E100	2.0	µS/cm	635	389	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	334	208	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	292	242	----	----	----	
pH	----	E108	0.10	pH units	8.06	7.95	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	446	251	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.2	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	2.24	<0.10	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	201	172	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0143	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.57	0.16	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.171	0.214	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.371	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	12.3	1.93	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0147	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	150	74.6	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.03	0.88	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.02	0.95	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-1B_QT R_2021-04-05_ N	FR_POTWELLS _QTR_2021-04- 05_N	----	----	----
Client sampling date / time					20-May-2021 11:30	20-May-2021 10:10	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101550-001 Result	CG2101550-002 Result	-----	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	7.30	4.52	----	----	----	
cation sum	----	EC101	0.10	meq/L	6.75	4.19	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.5	92.7	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.91	3.79	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0117	0.0011	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00026	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0962	0.0505	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0160	0.0078	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	83.3	53.2	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00016	0.00012	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00048	0.00150	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	0.000080	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0296	0.0057	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	30.5	18.2	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00076	0.00021	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00107	0.000728	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.22	0.610	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	35.4	11.0	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.74	1.43	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.32	0.580	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-1B_QT R_2021-04-05_ N	FR_POTWELLS _QTR_2021-04- 05_N	----	----	----
Client sampling date / time					20-May-2021 11:30	20-May-2021 10:10	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101550-001 Result	CG2101550-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.140	0.0938	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	47.2	22.8	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00032	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00173	0.000783	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0010	0.0068	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



COC ID: 5/20/2021		TURNAROUND TIME:				RUSH:						
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>				<b>OTHER INFO</b>				
Facility Name / Job# Fording River Operation				Lab Name ALS Calgary		Report Format / Distribution				Excel	PDF	EDD
Project Manager Scott Roughead				Lab Contact Lyudmyla Shvets		Email 1:		david.burroughs@teck.com	X	X	X	
Email scott.roughead@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com		Email 2:		britt.anderson@teck.com	X	X	X	
Address				Address 2559 29 Street NE		Email 3:		scott.roughead@teck.com	X	X	X	
City Elkford				City Calgary		Email 4:		teckcoal@equisonline.com			X	
Province BC				Province AB		Email 5:		cruz.carlas@teck.com	X	X	X	
Postal Code				Postal Code T1Y 7B5		Email 6:		jamie.walsh@teck.com	X	X	X	
Country Canada				Country Canada		PO number		VPO00741392				
Phone Number 1-250-433-6976				Phone Number 403 407 1794								

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	EPH	TSS Turbidity	ALS Package-BOD	ALS Package-Colour	ALS Package-PAH
FR_MW-1B_QTR_2021-04-05_N	FR_MW-1B	WG	NO	5/20/2021	11:30	G	5	1	1	1		1		1					
FR_POTWELLS_QTR_2021-04-05_N	FR_POTWELLS	WG	NO	5/20/2021	10:10	G	5	1	1	1		1		1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Cruz Canlas	May 20, 2021		

SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name	Cruz Canlas	Mobile #	250-433-6166	
Sampler's Signature		Date/Time	May 20, 2021	

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2101550**



Telephone: +1 403 407 1800

*Handwritten signatures and initials*

*Handwritten number 5*



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101559**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 5/19/2021  
**Sampler** : Jamie Walsh  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-May-2021 08:35  
**Date Analysis Commenced** : 21-May-2021  
**Issue Date** : 10-Nov-2021 12:42

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
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<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_GCMW-1B_QTR_2021-04-05_N	FR_GCMW-2_QTR_2021-04-05_N	FR_TBSSMW-1_QTR_2021-04-05_N	FR_TBSSMW-2_QTR_2021-04-05_N	FR_HMW2_QTR_2021-04-05_N
Client sampling date / time					20-May-2021 14:33	20-May-2021 13:21	20-May-2021 11:41	20-May-2021 10:50	20-May-2021 08:45	
Analyte	CAS Number	Method	LOR	Unit	CG2101559-001	CG2101559-002	CG2101559-003	CG2101559-004	CG2101559-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	7.5	<2.0	<2.0	23.7	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	383	237	194	154	412	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	26.8	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	410	237	194	154	412	
conductivity	----	E100	2.0	µS/cm	741	1430	347	514	2710	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	56.3	879	162	296	1950	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	281	407	306	486	365	
pH	----	E108	0.10	pH units	8.50	8.13	8.17	8.07	7.91	
solids, total dissolved [TDS]	----	E162	10	mg/L	455	1130	181	332	2490	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	6.6	2.2	1.7	<1.0	15.4	
turbidity	----	E121	0.10	NTU	11.1	0.48	2.05	0.12	6.50	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	468	289	237	188	502	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	16.1	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.279	0.0144	3.40 <sup>RRV</sup>	<0.0050	0.0732 <sup>TKNI</sup>	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.052	<0.250 <sup>DLHC</sup>	<0.050	<0.050	<0.250 <sup>DLHC</sup>	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	19.1	2.44	0.29	0.22	0.81	
fluoride	16984-48-8	E235.F	0.020	mg/L	1.88	0.177	0.420	0.204	0.173	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.344	<0.050	3.31	0.144	<0.050 <sup>TKNI</sup>	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0103	45.2	<0.0050	3.46	47.8	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0010	0.0059	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0053	<0.0010	<0.0010	<0.0010	0.0058	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0273	<0.0020	<0.0020	<0.0020	0.0148	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	7.80	460	10.9	125	1330	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.90	2.28 <sup>DTC,RRV</sup>	1.07	1.13	0.69	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.21	1.08 <sup>DTC</sup>	0.98	0.84	5.20	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_GCMW-1B_QTR_2021-04-05_N	FR_GCMW-2_QTR_2021-04-05_N	FR_TBSSMW-1_QTR_2021-04-05_N	FR_TBSSMW-2_QTR_2021-04-05_N	FR_HMW2_QTR_2021-04-05_N
Client sampling date / time					20-May-2021 14:33	20-May-2021 13:21	20-May-2021 11:41	20-May-2021 10:50	20-May-2021 08:45	
Analyte	CAS Number	Method	LOR	Unit	CG2101559-001	CG2101559-002	CG2101559-003	CG2101559-004	CG2101559-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	8.99	17.6	4.13	5.94	39.4	
cation sum	----	EC101	0.10	meq/L	9.03	17.9	4.18	5.96	39.2	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	102	101	100	99.5	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.222	0.845	0.602	0.168	0.254	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0073	0.0010	0.0027	0.0012	<0.0020 <sup>DLA</sup>	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00040	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00229	<0.00010	0.00122	<0.00010	<0.00020 <sup>DLA</sup>	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.149	0.0644	3.37	0.0693	0.0113	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.040 <sup>DLA</sup>	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.154	0.019	0.019	<0.010	0.048	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0150 <sup>DLM</sup>	0.0576	<0.0100 <sup>DLM</sup>	0.0146	0.282	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	15.3	198	16.6	73.2	396	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00013	<0.00010	0.00011	<0.00020 <sup>DLA</sup>	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.13	<0.10	<0.10	<0.10	0.25	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00058	0.00087	<0.00020	0.00056	0.00249	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.224	<0.010	0.354	<0.010	<0.020 <sup>DLA</sup>	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000065	<0.000050	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.253	0.210	0.225	0.0092	0.128	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.39	93.3	29.4	27.5	233	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.179	0.00019	0.0421	<0.00010	0.176	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0376	0.00204	0.0136	0.000851	0.000449	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00081	0.00281	<0.00050	<0.00050	0.0119	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.62	4.03	7.96	0.804	6.56	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.080	110	0.052	20.5	313	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.92	1.98	2.30	1.48	1.94	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	180	5.97	10.8	0.706	2.32	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_GCMW-1B_QTR_2021-04-05_N	FR_GCMW-2_QTR_2021-04-05_N	FR_TBSSMW-1_QTR_2021-04-05_N	FR_TBSSMW-2_QTR_2021-04-05_N	FR_HMW2_QTR_2021-04-05_N
Client sampling date / time					20-May-2021 14:33	20-May-2021 13:21	20-May-2021 11:41	20-May-2021 10:50	20-May-2021 08:45	
Analyte	CAS Number	Method	LOR	Unit	CG2101559-001	CG2101559-002	CG2101559-003	CG2101559-004	CG2101559-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.123	0.307	0.285	0.122	0.234	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.81	156	3.71	41.6	498	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000039	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00060 <sup>DLA</sup>	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000931	0.00797	0.000167	0.00113	0.00884	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0025	0.0038	0.0031	0.0018	0.0109	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.

Teck

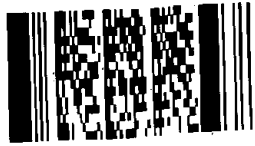
COC ID: 5/19/2021		TURNAROUND TIME:		RUSH:				
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO		
Facility Name / Job#: Fording River Operation		Lab Name: ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager: Scott Roughead		Lab Contact: Lyudmyla Shvets		Email 1: david.burroughs@teck.com		X	X	X
Email: scott.roughead@teck.com		Email: Lyudmyla.Shvets@ALSGlobal.com		Email 2: britt.anderson@teck.com		X	X	X
Address:		Address: 2559 29 Street NE		Email 3: scott.roughead@teck.com		X	X	X
City: Elkford Province: BC		City: Calgary Province: AB		Email 4: teckcoal@egulsonline.com				X
Postal Code:		Postal Code: T1Y 7B5		Email 5: cruz.canlas@teck.com		X	X	X
Country: Canada		Country: Canada		Email 6: jamie.walsh@teck.com		X	X	X
Phone Number: 1-250-433-6976		Phone Number: 403 407 1794		PO number:		VPO00741392		

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	ALS Package-TRN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	EPH	TSS Turbidity	ALS Package-BOD	ALS Package-Colour	ALS Package-PAH
FR_GCMW-1B_QTR_2021-04-05_N	FR_GCMW-1B	WG	NO	5/19/2021	14:33	G	5	1	1	1		1		1					
FR_GCMW-2_QTR_2021-04-05_N	FR_GCMW-2	WG	NO	5/19/2021	13:21	G	5	1	1	1		1		1					
FR_TBSSMW-1_QTR_2021-04-05_N	FR_TBSSMW-1	WG	NO	5/19/2021	11:41	G	5	1	1	1		1		1					
FR_TBSSMW-2_QTR_2021-04-05_N	FR_TBSSMW-2	WG	NO	5/19/2021	10:50	G	5	1	1	1		1		1					
FR_HMW2_QTR_2021-04-05_N	FR_HMW2	WG	NO	5/19/2021	8:45	G	5	1	1	1		1		1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jamie Walsh	May 19, 2021	<i>JW</i>	21/05 8:35

SERVICE REQUEST (rush - subject to availability)			
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Jamie Walsh	Mobile #	250-433-6168
Sampler's Signature	<i>Jamie Walsh</i>	Date/Time	May 19, 2021

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2101559**



Telephone : +1 403 407 1800



## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>CG2101760</b>	<b>Page</b>	: 1 of 7
<b>Amendment</b>	: <b>1</b>		
<b>Client</b>	: <b>Teck Coal Limited</b>	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Paul Dore	<b>Account Manager</b>	: Justine Buma-a
<b>Address</b>	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	<b>Address</b>	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
<b>Telephone</b>	: ----	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: FORDING RIVER OPERATIONS	<b>Date Samples Received</b>	: 02-Jun-2021 08:35
<b>PO</b>	: VPO00765458	<b>Date Analysis Commenced</b>	: 02-Jun-2021
<b>C-O-C number</b>	: QTR_KC_GW_2021-06	<b>Issue Date</b>	: 10-Nov-2021 14:13
<b>Sampler</b>	: Katie Peterson		
<b>Site</b>	: ----		
<b>Quote number</b>	: Teck Coal Master Quote		
<b>No. of samples received</b>	: 3		
<b>No. of samples analysed</b>	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_KB-1_WG_2 021-06_NP	FR_KB-2_WG_2 021-06_NP	FR_KB-4MW_W G_2021-06_NP	----	----
(Matrix: Water)					Client sampling date / time	01-Jun-2021 09:58	01-Jun-2021 11:30	01-Jun-2021 14:20	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2101760-001 Result	CG2101760-002 Result	CG2101760-003 Result	----- ----	----- ----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	15.7	18.1	36.9	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	304	299	340	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	304	299	340	----	----	
conductivity	----	E100	2.0	µS/cm	1300	1250	2660	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	742	704	1810	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	421	423	380	----	----	
pH	----	E108	0.10	pH units	7.91	7.83	7.49	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	916	968	2740	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	4.6	1.0	----	----	
turbidity	----	E121	0.10	NTU	<0.10	13.4	0.49	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	371	365	415	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.186 <sup>TKNI</sup>	0.0068	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.01	0.89	6.21	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.130	0.132	0.204	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050 <sup>TKNI</sup>	0.166	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	42.2	39.8	10.5	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	0.0454	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	0.0013	0.0021	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0130	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	334	302	1490	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.10	1.12	4.85	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.57	0.62	4.45	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-1_WG_2 021-06_NP	FR_KB-2_WG_2 021-06_NP	FR_KB-4MW_W G_2021-06_NP	----	----
Client sampling date / time					01-Jun-2021 09:58	01-Jun-2021 11:30	01-Jun-2021 14:20	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101760-001	CG2101760-002	CG2101760-003	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	16.1	15.1	38.8	----	----	
cation sum	----	EC101	0.10	meq/L	15.1	14.3	38.6	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.8	94.7	99.5	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.20	2.72	0.258	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.694	<0.0060 <sup>DLA</sup>	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00054	0.00039	0.00045	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00015	0.00022	0.00026	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0233	0.0452	0.0265	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.040 <sup>DLA</sup>	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.025	0.026	0.551	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.537	0.145	1.14	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	169	172	480	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00091	0.00215	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	0.28	0.90	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	0.00065	0.00101	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.417	0.152	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000223	0.000132	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.100	0.0882	0.106	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	82.3	76.4	160	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	0.0206	3.71	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00237	0.00487	0.00436	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0221	0.00529	0.0150	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	3.80	3.77	7.92	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	158	142	32.2	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	1.90	3.41	15.4	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	0.000016	<0.000020 <sup>DLA</sup>	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	4.25	3.96	44.8	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.162	0.155	0.651	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	120	104	555	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-1_WG_2 021-06_NP	FR_KB-2_WG_2 021-06_NP	FR_KB-4MW_W G_2021-06_NP	----	----
Client sampling date / time					01-Jun-2021 09:58	01-Jun-2021 11:30	01-Jun-2021 14:20	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101760-001	CG2101760-002	CG2101760-003	-----	-----	
					Result	Result	Result	----	----	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000018	0.000016	0.000226	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	0.0168	<0.00060 <sup>DLA</sup>	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00697	0.00547	0.00181	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	0.00192	<0.00100 <sup>DLA</sup>	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0125	0.0054	<0.0060 <sup>DLA</sup>	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0229	0.0028	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00049	0.00036	0.00041	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0218	0.0327	0.0248	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.040 <sup>DLA</sup>	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.023	0.023	0.504	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.486	0.0904	1.08	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	175	168	454	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00010	0.00206	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	0.85	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00031	0.00021	0.00079	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.011	0.120	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0966	0.0890	0.101	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	74.2	69.2	165	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.00209	3.76	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00225	0.00490	0.00433	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0198	0.00412	0.0151	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.61	3.40	7.67	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	181	152	32.1	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.81	1.94	14.3	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.04	3.79	47.6	----	----	



## Analytical Results

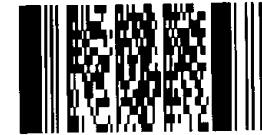
Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-1_WG_2 021-06_NP	FR_KB-2_WG_2 021-06_NP	FR_KB-4MW_W G_2021-06_NP	----	----
Client sampling date / time					01-Jun-2021 09:58	01-Jun-2021 11:30	01-Jun-2021 14:20	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101760-001	CG2101760-002	CG2101760-003	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.162	0.148	0.680	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	109	99.1	550	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	<0.000010	0.000216	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	0.00054	<0.00060 <sup>DLA</sup>	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00656	0.00533	0.00180	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0118	0.0024	0.0053	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: <b>QTR_KC_GW_2021-06</b>		TURNAROUND TIME:		RUSH:						
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO				
Facility Name / Job# Fording River Operations		Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EMD		
Project Manager Paul Dore		Lab Contact Lyudmyla Shvets		Email 1:		teckcoal@equisonline.com	X	X	X	
Email paul.dore@teck.com		Email Lyudmyla.Shvets@ALSGlobal.com		Email 2:		paul.dore@teck.com	X	X	X	
Address Suite 1000, 205 - 9th Ave S.E.		Address 2559 29 Street NE		Email 3:		leslie.harker@snclavalin.com	X	X	X	
City Calgary		Province AB	City Calgary	Province AB	Email 4:		David.Burroughs@teck.com	X	X	X
Postal Code T2G 0R3		Country Canada	Postal Code T1Y 7B5	Country Canada	Email 5:		Stefan.Humphries@snclavalin.com	X	X	X
Phone Number 1-250-433-6716		Phone Number 403 407 1794		PO number		YPO00765458				

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None			
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOCTKN	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA	F	L	FL	N
FR_KB-1_WG_2021-06_NP	FR_KB-1	WG	N	06/01/21	9:58	G	5	1	1	1	1	1				
FR_KB-2_WG_2021-06_NP	FR_KB-2	WG	N	06/01/21	11:30	G	5	1	1	1	1	1				
<del>FR_KB-3A_WG_2021-06_NP</del>	<del>FR_KB-3A</del>	<del>WG</del>	<del>N</del>	<del>-</del>	<del>-</del>	<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>				
<del>FR_KB-3B_WG_2021-06_NP</del>	<del>FR_KB-3B</del>	<del>WG</del>	<del>N</del>	<del>-</del>	<del>-</del>	<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>				
FR_KB-4MW_WG_2021-06_NP	FR_KB-4MW	WG	N	06/01/21	14:20	G	5	1	1	1	1	1				
<del>FR_KB-5PW_WG_2021-06_NP</del>	<del>FR_KB-5PW</del>	<del>WG</del>	<del>N</del>	<del>-</del>	<del>-</del>	<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>				
<del>FR_KB-6PW_WG_2021-06_NP</del>	<del>FR_KB-6PW</del>	<del>WG</del>	<del>N</del>	<del>-</del>	<del>-</del>	<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>				
<del>FR_KB-7PW_WG_2021-06_NP</del>	<del>FR_KB-7PW</del>	<del>WG</del>	<del>N</del>	<del>-</del>	<del>-</del>	<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>				
<del>FR_KB-8PW_WG_2021-06_NP</del>	<del>FR_KB-8PW</del>	<del>WG</del>	<del>N</del>	<del>-</del>	<del>-</del>	<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>				
<del>FR_KB-9PW_WG_2021-06_NP</del>	<del>FR_KB-9PW</del>	<del>WG</del>	<del>N</del>	<del>-</del>	<del>-</del>	<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>				
<del>FR_KB-10PW_WG_2021-06_NP</del>	<del>FR_KB-10PW</del>	<del>WG</del>	<del>N</del>	<del>-</del>	<del>-</del>	<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>				
<del>FR_KB-11PW_WG_2021-06_NP</del>	<del>FR_KB-11PW</del>	<del>WG</del>	<del>N</del>	<del>-</del>	<del>-</del>	<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>				
<del>FR_KB-12PW_WG_2021-06_NP</del>	<del>FR_KB-12PW</del>	<del>WG</del>	<del>N</del>	<del>-</del>	<del>-</del>	<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>				

Environmental Division  
Calgary  
Work Order Reference  
**CG2101760**



Telephone : +1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
*All samples field filtered and preserved as required.		8:35	GT	June 2
SERVICE REQUEST (rush - subject to availability)				

Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Mobile #
				Sampler's Signature	Date/Time

1100





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101844**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-06  
**Sampler** : KP  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 05-Jun-2021 09:00  
**Date Analysis Commenced** : 05-Jun-2021  
**Issue Date** : 10-Nov-2021 14:34

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

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## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Ann Ho	Laboratory Analyst	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Erick Magalhaes	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuginay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_KB-3A_WG_	FR_KB-3B_WG_	----	----	----
(Matrix: Water)						2021-06_NP	2021-06_NP			
Client sampling date / time						04-Jun-2021 14:20	04-Jun-2021 10:55	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2101844-001	CG2101844-002	-----	-----	-----	
					Result	Result	----	----	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	18.3	13.2	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	361	340	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	361	340	----	----	----	
conductivity	----	E100	2.0	µS/cm	1950	1920	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1240	1120	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	455	448	----	----	----	
pH	----	E108	0.10	pH units	7.70	7.73	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	1760	1640	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	11.4	4.1	----	----	----	
turbidity	----	E121	0.10	NTU	4.02	2.38	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	440	415	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.63	1.29	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLDS</sup>	<0.100 <sup>DLDS</sup>	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050 <sup>TKN</sup>	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	78.5	65.8	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0134	0.0033	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	628	445	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.07	1.04	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.41	0.95	----	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-3A_WG_ 2021-06_NP	FR_KB-3B_WG_ 2021-06_NP	----	----	----
Client sampling date / time					04-Jun-2021 14:20	04-Jun-2021 10:55	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101844-001	CG2101844-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	25.9	20.8	----	----	----	
cation sum	----	EC101	0.10	meq/L	25.0	22.7	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.5	109	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.77	4.37	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.196	0.0991	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00046	0.00016	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00027	0.00011	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0657	0.0659	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.019	0.022	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0544	0.0300	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	302	284	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00080	0.00035	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.93	<0.10	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00179	<0.00050	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.459	0.091	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000391	0.000154	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0480	0.0912	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	118	120	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0173	0.00439	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000376	0.000519	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00102	<0.00050	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.14	2.99	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	246	248	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	3.21	2.68	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000013	<0.000010	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	4.55	5.24	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.358	0.277	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	234	225	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-3A_WG_ 2021-06_NP	FR_KB-3B_WG_ 2021-06_NP	----	----	----
Client sampling date / time					04-Jun-2021 14:20	04-Jun-2021 10:55	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101844-001	CG2101844-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000011	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00014	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0121	<0.00210 <sup>DLM</sup>	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00628	0.00881	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00093	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0069	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0044	0.0027	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	0.00014	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0569	0.0560	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	0.027	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.017	0.022	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0369	<0.0050	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	296	262	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00018	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.76	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00491 <sup>DTC</sup>	0.00020	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.011	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000226	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0417	0.0894	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	122	114	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00300	0.00013	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000342	0.000474	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00051	<0.00050	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.02	3.06	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	245	278	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.96	2.60	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.33	4.92	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-3A_WG_ 2021-06_NP	FR_KB-3B_WG_ 2021-06_NP	----	----	----
Client sampling date / time					04-Jun-2021 14:20	04-Jun-2021 10:55	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101844-001	CG2101844-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.341	0.270	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	200	218	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00613	0.00800	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0065	<0.0010	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Laboratory	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: <b>QTR_KC_GW_2021-06</b>		TURNAROUND TIME:			RUSH:							
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO					
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD		
Project Manager	Paul Dore			Lab Contact	Lyudmyla Shvets		Email 1:	teckcoal@equisonline.com	X	X	X	
Email	paul.dore@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	paul.dore@teck.com	X	X	X	
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE		Email 3:	tesile.harker@snclevalin.com	X	X	X	
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	David.Burroughs@teck.com	X	X	X
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Stefan.Humphries@snclevalin.com	X	X	X
Phone Number	1-250-433-6716			Phone Number	403 407 1794		PO number	VPO00765458				

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None								
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp # Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA	N	F	L	FL	N	F	L	FL	
1894																				
FR_KB-3A_WG_2021-06_NP	FR_KB-3A	WG	N	06/01/21	14:20	G 5	1	1	1	1	1									
FR_KB-3B_WG_2021-06_NP	FR_KB-3B	WG	N	06/01/21	10:55	G 5	1	1	1	1	1									
<del>FR_KB-3A_WG_2021-06_NP</del>	<del>FR_KB-3A</del>	<del>WG</del>	<del>N</del>			<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>									
<del>FR_KB-3B_WG_2021-06_NP</del>	<del>FR_KB-3B</del>	<del>WG</del>	<del>N</del>			<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>									
<del>FR_KB-3A_WG_2021-06_NP</del>	<del>FR_KB-3A</del>	<del>WG</del>	<del>N</del>			<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>									
<del>FR_KB-3B_WG_2021-06_NP</del>	<del>FR_KB-3B</del>	<del>WG</del>	<del>N</del>			<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>									
<del>FR_KB-3A_WG_2021-06_NP</del>	<del>FR_KB-3A</del>	<del>WG</del>	<del>N</del>			<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>									
<del>FR_KB-3B_WG_2021-06_NP</del>	<del>FR_KB-3B</del>	<del>WG</del>	<del>N</del>			<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>									
<del>FR_KB-3A_WG_2021-06_NP</del>	<del>FR_KB-3A</del>	<del>WG</del>	<del>N</del>			<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>									
<del>FR_KB-3B_WG_2021-06_NP</del>	<del>FR_KB-3B</del>	<del>WG</del>	<del>N</del>			<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>									

Environmental Division  
Calgary  
Work Order Reference  
**CG2101844**



Telephone : +1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
*All samples field filtered and preserved as required.			<i>Dv</i>	<i>06/01/21</i>
SERVICE REQUEST (rush - subject to availability)				
Regular (default)   X	Priority (2-3 business days) - 50% surcharge	Sampler's Name	Mobile #	250-946-8029
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time	06/01/2021

*2*





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102716**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 7/20/2021  
**Sampler** : Aric Keane  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Jul-2021 08:50  
**Date Analysis Commenced** : 21-Jul-2021  
**Issue Date** : 06-Aug-2021 11:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

13C: Samples Received with temperature >10 Degrees C.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_HMW5_QTR _2021-07-05_N	FR_HMW1S_QT R_2021-07-05_ N	FR_HMW1D_QT R_2021-07-05_ N	----	----
(Matrix: Water)					Client sampling date / time	20-Jul-2021 10:33	20-Jul-2021 11:44	20-Jul-2021 12:48	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102716-001	CG2102716-002	CG2102716-003	-----	-----	
					Result	Result	Result	----	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	25.7	30.8	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	144	387	403	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	144	387	403	----	----	
conductivity	----	E100	2.0	µS/cm	366	3630	3740	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	168	2550	2610	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	444	408	384	----	----	
pH	----	E108	0.10	pH units	8.27	7.88	7.81	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	223	3520	3910	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.7	5.5	5.2	----	----	
turbidity	----	E121	0.10	NTU	0.28	0.30	0.71	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	175	472	491	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0666	0.595	0.0145	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.79	2.16	2.27	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.466	0.179	0.155	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.110	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0118	115	114	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0050 <sup>DLDS</sup>	0.0330	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0182	0.0022	0.0024	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0195	0.0047	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	53.3	1930	2010	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	1.06	0.84	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	2.09	1.09	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW5_QTR _2021-07-05_N	FR_HMW1S_QT R_2021-07-05_N	FR_HMW1D_QT R_2021-07-05_N	----	----
Client sampling date / time					20-Jul-2021 10:33	20-Jul-2021 11:44	20-Jul-2021 12:48	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102716-001	CG2102716-002	CG2102716-003	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.04	56.2	58.1	----	----	
cation sum	----	EC101	0.10	meq/L	3.82	51.4	52.4	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	94.6	91.4	90.2	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.80	4.46	5.16	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0048	<0.0050 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.209	0.0105	0.0121	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.100 <sup>DLA</sup>	<0.100 <sup>DLA</sup>	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000250 <sup>DLA</sup>	<0.000250 <sup>DLA</sup>	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.040	<0.050 <sup>DLA</sup>	<0.050 <sup>DLA</sup>	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.137	0.0946	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	36.9	505	518	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	3.95	4.95	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00100 <sup>DLA</sup>	0.00113	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.050 <sup>DLA</sup>	<0.050 <sup>DLA</sup>	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000250 <sup>DLA</sup>	<0.000250 <sup>DLA</sup>	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.167	0.0822	0.0804	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.5	314	320	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0484	0.337	0.725	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	0.000876	0.000720	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.0412	0.0315	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.706	7.24	6.36	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	1.08	194	6.08	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.66	2.27	2.64	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000050 <sup>DLA</sup>	<0.000050 <sup>DLA</sup>	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	10.0	2.22	2.28	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.388	0.312	0.328	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW5_QTR _2021-07-05_N	FR_HMW1S_QT R_2021-07-05_ N	FR_HMW1D_QT R_2021-07-05_ N	----	----
Client sampling date / time					20-Jul-2021 10:33	20-Jul-2021 11:44	20-Jul-2021 12:48	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102716-001	CG2102716-002	CG2102716-003	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	33.3	643	629	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000050 <sup>DLA</sup>	<0.000050 <sup>DLA</sup>	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00150 <sup>DLA</sup>	<0.00150 <sup>DLA</sup>	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000012	0.0122	0.0121	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00250 <sup>DLA</sup>	<0.00250 <sup>DLA</sup>	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0064	0.0093	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102716</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 21-Jul-2021 08:50
PO	: VPO00741392	Issue Date	: 06-Aug-2021 11:55
C-O-C number	: 7/20/2021		
Sampler	: Aric Keane		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1D_QTR_2021-07-05_N	E298	20-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1S_QTR_2021-07-05_N	E298	20-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW5_QTR_2021-07-05_N	E298	20-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW1D_QTR_2021-07-05_N	E235.Br-L	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW1S_QTR_2021-07-05_N	E235.Br-L	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW5_QTR_2021-07-05_N	E235.Br-L	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW1D_QTR_2021-07-05_N	E235.Cl-L	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_HMW1S_QTR_2021-07-05_N	E235.Cl-L	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_HMW5_QTR_2021-07-05_N	E235.Cl-L	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_HMW1D_QTR_2021-07-05_N	E378-U	20-Jul-2021	----	----	----		22-Jul-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_HMW1S_QTR_2021-07-05_N	E378-U	20-Jul-2021	----	----	----		22-Jul-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_HMW5_QTR_2021-07-05_N	E378-U	20-Jul-2021	----	----	----		22-Jul-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_HMW1D_QTR_2021-07-05_N	E235.F	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_HMW1S_QTR_2021-07-05_N	E235.F	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_HMW5_QTR_2021-07-05_N	E235.F	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_HMW1D_QTR_2021-07-05_N	E235.NO3-L	20-Jul-2021	----	----	----		21-Jul-2021	3 days	1 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW1S_QTR_2021-07-05_N	E235.NO3-L	20-Jul-2021	----	----	----		21-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW5_QTR_2021-07-05_N	E235.NO3-L	20-Jul-2021	----	----	----		21-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW1D_QTR_2021-07-05_N	E235.NO2-L	20-Jul-2021	----	----	----		21-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW1S_QTR_2021-07-05_N	E235.NO2-L	20-Jul-2021	----	----	----		21-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW5_QTR_2021-07-05_N	E235.NO2-L	20-Jul-2021	----	----	----		21-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_HMW1D_QTR_2021-07-05_N	E235.SO4	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_HMW1S_QTR_2021-07-05_N	E235.SO4	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_HMW5_QTR_2021-07-05_N	E235.SO4	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1D_QTR_2021-07-05_N	E318	20-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	5 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1S_QTR_2021-07-05_N	E318	20-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW5_QTR_2021-07-05_N	E318	20-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1D_QTR_2021-07-05_N	E372-U	20-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1S_QTR_2021-07-05_N	E372-U	20-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW5_QTR_2021-07-05_N	E372-U	20-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_HMW1D_QTR_2021-07-05_N	E421.Cr-L	20-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_HMW1S_QTR_2021-07-05_N	E421.Cr-L	20-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_HMW5_QTR_2021-07-05_N	E421.Cr-L	20-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_HMW1D_QTR_2021-07-05_N	E509	20-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	6 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_HMW1S_QTR_2021-07-05_N	E509	20-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_HMW5_QTR_2021-07-05_N	E509	20-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_HMW1D_QTR_2021-07-05_N	E421	20-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_HMW1S_QTR_2021-07-05_N	E421	20-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_HMW5_QTR_2021-07-05_N	E421	20-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	180 days	3 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_HMW1D_QTR_2021-07-05_N	E358-L	20-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_HMW1S_QTR_2021-07-05_N	E358-L	20-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_HMW5_QTR_2021-07-05_N	E358-L	20-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1D_QTR_2021-07-05_N	E355-L	20-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW5_QTR_2021-07-05_N	E355-L	20-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1S_QTR_2021-07-05_N	E355-L	20-Jul-2021	26-Jul-2021	----	----		27-Jul-2021	28 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_HMW1D_QTR_2021-07-05_N	E283	20-Jul-2021	----	----	----		21-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_HMW1S_QTR_2021-07-05_N	E283	20-Jul-2021	----	----	----		21-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_HMW5_QTR_2021-07-05_N	E283	20-Jul-2021	----	----	----		21-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_HMW1D_QTR_2021-07-05_N	E290	20-Jul-2021	----	----	----		23-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_HMW1S_QTR_2021-07-05_N	E290	20-Jul-2021	----	----	----		23-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_HMW5_QTR_2021-07-05_N	E290	20-Jul-2021	----	----	----		23-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> FR_HMW1D_QTR_2021-07-05_N	E100	20-Jul-2021	----	----	----		23-Jul-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_HMW1S_QTR_2021-07-05_N	E100	20-Jul-2021	----	----	----		23-Jul-2021	28 days	3 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_HMW5_QTR_2021-07-05_N	E100	20-Jul-2021	----	----	----		23-Jul-2021	28 days	3 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_HMW1D_QTR_2021-07-05_N	E125	20-Jul-2021	----	----	----		27-Jul-2021	0.34 hrs	175 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_HMW1S_QTR_2021-07-05_N	E125	20-Jul-2021	----	----	----		27-Jul-2021	0.34 hrs	176 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_HMW5_QTR_2021-07-05_N	E125	20-Jul-2021	----	----	----		27-Jul-2021	0.34 hrs	177 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_HMW1D_QTR_2021-07-05_N	E108	20-Jul-2021	----	----	----		23-Jul-2021	0.25 hrs	77 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_HMW1S_QTR_2021-07-05_N	E108	20-Jul-2021	----	----	----		23-Jul-2021	0.25 hrs	78 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_HMW5_QTR_2021-07-05_N	E108	20-Jul-2021	----	----	----		23-Jul-2021	0.25 hrs	80 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_HMW1D_QTR_2021-07-05_N	E162	20-Jul-2021	----	----	----		26-Jul-2021	7 days	6 days		✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_HMW1S_QTR_2021-07-05_N	E162	20-Jul-2021	----	----	----		26-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_HMW5_QTR_2021-07-05_N	E162	20-Jul-2021	----	----	----		26-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_HMW1D_QTR_2021-07-05_N	E160-L	20-Jul-2021	----	----	----		26-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_HMW1S_QTR_2021-07-05_N	E160-L	20-Jul-2021	----	----	----		26-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_HMW5_QTR_2021-07-05_N	E160-L	20-Jul-2021	----	----	----		26-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_HMW1D_QTR_2021-07-05_N	E121	20-Jul-2021	----	----	----		22-Jul-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_HMW1S_QTR_2021-07-05_N	E121	20-Jul-2021	----	----	----		22-Jul-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_HMW5_QTR_2021-07-05_N	E121	20-Jul-2021	----	----	----		22-Jul-2021	3 days	2 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	248602	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	250597	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	251395	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	248317	1	5	20.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	248318	1	5	20.0	5.0	✔
Conductivity in Water	E100	250596	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	249938	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	252030	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	249939	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251876	1	17	5.8	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249335	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	248321	1	17	5.8	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	248319	1	5	20.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	248320	1	5	20.0	5.0	✔
ORP by Electrode	E125	253116	1	13	7.6	5.0	✔
pH by Meter	E108	250595	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	248316	1	17	5.8	5.0	✔
TDS by Gravimetry	E162	251633	2	40	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	249118	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251877	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249084	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	249530	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	248602	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	250597	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	251395	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	248317	1	5	20.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	248318	1	5	20.0	5.0	✔
Conductivity in Water	E100	250596	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	249938	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	252030	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	249939	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251876	1	17	5.8	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249335	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	248321	1	17	5.8	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	248319	1	5	20.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	248320	1	5	20.0	5.0	✔





Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	253116	1	13	7.6	5.0	✔
pH by Meter	E108	250595	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	248316	1	17	5.8	5.0	✔
TDS by Gravimetry	E162	251633	2	40	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	249118	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251877	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249084	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	251627	2	40	5.0	5.0	✔
Turbidity by Nephelometry	E121	249530	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	248602	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	250597	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	251395	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	248317	1	5	20.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	248318	1	5	20.0	5.0	✔
Conductivity in Water	E100	250596	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	249938	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	252030	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	249939	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251876	1	17	5.8	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249335	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	248321	1	17	5.8	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	248319	1	5	20.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	248320	1	5	20.0	5.0	✔
Sulfate in Water by IC	E235.SO4	248316	1	17	5.8	5.0	✔
TDS by Gravimetry	E162	251633	2	40	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	249118	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251877	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249084	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	251627	2	40	5.0	5.0	✔
Turbidity by Nephelometry	E121	249530	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	251395	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	248317	0	5	0.0	5.0	✖
Chloride in Water by IC (Low Level)	E235.Cl-L	248318	0	5	0.0	5.0	✖
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	249938	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	252030	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	249939	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251876	1	17	5.8	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249335	1	20	5.0	5.0	✔





Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	248321	0	17	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	248319	0	5	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	248320	0	5	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	248316	0	17	0.0	5.0	✘
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	249118	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251877	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249084	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102716**

**Page** : 1 of 13

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 7/20/2021  
**Sampler** : Aric Keane  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Jul-2021 08:50  
**Date Analysis Commenced** : 21-Jul-2021  
**Issue Date** : 06-Aug-2021 11:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

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Page : 2 of 13  
Work Order : CG2102716  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 248602)</b>											
CG2102707-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 249530)</b>											
CG2102689-001	Anonymous	turbidity	----	E121	0.10	NTU	82.8	82.3	0.606%	15%	----
<b>Physical Tests (QC Lot: 250595)</b>											
CG2102716-001	FR_HMW5_QTR_2021-07-05_N	pH	----	E108	0.10	pH units	8.27	8.30	0.362%	4%	----
<b>Physical Tests (QC Lot: 250596)</b>											
CG2102716-001	FR_HMW5_QTR_2021-07-05_N	conductivity	----	E100	2.0	µS/cm	366	369	0.816%	10%	----
<b>Physical Tests (QC Lot: 250597)</b>											
CG2102716-001	FR_HMW5_QTR_2021-07-05_N	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	144	146	1.59%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	144	146	2.00%	20%	----
<b>Physical Tests (QC Lot: 251633)</b>											
CG2102693-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	223	221	0.675%	20%	----
<b>Physical Tests (QC Lot: 251634)</b>											
CG2102716-003	FR_HMW1D_QTR_2021-07-05_N	solids, total dissolved [TDS]	----	E162	40	mg/L	3910	3840	1.73%	20%	----
<b>Physical Tests (QC Lot: 253116)</b>											
CG2102715-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	445	441	0.993%	15%	----
<b>Anions and Nutrients (QC Lot: 248316)</b>											
CG2102711-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	27.3	27.2	0.562%	20%	----
<b>Anions and Nutrients (QC Lot: 248317)</b>											
CG2102711-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248318)</b>											
CG2102711-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.86	0.84	0.02	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248319)</b>											
CG2102711-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.651	0.650	0.108%	20%	----
<b>Anions and Nutrients (QC Lot: 248320)</b>											
CG2102711-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248321)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 248321) - continued</b>											
CG2102711-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.251	0.251	0.159%	20%	----
<b>Anions and Nutrients (QC Lot: 249084)</b>											
CG2102716-001	FR_HMW5_QTR_2021-07-05_N	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0195	0.0190	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249118)</b>											
CG2102707-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249335)</b>											
CG2102714-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	0.0017	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 251395)</b>											
CG2102713-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0498	0.0484	0.0014	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 251876)</b>											
CG2102558-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	4.61	4.82	0.21	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 251877)</b>											
CG2102558-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.89	4.89	0.004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 249938)</b>											
CG2102701-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 249939)</b>											
CG2102701-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00504	0.00510	1.18%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00015	0.00016	0.000007	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0213	0.0220	3.50%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.107	0.111	4.27%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	1.54 µg/L	0.00158	2.73%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	490	510	4.11%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	111 µg/L	0.120	7.86%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00048	0.00051	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.011	0.012	0.0007	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	1.03	1.06	2.35%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	219	232	5.77%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.389	0.422	8.04%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0131	0.0134	2.04%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.556	0.591	6.21%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	24.7	26.5	6.94%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 249939) - continued</b>											
CG2102701-001	Anonymous	selenium, dissolved	7782-49-2	E421	0.050	mg/L	64.2 µg/L	0.0692	7.44%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.81	2.84	0.764%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	26.7	28.3	5.60%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.804	0.823	2.30%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	391	393	0.408%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000280	0.000291	3.89%	20%	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0364	0.0374	2.79%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.109	0.114	4.52%	20%	----
<b>Dissolved Metals (QC Lot: 252030)</b>											
CG2102701-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 248602)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 249530)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 250596)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 250597)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 251627)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 251628)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 251633)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 251634)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 248316)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 248317)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 248318)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 248319)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 248320)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 248321)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 249084)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 249118)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 249118) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 249335)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 251395)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 251876)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 251877)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 249938)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 249939)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 249939) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 252030)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 248602)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	102	85.0	115	----
<b>Physical Tests (QCLot: 249530)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	96.4	85.0	115	----
<b>Physical Tests (QCLot: 250595)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 250596)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	96.5	90.0	110	----
<b>Physical Tests (QCLot: 250597)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	96.7	85.0	115	----
<b>Physical Tests (QCLot: 251627)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	93.0	85.0	115	----
<b>Physical Tests (QCLot: 251628)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	93.0	85.0	115	----
<b>Physical Tests (QCLot: 251633)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.9	85.0	115	----
<b>Physical Tests (QCLot: 251634)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.4	85.0	115	----
<b>Physical Tests (QCLot: 253116)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
<b>Anions and Nutrients (QCLot: 248316)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	----
<b>Anions and Nutrients (QCLot: 248317)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	96.8	85.0	115	----
<b>Anions and Nutrients (QCLot: 248318)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	105	90.0	110	----
<b>Anions and Nutrients (QCLot: 248319)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 248320)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.4	90.0	110	----
<b>Anions and Nutrients (QCLot: 248321)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.7	90.0	110	----
<b>Anions and Nutrients (QCLot: 249084)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 249084) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 249118)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	96.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 249335)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	106	80.0	120	----
<b>Anions and Nutrients (QCLot: 251395)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	110	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 251876)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 251877)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	99.0	80.0	120	----
<b>Dissolved Metals (QCLot: 249938)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	96.5	80.0	120	----
<b>Dissolved Metals (QCLot: 249939)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.8	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	94.7	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	95.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	89.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.0	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	93.5	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier	
					Concentration	LCS	Low	High		
<b>Dissolved Metals (QCLot: 249939) - continued</b>										
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.2	80.0	120	----	
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----	
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.5	80.0	120	----	
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	89.7	80.0	120	----	
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----	
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.6	80.0	120	----	
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.8	80.0	120	----	
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.1	80.0	120	----	
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.2	80.0	120	----	
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	110	80.0	120	----	
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.1	80.0	120	----	



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 249084)</b>										
CG2102716-002	FR_HMW1S_QTR_2021-07-05_N	phosphorus, total	7723-14-0	E372-U	0.0590 mg/L	0.0676 mg/L	87.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 249118)</b>										
CG2102707-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.25 mg/L	2.5 mg/L	89.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 249335)</b>										
CG2102714-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0550 mg/L	0.05 mg/L	110	70.0	130	----
<b>Anions and Nutrients (QCLot: 251395)</b>										
CG2102719-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.113 mg/L	0.1 mg/L	113	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 251876)</b>										
CG2102558-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.1 mg/L	23.9 mg/L	101	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 251877)</b>										
CG2102558-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.7 mg/L	23.9 mg/L	99.0	70.0	130	----
<b>Dissolved Metals (QCLot: 249938)</b>										
CG2102701-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0790 mg/L	0.08 mg/L	98.8	70.0	130	----
<b>Dissolved Metals (QCLot: 249939)</b>										
CG2102701-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.404 mg/L	0.4 mg/L	101	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0394 mg/L	0.04 mg/L	98.5	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0369 mg/L	0.04 mg/L	92.3	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0790 mg/L	0.08 mg/L	98.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0168 mg/L	0.02 mg/L	84.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.198 mg/L	0.2 mg/L	98.9	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00753 mg/L	0.008 mg/L	94.1	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0353 mg/L	0.04 mg/L	88.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.82 mg/L	4 mg/L	95.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0368 mg/L	0.04 mg/L	92.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----





Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 249939) - continued</b>										
CG2102701-002	Anonymous	manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0870 mg/L	0.08 mg/L	109	70.0	130	----
		silicon, dissolved	7440-21-3	E421	19.1 mg/L	20 mg/L	95.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00757 mg/L	0.008 mg/L	94.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00742 mg/L	0.008 mg/L	92.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0806 mg/L	0.08 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.718 mg/L	0.8 mg/L	89.8	70.0	130	----
<b>Dissolved Metals (QCLot: 252030)</b>										
CG2102701-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000953 mg/L	0.0001 mg/L	95.3	70.0	130	----

COC ID: 7/20/2021

TURNAROUND TIME:

RUSH:

**PROJECT/CLIENT INFO**

Facility Name/Job#: Fording River Operation  
 Project Manager: Scott Roughtead  
 Email: scott.roughtead@teck.com  
 Address:  
 City: Elkford  
 Postal Code:  
 Phone Number: 1-250-433-6976

**LABORATORY**

Lab Name: ALS Calgary  
 Lab Contact: Lyndynda Shrovs  
 Email: lyndynda.shrovs@ALSscientific.com  
 Address: 2559 29 Street NE  
 City: Calgary  
 Postal Code: T1Y 7B5  
 Phone Number: 403 407 1794

**OTHER INFO**

Report Format / Distribution:  
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 Email 3: scott.roughtead@teck.com  
 Email 4: cory.zemba@teck.com  
 Email 5: email 5:  
 Email 6: janie.walsh@teck.com  
 PO number: 17000741392

**SAMPLE DETAILS**

Sample ID	Sample Location (Sys Loc Code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp Cont.	# Of	ANALYSIS REQUESTED	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
FR_HMW5_QTR_2021-07-05_N	FR_HMW5	WS	NO	July 20, 2021	10:33	G	5	ALS_Package-TKN/TOC	1	1	1
FR_HMW5_QTR_2021-07-05_N	FR_HMW5	WS	NO	July 20, 2021	11:44	G	5	TECKCOAL-ROUTINE-VA	1	1	1
FR_HMW5_QTR_2021-07-05_N	FR_HMW5	WS	NO	July 20, 2021	12:48	G	5	HG-D-CVAF-VA	1	1	1
								HG-T-U-CVAF-VA	1	1	1
								ALS_Package-DOC	1	1	1
								TECKCOAL-MET-D-VA	1	1	1
								TECKCOAL-METNHG-T-CL	1	1	1
								ALS_Package-BOD	1	1	1
								ALS_Package-Colour	1	1	1
								ALS_Package-PAH	1	1	1
								ALS_Package-TSS/TURB	1	1	1
								ALS_Package-EPH	1	1	1

**REINQUISHED BY/AFFILIATION**

Artic Keane

July 20, 2021

**SERVICE REQUEST (rush - subject to availability)**

Regular (default)   
 Priority (2-3 business days) - 50% surcharge  
 Emergency (1 Business Day) - 100% surcharge  
 For Emergency <1 Day, ASAP or Weekend - Contact ALS

**Sampler's Name**

Artic Keane

**Mobile #**

250-427-1062

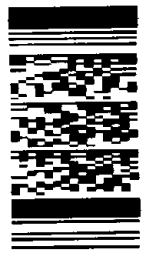
**Sampler's Signature**



**Date/Time**

July 20, 2021

**Environmental Division**  
 Calgary  
 Work Order Reference  
**CG2102716**



Telephone : +1 403 407 1800

2/16/27 250

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2102753**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 7/21/2021  
**Sampler** : Aric Keane  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Jul-2021 09:00  
**Date Analysis Commenced** : 22-Jul-2021  
**Issue Date** : 10-Aug-2021 10:22

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

Samples Received with temperature >10 Degrees C. Samples were received at 15C.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW3_QTR _2021-07-05_N	FR_TBSSMW-1 _QTR_2021-07- 05_N	FR_DC1_QTR_2 021-07-05_N	FR_TRP_QTR_2 021-07-05_N	FR_TBSSMW-2 _QTR_2021-07- 05_N
Client sampling date / time					21-Jul-2021 12:48	21-Jul-2021 10:29	21-Jul-2021 09:12	21-Jul-2021 12:00	21-Jul-2021 09:12	
Analyte	CAS Number	Method	LOR	Unit	CG2102753-001	CG2102753-002	CG2102753-003	CG2102753-004	CG2102753-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	5.2	<2.0	<2.0	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	199	180	137	<1.0	130	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	6.8	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	199	187	137	<1.0	131	
conductivity	----	E100	2.0	µS/cm	847	341	362	<2.0	362	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	478	148	197	<0.50	190	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	457	437	468	473	456	
pH	----	E108	0.10	pH units	8.27	8.46	8.28	5.51	8.30	
solids, total dissolved [TDS]	----	E162	10	mg/L	628	174	232	<10	232	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.0	10.1	<1.0	<1.0	<1.0	
turbidity	----	E121	0.10	NTU	2.29	1.69	0.20	<0.10	<0.10	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	243	220	167	<1.0	159	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	4.1	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0632	3.16	0.0074	<0.0050	0.0158	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.42	0.23	0.15	<0.10	0.33	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.241	0.300	0.194	<0.020	0.197	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKN</sup>	4.24	0.292	<0.050	0.082 <sup>TKN</sup>	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	9.83	0.0124	1.27	<0.0050	1.27	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0043	<0.0010	<0.0010	<0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0033	<0.0010	0.0018	<0.0010	0.0024	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0064	0.0065	<0.0020	<0.0020	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	276	12.4	66.8	<0.30	66.9	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.35 <sup>DTC.RRV</sup>	1.51	<0.50	<0.50	0.72	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.27 <sup>DTC.RRV</sup>	1.02	<0.50	<0.50	1.14	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW3_QTR _2021-07-05_N	FR_TBSSMW-1 _QTR_2021-07- 05_N	FR_DC1_QTR_2 021-07-05_N	FR_TRP_QTR_2 021-07-05_N	FR_TBSSMW-2 _QTR_2021-07- 05_N
Client sampling date / time					21-Jul-2021 12:48	21-Jul-2021 10:29	21-Jul-2021 09:12	21-Jul-2021 12:00	21-Jul-2021 09:12	
Analyte	CAS Number	Method	LOR	Unit	CG2102753-001	CG2102753-002	CG2102753-003	CG2102753-004	CG2102753-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	10.4	4.02	4.23	<0.10	4.12	
cation sum	----	EC101	0.10	meq/L	9.64	3.80	3.99	<0.10	3.85	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.7	94.5	94.3	100	93.4	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.79	2.81	2.92	<0.010	3.39	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	0.0028	0.0018	<0.0010	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00019	<0.00010	0.00012	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	0.00119	0.00010	<0.00010	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0332	2.89	0.0520	<0.00010	0.0480	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.018	0.021	<0.010	<0.010	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0329	<0.0050	0.0093	<0.0050	0.0096	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	108	14.9	49.8	<0.050	47.9	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00012	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00033	<0.00020	0.00144	<0.00020	0.00042	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.303	<0.010	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0298	0.227	0.0084	<0.0010	0.0075	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	50.5	26.8	17.7	<0.0050	17.2	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0524	0.0408	0.00020	<0.00010	0.00012	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000961	0.0138	0.000952	<0.000050	0.000894	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00089	<0.00050	<0.00050	<0.00050	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.00	6.79	0.774	<0.050	0.747	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	83.7	<0.050	10.1	<0.050	10.1	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.50	2.44	1.81	<0.050	1.76	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.04	10.1	0.595	<0.050	0.567	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.116	0.260	0.0870	<0.00020	0.0844	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW3_QTR_2021-07-05_N	FR_TBSSMW-1_QTR_2021-07-05_N	FR_DC1_QTR_2_021-07-05_N	FR_TRP_QTR_2_021-07-05_N	FR_TBSSMW-2_QTR_2021-07-05_N
Client sampling date / time					21-Jul-2021 12:48	21-Jul-2021 10:29	21-Jul-2021 09:12	21-Jul-2021 12:00	21-Jul-2021 09:12	
Analyte	CAS Number	Method	LOR	Unit	CG2102753-001	CG2102753-002	CG2102753-003	CG2102753-004	CG2102753-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	94.2	4.42	22.6	<0.50	22.0	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000011	<0.000010	<0.000010	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00194	0.000150	0.000740	<0.000010	0.000720	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0019	0.0020	0.0030	<0.0010	0.0016	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2102753</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : <b>Scott Roughead</b> <b>Address</b> : <b>PO BOX 100</b> <b>ELKFORD BC Canada V0B 1H0</b> <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>FORDING RIVER OPERATION</b> <b>PO</b> : <b>VPO00741392</b> <b>C-O-C number</b> : <b>7/21/2021</b> <b>Sampler</b> : <b>Aric Keane</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>Teck Coal Master Quote</b> <b>No. of samples received</b> : <b>5</b> <b>No. of samples analysed</b> : <b>5</b>	<b>Page</b> : <b>1 of 21</b> <b>Laboratory</b> : <b>Calgary - Environmental</b> <b>Account Manager</b> : <b>Justine Buma-a</b> <b>Address</b> : <b>2559 29th Street NE</b> <b>Calgary, Alberta Canada T1Y 7B5</b> <b>Telephone</b> : <b>+1 403 407 1800</b> <b>Date Samples Received</b> : <b>22-Jul-2021 09:00</b> <b>Issue Date</b> : <b>10-Aug-2021 10:22</b>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### ***Outliers: Reference Material (RM) Samples***

- No Reference Material (RM) Sample outliers occur.

#### ***Outliers : Analysis Holding Time Compliance (Breaches)***

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_QTR_2021-07-05_N	E298	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW3_QTR_2021-07-05_N	E298	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E298	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E298	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP_QTR_2021-07-05_N	E298	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC1_QTR_2021-07-05_N	E235.Br-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW3_QTR_2021-07-05_N	E235.Br-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E235.Br-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E235.Br-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_TRP_QTR_2021-07-05_N	E235.Br-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_DC1_QTR_2021-07-05_N	E235.Cl-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_HMW3_QTR_2021-07-05_N	E235.Cl-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E235.Cl-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E235.Cl-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_TRP_QTR_2021-07-05_N	E235.Cl-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_DC1_QTR_2021-07-05_N	E378-U	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_HMW3_QTR_2021-07-05_N	E378-U	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E378-U	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E378-U	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_TRP_QTR_2021-07-05_N	E378-U	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_DC1_QTR_2021-07-05_N	E235.F	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_HMW3_QTR_2021-07-05_N	E235.F	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E235.F	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E235.F	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_TRP_QTR_2021-07-05_N	E235.F	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC1_QTR_2021-07-05_N	E235.NO3-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW3_QTR_2021-07-05_N	E235.NO3-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_TBSSMW-1_QTR_2021-07-05_N	E235.NO3-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_TBSSMW-2_QTR_2021-07-05_N	E235.NO3-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_TRP_QTR_2021-07-05_N	E235.NO3-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC1_QTR_2021-07-05_N	E235.NO2-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW3_QTR_2021-07-05_N	E235.NO2-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_TBSSMW-1_QTR_2021-07-05_N	E235.NO2-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_TBSSMW-2_QTR_2021-07-05_N	E235.NO2-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_TRP_QTR_2021-07-05_N	E235.NO2-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_DC1_QTR_2021-07-05_N	E235.SO4	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_HMW3_QTR_2021-07-05_N	E235.SO4	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_TBSSMW-1_QTR_2021-07-05_N	E235.SO4	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_TBSSMW-2_QTR_2021-07-05_N	E235.SO4	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_TRP_QTR_2021-07-05_N	E235.SO4	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_QTR_2021-07-05_N	E318	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW3_QTR_2021-07-05_N	E318	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E318	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E318	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP_QTR_2021-07-05_N	E318	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_QTR_2021-07-05_N	E372-U	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW3_QTR_2021-07-05_N	E372-U	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E372-U	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E372-U	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP_QTR_2021-07-05_N	E372-U	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC1_QTR_2021-07-05_N	E421.Cr-L	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_HMW3_QTR_2021-07-05_N	E421.Cr-L	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E421.Cr-L	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E421.Cr-L	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TRP_QTR_2021-07-05_N	E421.Cr-L	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_DC1_QTR_2021-07-05_N	E509	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_HMW3_QTR_2021-07-05_N	E509	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E509	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E509	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_TRP_QTR_2021-07-05_N	E509	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC1_QTR_2021-07-05_N	E421	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_HMW3_QTR_2021-07-05_N	E421	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E421	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E421	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TRP_QTR_2021-07-05_N	E421	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_DC1_QTR_2021-07-05_N	E358-L	21-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E358-L	21-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_TRP_QTR_2021-07-05_N	E358-L	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_HMW3_QTR_2021-07-05_N	E358-L	21-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E358-L	21-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	7 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_QTR_2021-07-05_N	E355-L	21-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP_QTR_2021-07-05_N	E355-L	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW3_QTR_2021-07-05_N	E355-L	21-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	7 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E355-L	21-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	7 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E355-L	21-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_DC1_QTR_2021-07-05_N	E283	21-Jul-2021	----	----	----		22-Jul-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_HMW3_QTR_2021-07-05_N	E283	21-Jul-2021	----	----	----		22-Jul-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_TBSSMW-1_QTR_2021-07-05_N	E283	21-Jul-2021	----	----	----		22-Jul-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_TBSSMW-2_QTR_2021-07-05_N	E283	21-Jul-2021	----	----	----		22-Jul-2021	14 days	1 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_TRP_QTR_2021-07-05_N	E283	21-Jul-2021	----	----	----		22-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_DC1_QTR_2021-07-05_N	E290	21-Jul-2021	----	----	----		24-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_HMW3_QTR_2021-07-05_N	E290	21-Jul-2021	----	----	----		24-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E290	21-Jul-2021	----	----	----		24-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E290	21-Jul-2021	----	----	----		24-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_TRP_QTR_2021-07-05_N	E290	21-Jul-2021	----	----	----		24-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_DC1_QTR_2021-07-05_N	E100	21-Jul-2021	----	----	----		24-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_HMW3_QTR_2021-07-05_N	E100	21-Jul-2021	----	----	----		24-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E100	21-Jul-2021	----	----	----		24-Jul-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E100	21-Jul-2021	----	----	----		24-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_TRP_QTR_2021-07-05_N	E100	21-Jul-2021	----	----	----		24-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_HMW3_QTR_2021-07-05_N	E125	21-Jul-2021	----	----	----		28-Jul-2021	0.34 hrs	173 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_TRP_QTR_2021-07-05_N	E125	21-Jul-2021	----	----	----		28-Jul-2021	0.34 hrs	174 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E125	21-Jul-2021	----	----	----		28-Jul-2021	0.34 hrs	176 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_DC1_QTR_2021-07-05_N	E125	21-Jul-2021	----	----	----		28-Jul-2021	0.34 hrs	177 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E125	21-Jul-2021	----	----	----		28-Jul-2021	0.34 hrs	178 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE FR_HMW3_QTR_2021-07-05_N	E108	21-Jul-2021	----	----	----		24-Jul-2021	0.25 hrs	77 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE FR_TRP_QTR_2021-07-05_N	E108	21-Jul-2021	----	----	----		24-Jul-2021	0.25 hrs	78 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : pH by Meter</b>										
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E108	21-Jul-2021	----	----	----		24-Jul-2021	0.25 hrs	79 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_DC1_QTR_2021-07-05_N	E108	21-Jul-2021	----	----	----		24-Jul-2021	0.25 hrs	81 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E108	21-Jul-2021	----	----	----		24-Jul-2021	0.25 hrs	81 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_DC1_QTR_2021-07-05_N	E162	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_HMW3_QTR_2021-07-05_N	E162	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E162	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E162	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_TRP_QTR_2021-07-05_N	E162	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] FR_DC1_QTR_2021-07-05_N	E160-L	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_HMW3_QTR_2021-07-05_N	E160-L	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_TBSSMW-1_QTR_2021-07-05_N	E160-L	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_TBSSMW-2_QTR_2021-07-05_N	E160-L	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_TRP_QTR_2021-07-05_N	E160-L	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_DC1_QTR_2021-07-05_N	E121	21-Jul-2021	----	----	----		23-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_HMW3_QTR_2021-07-05_N	E121	21-Jul-2021	----	----	----		23-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_TBSSMW-1_QTR_2021-07-05_N	E121	21-Jul-2021	----	----	----		23-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_TBSSMW-2_QTR_2021-07-05_N	E121	21-Jul-2021	----	----	----		23-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_TRP_QTR_2021-07-05_N	E121	21-Jul-2021	----	----	----		23-Jul-2021	3 days	2 days	✔	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 15 of 21  
Work Order : CG2102753  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	249312	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	251311	2	23	8.7	5.0	✓
Ammonia by Fluorescence	E298	252485	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	249394	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	249395	1	15	6.6	5.0	✓
Conductivity in Water	E100	251309	2	23	8.7	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	253020	2	17	11.7	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	252710	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	253019	3	40	7.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252993	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249339	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	249398	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	249396	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	249397	1	15	6.6	5.0	✓
ORP by Electrode	E125	253836	2	33	6.0	5.0	✓
pH by Meter	E108	251310	2	23	8.7	5.0	✓
Sulfate in Water by IC	E235.SO4	249393	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	252418	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251414	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	252995	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250079	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	249943	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	249312	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	251311	2	23	8.7	5.0	✓
Ammonia by Fluorescence	E298	252485	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	249394	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	249395	1	15	6.6	5.0	✓
Conductivity in Water	E100	251309	2	23	8.7	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	253020	2	17	11.7	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	252710	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	253019	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252993	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249339	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	249398	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	249396	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	249397	1	15	6.6	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	253836	2	33	6.0	5.0	✓
pH by Meter	E108	251310	2	23	8.7	5.0	✓
Sulfate in Water by IC	E235.SO4	249393	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	252418	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251414	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	252995	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250079	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	252412	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	249943	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	249312	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	251311	2	23	8.7	5.0	✓
Ammonia by Fluorescence	E298	252485	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	249394	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	249395	1	15	6.6	5.0	✓
Conductivity in Water	E100	251309	2	23	8.7	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	253020	2	17	11.7	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	252710	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	253019	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252993	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249339	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	249398	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	249396	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	249397	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	249393	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	252418	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251414	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	252995	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250079	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	252412	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	249943	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	252485	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	249394	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	249395	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	253020	2	17	11.7	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	252710	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	253019	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252993	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249339	1	11	9.0	5.0	✓





Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	249398	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	249396	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	249397	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	249393	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251414	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	252995	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250079	2	40	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102753**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 7/21/2021  
**Sampler** : Aric Keane  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Jul-2021 09:00  
**Date Analysis Commenced** : 22-Jul-2021  
**Issue Date** : 10-Aug-2021 10:22

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
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Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 18  
Work Order : CG2102753  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 249312)</b>											
CG2102749-034	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	62.2	58.1	4.1	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 249943)</b>											
CG2102749-034	Anonymous	turbidity	----	E121	0.10	NTU	7.73	7.72	0.129%	15%	----
<b>Physical Tests (QC Lot: 251309)</b>											
CG2102750-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1700	1700	0.0589%	10%	----
<b>Physical Tests (QC Lot: 251310)</b>											
CG2102750-001	Anonymous	pH	----	E108	0.10	pH units	8.14	8.17	0.368%	4%	----
<b>Physical Tests (QC Lot: 251311)</b>											
CG2102750-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	427	423	0.964%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	427	423	0.964%	20%	----
<b>Physical Tests (QC Lot: 251312)</b>											
CG2102753-003	FR_DC1_QTR_2021-07-05_N	conductivity	----	E100	2.0	µS/cm	362	362	0.00%	10%	----
<b>Physical Tests (QC Lot: 251313)</b>											
CG2102753-003	FR_DC1_QTR_2021-07-05_N	pH	----	E108	0.10	pH units	8.28	8.33	0.602%	4%	----
<b>Physical Tests (QC Lot: 251314)</b>											
CG2102753-003	FR_DC1_QTR_2021-07-05_N	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	137	132	3.12%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	137	133	2.37%	20%	----
<b>Physical Tests (QC Lot: 252418)</b>											
CG2102749-034	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	3000	2900	3.59%	20%	----
<b>Physical Tests (QC Lot: 253836)</b>											
CG2102750-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	412	401	2.51%	15%	----
<b>Physical Tests (QC Lot: 253837)</b>											
CG2102753-005	FR_TBSSMW-2_QTR_2021-07-05_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	456	468	2.79%	15%	----
<b>Anions and Nutrients (QC Lot: 249339)</b>											
CG2102752-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 249393)</b>											
CG2102753-001	FR_HMW3_QTR_2021-07-05_N	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	276	278	0.570%	20%	----
<b>Anions and Nutrients (QC Lot: 249394)</b>											
CG2102753-001	FR_HMW3_QTR_2021-07-05_N	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249395)</b>											
CG2102753-001	FR_HMW3_QTR_2021-07-05_N	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.42	0.29	0.13	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249396)</b>											
CG2102753-001	FR_HMW3_QTR_2021-07-05_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	9.83	9.87	0.423%	20%	----
<b>Anions and Nutrients (QC Lot: 249397)</b>											
CG2102753-001	FR_HMW3_QTR_2021-07-05_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0043	0.0045	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249398)</b>											
CG2102753-001	FR_HMW3_QTR_2021-07-05_N	fluoride	16984-48-8	E235.F	0.020	mg/L	0.241	0.236	2.06%	20%	----
<b>Anions and Nutrients (QC Lot: 250079)</b>											
CG2102749-036	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0037	0.0037	0.000005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250080)</b>											
CG2102753-002	FR_TBSSMW-1_QTR_2021-07-05_N	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0065	0.0070	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 251414)</b>											
CG2102752-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 252485)</b>											
CG2102752-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.153	0.145	5.84%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 252993)</b>											
CG2102751-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.18	1.58	0.60	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 252995)</b>											
CG2102751-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.52	1.24	0.28	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 252710)</b>											
CG2102751-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 253019)</b>											
CG2102750-006	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00131	0.00123	6.84%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0199	0.0199	0.248%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 253019) - continued</b>											
CG2102750-006	Anonymous	boron, dissolved	7440-42-8	E421	0.010	mg/L	0.050	0.049	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	1.35 µg/L	0.00135	0.461%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	307	309	0.636%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	1.03 µg/L	0.00106	3.24%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00060	0.00058	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.576	0.581	0.879%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	143	147	2.55%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00139	0.00140	1.22%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00482	0.00479	0.528%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.105	0.105	0.428%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	10.5	10.3	2.02%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	270 µg/L	0.274	1.16%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.15	2.18	1.31%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.18	7.19	0.0881%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.509	0.492	3.26%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	245	249	1.46%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000097	0.000094	0.000003	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0195	0.0193	1.18%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.460	0.460	0.222%	20%	----
<b>Dissolved Metals (QC Lot: 253020)</b>											
CG2102750-006	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 253021)</b>											
CG2102752-001	Anonymous	cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0143 µg/L	0.0000173	0.0000030	Diff <2x LOR	----
CG2102752-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 253021) - continued</b>											
CG2102752-001	Anonymous	boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 253022)</b>											
CG2102752-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 249312)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 249943)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 251309)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 251311)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 251312)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 251314)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 252412)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 252418)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<40	----
<b>Anions and Nutrients (QCLot: 249339)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 249393)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 249394)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 249395)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 249396)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 249397)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 249398)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 250079)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 250080)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 251414)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 252485)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 252993)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 252995)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 252710)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 253019)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 253019) - continued</b>						
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 253020)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 253021)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 253021) - continued</b>						
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 253022)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 249312)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 249943)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	95.6	85.0	115	---
<b>Physical Tests (QCLot: 251309)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	95.4	90.0	110	---
<b>Physical Tests (QCLot: 251310)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 251311)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	98.8	85.0	115	---
<b>Physical Tests (QCLot: 251312)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	96.0	90.0	110	---
<b>Physical Tests (QCLot: 251313)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 251314)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 252412)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	92.5	85.0	115	---
<b>Physical Tests (QCLot: 252418)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	97.6	85.0	115	---
<b>Physical Tests (QCLot: 253836)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Physical Tests (QCLot: 253837)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Anions and Nutrients (QCLot: 249339)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	100	80.0	120	---
<b>Anions and Nutrients (QCLot: 249393)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 249394)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.0	85.0	115	---
<b>Anions and Nutrients (QCLot: 249395)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 249396)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 249396) - continued</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 249397)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.0	90.0	110	----
<b>Anions and Nutrients (QCLot: 249398)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	94.5	90.0	110	----
<b>Anions and Nutrients (QCLot: 250079)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	99.4	80.0	120	----
<b>Anions and Nutrients (QCLot: 250080)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 251414)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	122	75.0	125	----
<b>Anions and Nutrients (QCLot: 252485)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.6	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 252993)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	96.5	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 252995)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	92.1	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	91.3	80.0	120	----
<b>Dissolved Metals (QCLot: 253019)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.4	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.9	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 253019) - continued</b>									
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.2	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.7	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.3	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 253020)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 253021)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	107	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	107	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier	
					Concentration	LCS	Low	High		
<b>Dissolved Metals (QCLot: 253021) - continued</b>										
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----	
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	100	80.0	120	----	
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	108	80.0	120	----	
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----	
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----	
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.7	80.0	120	----	
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----	
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	104	80.0	120	----	
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.6	80.0	120	----	
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.8	80.0	120	----	
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----	
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----	
<b>Dissolved Metals (QCLot: 253022)</b>										
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----	



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 249339)</b>										
CG2102752-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0546 mg/L	0.05 mg/L	109	70.0	130	----
<b>Anions and Nutrients (QCLot: 249393)</b>										
CG2102753-004	FR_TRP_QTR_2021-07-05_N	sulfate (as SO4)	14808-79-8	E235.SO4	114 mg/L	100 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 249394)</b>										
CG2102753-004	FR_TRP_QTR_2021-07-05_N	bromide	24959-67-9	E235.Br-L	0.514 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 249395)</b>										
CG2102753-004	FR_TRP_QTR_2021-07-05_N	chloride	16887-00-6	E235.Cl-L	112 mg/L	100 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 249396)</b>										
CG2102753-004	FR_TRP_QTR_2021-07-05_N	nitrate (as N)	14797-55-8	E235.NO3-L	2.71 mg/L	2.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 249397)</b>										
CG2102753-004	FR_TRP_QTR_2021-07-05_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.536 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 249398)</b>										
CG2102753-004	FR_TRP_QTR_2021-07-05_N	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 250079)</b>										
CG2102750-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0571 mg/L	0.0676 mg/L	84.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 250080)</b>										
CG2102753-003	FR_DC1_QTR_2021-07-05_N	phosphorus, total	7723-14-0	E372-U	0.0598 mg/L	0.0676 mg/L	88.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 251414)</b>										
CG2102752-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.56 mg/L	2.5 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 252485)</b>										
CG2102753-004	FR_TRP_QTR_2021-07-05_N	ammonia, total (as N)	7664-41-7	E298	0.113 mg/L	0.1 mg/L	113	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 252993)</b>										
CG2102751-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.9 mg/L	23.9 mg/L	99.9	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 252995)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Organic / Inorganic Carbon (QCLot: 252995) - continued</b>										
CG2102751-001	Anonymous	carbon, total organic [TOC]	----	E355-L	21.5 mg/L	23.9 mg/L	89.9	70.0	130	----
<b>Dissolved Metals (QCLot: 252710)</b>										
CG2102751-004	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000940 mg/L	0.0001 mg/L	94.0	70.0	130	----
<b>Dissolved Metals (QCLot: 253019)</b>										
CG2102750-007	Anonymous	aluminum, dissolved	7429-90-5	E421	0.414 mg/L	0.4 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0775 mg/L	0.08 mg/L	96.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0173 mg/L	0.02 mg/L	86.5	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.189 mg/L	0.2 mg/L	94.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0371 mg/L	0.04 mg/L	92.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.99 mg/L	4 mg/L	99.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0358 mg/L	0.04 mg/L	89.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0429 mg/L	0.04 mg/L	107	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.9 mg/L	20 mg/L	94.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00790 mg/L	0.008 mg/L	98.7	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00730 mg/L	0.008 mg/L	91.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0829 mg/L	0.08 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.204 mg/L	0.2 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	ND mg/L	0.4 mg/L	ND	70.0	130	----
<b>Dissolved Metals (QCLot: 253020)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 253020) - continued</b>										
CG2102750-007	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0810 mg/L	0.08 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 253021)</b>										
CG2102752-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.203 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00902 mg/L	0.01 mg/L	90.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0196 mg/L	0.02 mg/L	98.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.97 mg/L	2 mg/L	98.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.88 mg/L	4 mg/L	96.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0432 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.27 mg/L	10 mg/L	92.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.99 mg/L	2 mg/L	99.6	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.8 mg/L	20 mg/L	104	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.410 mg/L	0.4 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 253022)</b>										
CG2102752-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----



COC ID: 7/21/2021 TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Scott Roughead			Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com	X	X	X
Email	scott.roughead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	britt.underaun@teck.com	X	X	X
Address				Address	2559 29 Street NE			Email 3:	scott.roughead@teck.com	X	X	X
City	Elkford		Province	BC		City	Calgary		Province	AB		
Postal Code			Country	Canada		Postal Code	T1Y 7B5		Country	Canada		
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00741392			

Sample ID	Sample Location (sys_loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED														
								ALS_Package-TKN/IOC	TECKCOAL-ROUTINE-VA	HG-D-CVAF-VA	HG-T-U-CVAF-VA	ALS_Package-DOC	TECKCOAL-MET-D-VA	TECKCOAL-MET/NIIG-T-CL	ALS_Package-BOD	ALS_Package-Colour	ALS_Package-PAH	ALS_Package-TSS/TURB	ALS_Package-EPH			
FR_HMW3_QTR_2021-07-05_N	FR_HMW3	WS	NO	July 21, 2021	12:48	G	5	N	N	F	N	F	F	N								
FR_TBSSMW-1_QTR_2021-07-05_N	FR_TBSSMW-1	WS	NO	July 21, 2021	10:29	G	5	H2SO4	NONE	HCL	NONE	H2SO4	HNO3	HNO3			NAHSO4				NAHSO4	
FR_DC1_QTR_2021-07-05_N	FR_DC1	WS	NO	July 21, 2021	9:12	G	5	1	1	1		1	1									
FR_TRP_QTR_2021-07-05_N	FR_TRP	WS	NO	July 21, 2021	12:00	G	5	1	1	1		1	1									
FR_TBSSMW-2_QTR_2021-07-05_N	FR_TBSSMW-2	WS	NO	July 21, 2021	9:12	G	5	1	1	1		1	1									

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Environmental Division Calgary Work Order Reference <b>CG2102753</b>	Aric Keane	July 21, 2021	<i>[Signature]</i>	22/07 9:00



Subject to availability)	
Regular (default) X	
3 business days) - 50% surcharge	
1 Business Day) - 100% surcharge	
1 SAP or Weekend - Contact ALS	
Sampler's Name	Aric Keane
Sampler's Signature	<i>[Signature]</i>
Mobile #	250-427-1062
Date/Time	July 21, 2021

150



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2102787**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 7/22/2021  
**Sampler** : Aric Keane  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 10  
**No. of samples analysed** : 10

**Page** : 1 of 11  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Jul-2021 08:50  
**Date Analysis Commenced** : 23-Jul-2021  
**Issue Date** : 10-Aug-2021 10:58

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
CU	colour units (1 CU = 1 mg/L Pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	<i>Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.</i>
DLM	<i>Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).</i>
RRV	<i>Reported result verified by repeat analysis.</i>
TKNI	<i>TKN result may be biased low due to Nitrate interference. Nitrate-N is &gt; 10x TKN.</i>



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-01-A_QT R_2021-07-05_ N	FR_09-01-B_QT R_2021-07-05_ N	FR_09-02-A_QT R_2021-07-05_ N	FR_09-02-B_QT R_2021-07-05_ N	FR_DC2_QTR_2 021-07-05_N
Client sampling date / time					22-Jul-2021 12:44	22-Jul-2021 13:17	22-Jul-2021 11:17	22-Jul-2021 11:46	22-Jul-2021 11:17	
Analyte	CAS Number	Method	LOR	Unit	CG2102787-001	CG2102787-002	CG2102787-003	CG2102787-004	CG2102787-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	12.6	12.3	6.4	7.2	5.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	345	313	250	260	238	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	345	313	250	260	238	
conductivity	----	E100	2.0	µS/cm	1220	1140	794	851	781	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	705	657	446	483	444	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	456	444	442	447	445	
pH	----	E108	0.10	pH units	8.12	7.97	8.13	8.18	8.05	
solids, total dissolved [TDS]	----	E162	10	mg/L	963	923	595	634	576	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	8.2	1.3	6.7	
turbidity	----	E121	0.10	NTU	0.14	0.48	6.57	0.47	8.64	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	421	382	306	317	290	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0168	0.0083	<0.0050	0.0158	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.050	<0.050	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.35	1.15	0.93	1.39	0.97	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.216	0.152	0.191	0.166	0.188	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.074 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	0.151 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	30.8	28.2	12.0	12.2	11.8	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0027	<0.0020	0.0123	0.0024	0.0110	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	295	281	171	192	170	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.51	1.03	1.71	2.02	1.74	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.99	1.00	1.66	1.76	1.56	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-01-A_QT R_2021-07-05_ N	FR_09-01-B_QT R_2021-07-05_ N	FR_09-02-A_QT R_2021-07-05_ N	FR_09-02-B_QT R_2021-07-05_ N	FR_DC2_QTR_2 021-07-05_N
Client sampling date / time					22-Jul-2021 12:44	22-Jul-2021 13:17	22-Jul-2021 11:17	22-Jul-2021 11:46	22-Jul-2021 11:17	
Analyte	CAS Number	Method	LOR	Unit	CG2102787-001	CG2102787-002	CG2102787-003	CG2102787-004	CG2102787-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	15.3	14.2	9.45	10.1	9.18	
cation sum	----	EC101	0.10	meq/L	14.4	13.4	9.11	9.83	9.07	
ion balance (cations/anions ratio)	----	EC101	0.010	%	94.1	94.4	96.4	97.3	98.8	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.03	2.90	1.83	1.35	0.603	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0011	0.0012	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00040	0.00014	0.00030	0.00013	0.00032	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0820	0.112	0.115	0.138	0.120	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	0.018	0.019	0.012	0.020	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0299	0.0251	0.0207	0.0196	0.0222	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	158	147	99.9	110	101	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00076	<0.00020	<0.00020	0.00039	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000184	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0743	0.0739	0.0560	0.0569	0.0588	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	75.4	70.5	47.8	50.5	46.6	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00217	0.000982	0.00215	0.00129	0.00218	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.77	2.94	2.38	1.88	2.60	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	123	111	46.2	47.8	45.4	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.04	2.22	1.97	2.05	2.06	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.92	3.97	3.00	3.31	2.97	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.169	0.188	0.131	0.164	0.143	



## Analytical Results

					Client sample ID	FR_09-01-A_QT R_2021-07-05_ N	FR_09-01-B_QT R_2021-07-05_ N	FR_09-02-A_QT R_2021-07-05_ N	FR_09-02-B_QT R_2021-07-05_ N	FR_DC2_QTR_2 021-07-05_N
Sub-Matrix: Water (Matrix: Water)					Client sampling date / time	22-Jul-2021 12:44	22-Jul-2021 13:17	22-Jul-2021 11:17	22-Jul-2021 11:46	22-Jul-2021 11:17
Analyte	CAS Number	Method	LOR	Unit	CG2102787-001	CG2102787-002	CG2102787-003	CG2102787-004	CG2102787-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	104	96.4	62.3	66.4	62.4	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00676	0.00532	0.00382	0.00363	0.00412	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_SKP2H_MO N_2021-07-05_ N	FR_DC2_MON_ 2021-07-05_N	FR_FRABCH_W EK_2021-07-19	FR_WWT_WW_ 2021-07-05_N	FR_FLD_QTR_2 021-07-05_N
Client sampling date / time					22-Jul-2021 13:24	22-Jul-2021 13:24	22-Jul-2021 12:15	22-Jul-2021 10:20	22-Jul-2021 11:46	
Analyte	CAS Number	Method	LOR	Unit	CG2102787-006	CG2102787-007	CG2102787-008	CG2102787-009	CG2102787-010	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	10.2	10.0	2.2	----	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	322	334	224	----	<1.0	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	3.4	----	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	322	334	228	----	<1.0	
colour, true	----	E329	5.0	CU	----	----	----	54.3 <sup>RRV</sup>	----	
conductivity	----	E100	2.0	µS/cm	1230	1230	972	----	<2.0	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	740	778	543	----	<0.50	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	449	482	452	----	446	
pH	----	E108	0.10	pH units	8.07	8.07	8.35	----	5.58	
solids, total dissolved [TDS]	----	E162	10	mg/L	961	976	767	----	<10	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	4.4	<1.0	4.0	27.2	<1.0	
turbidity	----	E121	0.10	NTU	0.76	0.44	0.33	12.3	<0.10	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	393	407	274	----	<1.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	2.0	----	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0053	0.0068	0.0213	----	<0.0050	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	----	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.93	1.12	1.21	----	<0.10	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.133	0.133	0.136	----	<0.020	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	----	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	32.5	32.7	21.0	----	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0204	0.0184	0.0082	----	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0035	0.0028	0.0030	----	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	305	306	274	----	<0.30	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.05	2.24	2.52	----	<0.50	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.62	2.17	2.08	----	<0.50	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_SKP2H_MO N_2021-07-05_ N	FR_DC2_MON_ 2021-07-05_N	FR_FRABCH_W EK_2021-07-19	FR_WWT_WW_ 2021-07-05_N	FR_FLD_QTR_2 021-07-05_N
Client sampling date / time					22-Jul-2021 13:24	22-Jul-2021 13:24	22-Jul-2021 12:15	22-Jul-2021 10:20	22-Jul-2021 11:46	
Analyte	CAS Number	Method	LOR	Unit	CG2102787-006	CG2102787-007	CG2102787-008	CG2102787-009	CG2102787-010	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	15.1	15.4	11.8	----	<0.10	
cation sum	----	EC101	0.10	meq/L	15.0	15.8	11.0	----	<0.10	
ion balance (cations/anions ratio)	----	EC101	0.010	%	99.3	102	93.2	----	100	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.332	1.28	3.51	----	<0.010	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0836	0.0108	0.0064	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00047	0.00046	0.00018	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00011	<0.00010	<0.00010	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0388	0.0383	0.0796	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.028	0.026	0.014	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.469	0.264	0.0443	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	187	176	128	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00023	<0.00010	0.00012	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.46	<0.10	<0.10	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00079	<0.00050	<0.00050	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.185	0.016	0.016	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000212	<0.000050	<0.000050	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0968	0.0891	0.0437	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	75.2	76.4	59.5	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00894	0.00107	0.00563	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00065	0.00099	<0.00050	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00134	0.00143	0.00149	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0159	0.0145	0.00180	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	3.56	3.54	2.07	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	119	116	80.2	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.15	2.10	1.90	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	3.67	3.93	2.39	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.183	0.192	0.169	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_SKP2H_MO N_2021-07-05_ N	FR_DC2_MON_ 2021-07-05_N	FR_FRABCH_W EK_2021-07-19	FR_WWT_WW_ 2021-07-05_N	FR_FLD_QTR_2 021-07-05_N
Client sampling date / time					22-Jul-2021 13:24	22-Jul-2021 13:24	22-Jul-2021 12:15	22-Jul-2021 10:20	22-Jul-2021 11:46	
Analyte	CAS Number	Method	LOR	Unit	CG2102787-006	CG2102787-007	CG2102787-008	CG2102787-009	CG2102787-010	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	108	106	97.2	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000021	0.000016	<0.000010	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00120 <sup>DLM</sup>	<0.00030	<0.00030	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00692	0.00671	0.00344	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0150	0.0066	<0.0030	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00043	0.00042	0.00016	----	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	<0.00010	<0.00010	----	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0407	0.0401	0.0806	----	<0.00010	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	0.026	0.013	----	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.254	0.247	0.0417	----	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	165	176	120	----	<0.050	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	----	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	----	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	----	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0845	0.0895	0.0390	----	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	79.6	82.1	59.0	----	<0.0050	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00033	0.00036	0.00468	----	<0.00010	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00136	0.00132	0.00138	----	<0.000050	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0152	0.0154	0.00187	----	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.78	3.65	1.95	----	<0.050	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	128	131	84.1	----	<0.050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.05	2.06	1.81	----	<0.050	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_SKP2H_MO N_2021-07-05_ N	FR_DC2_MON_ 2021-07-05_N	FR_FRABCH_W EK_2021-07-19	FR_WWT_WW_ 2021-07-05_N	FR_FLD_QTR_2 021-07-05_N
Client sampling date / time					22-Jul-2021 13:24	22-Jul-2021 13:24	22-Jul-2021 12:15	22-Jul-2021 10:20	22-Jul-2021 11:46	
Analyte	CAS Number	Method	LOR	Unit	CG2102787-006	CG2102787-007	CG2102787-008	CG2102787-009	CG2102787-010	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	<0.00010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.97	4.13	2.54	----	<0.050	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.176	0.168	0.149	----	<0.00020	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	107	106	94.5	----	<0.50	
thallium, dissolved	7440-28-0	E421	0.00010	mg/L	0.00018	0.00012	<0.00010	----	<0.00010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	<0.00030	
uranium, dissolved	7440-61-1	E421	0.00010	mg/L	0.00682	0.00662	0.00334	----	<0.00010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0055	0.0058	0.0014	----	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	Field	
<b>Aggregate Organics</b>										
biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	----	----	----	8.2	----	
<b>Polycyclic Aromatic Hydrocarbons</b>										
acenaphthene	83-32-9	E641A	0.010	µg/L	----	----	<0.010	----	----	
acenaphthylene	208-96-8	E641A	0.010	µg/L	----	----	<0.010	----	----	
acridine	260-94-6	E641A	0.010	µg/L	----	----	<0.010	----	----	
anthracene	120-12-7	E641A	0.010	µg/L	----	----	<0.010	----	----	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	----	----	<0.010	----	----	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	----	----	<0.0050	----	----	
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	----	----	<0.010	----	----	
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	----	----	<0.015	----	----	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	----	----	<0.010	----	----	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	----	----	<0.010	----	----	
chrysene	218-01-9	E641A	0.010	µg/L	----	----	<0.010	----	----	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	----	----	<0.0050	----	----	
fluoranthene	206-44-0	E641A	0.010	µg/L	----	----	<0.010	----	----	
fluorene	86-73-7	E641A	0.010	µg/L	----	----	<0.010	----	----	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	----	----	<0.010	----	----	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	----	----	<0.010	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_SKP2H_MON_2021-07-05_N	FR_DC2_MON_2021-07-05_N	FR_FRABCH_WEK_2021-07-19	FR_WWT_WW_2021-07-05_N	FR_FLD_QTR_2021-07-05_N
Client sampling date / time					22-Jul-2021 13:24	22-Jul-2021 13:24	22-Jul-2021 12:15	22-Jul-2021 10:20	22-Jul-2021 11:46	
Analyte	CAS Number	Method	LOR	Unit	CG2102787-006	CG2102787-007	CG2102787-008	CG2102787-009	CG2102787-010	
					Result	Result	Result	Result	Result	
<b>Polycyclic Aromatic Hydrocarbons</b>										
methylnaphthalene, 1+2-	----	E641A	0.015	µg/L	----	----	<0.015	----	----	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	----	----	<0.010	----	----	
naphthalene	91-20-3	E641A	0.050	µg/L	----	----	<0.050	----	----	
phenanthrene	85-01-8	E641A	0.020	µg/L	----	----	<0.020	----	----	
pyrene	129-00-0	E641A	0.010	µg/L	----	----	<0.010	----	----	
quinoline	6027-02-7	E641A	0.050	µg/L	----	----	<0.050	----	----	
B(a)P total potency equivalents [B(a)P TPE]	----	E641A	0.010	µg/L	----	----	<0.010	----	----	
PAHs, high molecular weight (BC AWQ)	----	E641A	0.030	µg/L	----	----	<0.030	----	----	
PAHs, low molecular weight (BC AWQ)	----	E641A	0.060	µg/L	----	----	<0.060	----	----	
PAHs, total (EPA 16)	----	E641A	0.065	µg/L	----	----	<0.065	----	----	
<b>Polycyclic Aromatic Hydrocarbons Surrogates</b>										
chrysene-d12	1719-03-5	E641A	0.1	%	----	----	117	----	----	
naphthalene-d8	1146-65-2	E641A	0.1	%	----	----	116	----	----	
phenanthrene-d10	1517-22-2	E641A	0.1	%	----	----	122	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102787</b>	Page	: 1 of 33
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 23-Jul-2021 08:50
PO	: VPO00741392	Issue Date	: 10-Aug-2021 10:58
C-O-C number	: 7/22/2021		
Sampler	: Aric Keane		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 10		
No. of samples analysed	: 10		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>											
<b>HDPE [BOD HT 3d]</b> FR_WWT_WW_2021-07-05_N	E550	22-Jul-2021	----	----	----		25-Jul-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-01-A_QTR_2021-07-05_N	E298	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-01-B_QTR_2021-07-05_N	E298	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-02-A_QTR_2021-07-05_N	E298	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-02-B_QTR_2021-07-05_N	E298	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC2_MON_2021-07-05_N	E298	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC2_QTR_2021-07-05_N	E298	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD_QTR_2021-07-05_N	E298	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FRABCH_WEK_2021-07-19	E298	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_SKP2H_MON_2021-07-05_N	E298	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-01-A_QTR_2021-07-05_N	E235.Br-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-01-B_QTR_2021-07-05_N	E235.Br-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-02-A_QTR_2021-07-05_N	E235.Br-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-02-B_QTR_2021-07-05_N	E235.Br-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC2_MON_2021-07-05_N	E235.Br-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC2_QTR_2021-07-05_N	E235.Br-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_FLD_QTR_2021-07-05_N	E235.Br-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_FRABCH_WEK_2021-07-19	E235.Br-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_SKP2H_MON_2021-07-05_N	E235.Br-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_09-01-A_QTR_2021-07-05_N	E235.Cl-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_09-01-B_QTR_2021-07-05_N	E235.Cl-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_09-02-A_QTR_2021-07-05_N	E235.Cl-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_09-02-B_QTR_2021-07-05_N	E235.Cl-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_DC2_MON_2021-07-05_N	E235.Cl-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_DC2_QTR_2021-07-05_N	E235.Cl-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_FLD_QTR_2021-07-05_N	E235.CI-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_FRABCH_WEK_2021-07-19	E235.CI-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_SKP2H_MON_2021-07-05_N	E235.CI-L	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_09-01-A_QTR_2021-07-05_N	E378-U	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_09-01-B_QTR_2021-07-05_N	E378-U	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_09-02-A_QTR_2021-07-05_N	E378-U	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_09-02-B_QTR_2021-07-05_N	E378-U	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_DC2_MON_2021-07-05_N	E378-U	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_DC2_QTR_2021-07-05_N	E378-U	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_FLD_QTR_2021-07-05_N	E378-U	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_FRABCH_WEK_2021-07-19	E378-U	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_SKP2H_MON_2021-07-05_N	E378-U	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_09-01-A_QTR_2021-07-05_N	E235.F	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_09-01-B_QTR_2021-07-05_N	E235.F	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_09-02-A_QTR_2021-07-05_N	E235.F	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_09-02-B_QTR_2021-07-05_N	E235.F	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_DC2_MON_2021-07-05_N	E235.F	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_DC2_QTR_2021-07-05_N	E235.F	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_FLD_QTR_2021-07-05_N	E235.F	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_FRABCH_WEK_2021-07-19	E235.F	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_SKP2H_MON_2021-07-05_N	E235.F	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-01-A_QTR_2021-07-05_N	E235.NO3-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-01-B_QTR_2021-07-05_N	E235.NO3-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-02-A_QTR_2021-07-05_N	E235.NO3-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-02-B_QTR_2021-07-05_N	E235.NO3-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC2_MON_2021-07-05_N	E235.NO3-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC2_QTR_2021-07-05_N	E235.NO3-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_FLD_QTR_2021-07-05_N	E235.NO3-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_FRABCH_WEK_2021-07-19	E235.NO3-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_SKP2H_MON_2021-07-05_N	E235.NO3-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_09-01-A_QTR_2021-07-05_N	E235.NO2-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_09-01-B_QTR_2021-07-05_N	E235.NO2-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_09-02-A_QTR_2021-07-05_N	E235.NO2-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_09-02-B_QTR_2021-07-05_N	E235.NO2-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_DC2_MON_2021-07-05_N	E235.NO2-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_DC2_QTR_2021-07-05_N	E235.NO2-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_FLD_QTR_2021-07-05_N	E235.NO2-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_FRABCH_WEK_2021-07-19	E235.NO2-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_SKP2H_MON_2021-07-05_N	E235.NO2-L	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_09-01-A_QTR_2021-07-05_N	E235.SO4	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_09-01-B_QTR_2021-07-05_N	E235.SO4	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_09-02-A_QTR_2021-07-05_N	E235.SO4	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_09-02-B_QTR_2021-07-05_N	E235.SO4	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_DC2_MON_2021-07-05_N	E235.SO4	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_DC2_QTR_2021-07-05_N	E235.SO4	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_FLD_QTR_2021-07-05_N	E235.SO4	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_FRABCH_WEK_2021-07-19	E235.SO4	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_SKP2H_MON_2021-07-05_N	E235.SO4	22-Jul-2021	----	----	----		24-Jul-2021	28 days	2 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_09-01-A_QTR_2021-07-05_N	E318	22-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	4 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_09-01-B_QTR_2021-07-05_N	E318	22-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	4 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_09-02-A_QTR_2021-07-05_N	E318	22-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	4 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_09-02-B_QTR_2021-07-05_N	E318	22-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	4 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_DC2_MON_2021-07-05_N	E318	22-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	4 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_DC2_QTR_2021-07-05_N	E318	22-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	4 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD_QTR_2021-07-05_N	E318	22-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FRABCH_WEK_2021-07-19	E318	22-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_SKP2H_MON_2021-07-05_N	E318	22-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-01-A_QTR_2021-07-05_N	E372-U	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-01-B_QTR_2021-07-05_N	E372-U	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-02-A_QTR_2021-07-05_N	E372-U	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-02-B_QTR_2021-07-05_N	E372-U	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC2_MON_2021-07-05_N	E372-U	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC2_QTR_2021-07-05_N	E372-U	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD_QTR_2021-07-05_N	E372-U	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FRABCH_WEK_2021-07-19	E372-U	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_SKP2H_MON_2021-07-05_N	E372-U	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-01-A_QTR_2021-07-05_N	E421.Cr-L	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-01-B_QTR_2021-07-05_N	E421.Cr-L	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-02-A_QTR_2021-07-05_N	E421.Cr-L	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-02-B_QTR_2021-07-05_N	E421.Cr-L	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC2_MON_2021-07-05_N	E421.Cr-L	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC2_QTR_2021-07-05_N	E421.Cr-L	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	





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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FLD_QTR_2021-07-05_N	E421.Cr-L	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FRABCH_WEK_2021-07-19	E421.Cr-L	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_SKP2H_MON_2021-07-05_N	E421.Cr-L	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_09-01-A_QTR_2021-07-05_N	E509	22-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_09-01-B_QTR_2021-07-05_N	E509	22-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_09-02-A_QTR_2021-07-05_N	E509	22-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_09-02-B_QTR_2021-07-05_N	E509	22-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_DC2_MON_2021-07-05_N	E509	22-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_DC2_QTR_2021-07-05_N	E509	22-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_FLD_QTR_2021-07-05_N	E509	22-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_FRABCH_WEK_2021-07-19	E509	22-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_SKP2H_MON_2021-07-05_N	E509	22-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-01-A_QTR_2021-07-05_N	E421	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-01-B_QTR_2021-07-05_N	E421	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-02-A_QTR_2021-07-05_N	E421	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-02-B_QTR_2021-07-05_N	E421	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC2_MON_2021-07-05_N	E421	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC2_QTR_2021-07-05_N	E421	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FLD_QTR_2021-07-05_N	E421	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FRABCH_WEK_2021-07-19	E421	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_SKP2H_MON_2021-07-05_N	E421	22-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	180 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-01-A_QTR_2021-07-05_N	E358-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-01-B_QTR_2021-07-05_N	E358-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-02-A_QTR_2021-07-05_N	E358-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-02-B_QTR_2021-07-05_N	E358-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_DC2_MON_2021-07-05_N	E358-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_DC2_QTR_2021-07-05_N	E358-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_FLD_QTR_2021-07-05_N	E358-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_FRABCH_WEK_2021-07-19	E358-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_SKP2H_MON_2021-07-05_N	E358-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-01-A_QTR_2021-07-05_N	E355-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-01-B_QTR_2021-07-05_N	E355-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-02-A_QTR_2021-07-05_N	E355-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-02-B_QTR_2021-07-05_N	E355-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC2_MON_2021-07-05_N	E355-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC2_QTR_2021-07-05_N	E355-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD_QTR_2021-07-05_N	E355-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FRABCH_WEK_2021-07-19	E355-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_SKP2H_MON_2021-07-05_N	E355-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_09-01-A_QTR_2021-07-05_N	E283	22-Jul-2021	----	----	----		24-Jul-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_09-01-B_QTR_2021-07-05_N	E283	22-Jul-2021	----	----	----		24-Jul-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_09-02-A_QTR_2021-07-05_N	E283	22-Jul-2021	----	----	----		24-Jul-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_09-02-B_QTR_2021-07-05_N	E283	22-Jul-2021	----	----	----		24-Jul-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_DC2_MON_2021-07-05_N	E283	22-Jul-2021	----	----	----		24-Jul-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_DC2_QTR_2021-07-05_N	E283	22-Jul-2021	----	----	----		24-Jul-2021	14 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_FLD_QTR_2021-07-05_N	E283	22-Jul-2021	----	----	----		24-Jul-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_FRABCH_WEK_2021-07-19	E283	22-Jul-2021	----	----	----		24-Jul-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_SKP2H_MON_2021-07-05_N	E283	22-Jul-2021	----	----	----		24-Jul-2021	14 days	2 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_09-01-A_QTR_2021-07-05_N	E290	22-Jul-2021	----	----	----		25-Jul-2021	14 days	3 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_09-01-B_QTR_2021-07-05_N	E290	22-Jul-2021	----	----	----		25-Jul-2021	14 days	3 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_09-02-A_QTR_2021-07-05_N	E290	22-Jul-2021	----	----	----		25-Jul-2021	14 days	3 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_09-02-B_QTR_2021-07-05_N	E290	22-Jul-2021	----	----	----		25-Jul-2021	14 days	3 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_DC2_MON_2021-07-05_N	E290	22-Jul-2021	----	----	----		25-Jul-2021	14 days	3 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_DC2_QTR_2021-07-05_N	E290	22-Jul-2021	----	----	----		25-Jul-2021	14 days	3 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_FLD_QTR_2021-07-05_N	E290	22-Jul-2021	----	----	----		25-Jul-2021	14 days	3 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_FRABCH_WEK_2021-07-19	E290	22-Jul-2021	----	----	----		25-Jul-2021	14 days	3 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_SKP2H_MON_2021-07-05_N	E290	22-Jul-2021	----	----	----		25-Jul-2021	14 days	3 days	✓
<b>Physical Tests : Colour (True) by Spectrometer</b>										
HDPE FR_WWT_WW_2021-07-05_N	E329	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_09-01-A_QTR_2021-07-05_N	E100	22-Jul-2021	----	----	----		25-Jul-2021	28 days	3 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_09-01-B_QTR_2021-07-05_N	E100	22-Jul-2021	----	----	----		25-Jul-2021	28 days	3 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_09-02-A_QTR_2021-07-05_N	E100	22-Jul-2021	----	----	----		25-Jul-2021	28 days	3 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_09-02-B_QTR_2021-07-05_N	E100	22-Jul-2021	----	----	----		25-Jul-2021	28 days	3 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_DC2_MON_2021-07-05_N	E100	22-Jul-2021	----	----	----		25-Jul-2021	28 days	3 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_DC2_QTR_2021-07-05_N	E100	22-Jul-2021	----	----	----		25-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_FLD_QTR_2021-07-05_N	E100	22-Jul-2021	----	----	----		25-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_FRABCH_WEK_2021-07-19	E100	22-Jul-2021	----	----	----		25-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_SKP2H_MON_2021-07-05_N	E100	22-Jul-2021	----	----	----		25-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_09-01-B_QTR_2021-07-05_N	E125	22-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	167 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_SKP2H_MON_2021-07-05_N	E125	22-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	167 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_09-01-A_QTR_2021-07-05_N	E125	22-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	168 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_DC2_MON_2021-07-05_N	E125	22-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	168 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_09-02-A_QTR_2021-07-05_N	E125	22-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	169 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_09-02-B_QTR_2021-07-05_N	E125	22-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	169 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_DC2_QTR_2021-07-05_N	E125	22-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	169 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_FRABCH_WEK_2021-07-19	E125	22-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	169 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_FLD_QTR_2021-07-05_N	E125	22-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	170 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_DC2_MON_2021-07-05_N	E108	22-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	66 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_SKP2H_MON_2021-07-05_N	E108	22-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	66 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_09-01-A_QTR_2021-07-05_N	E108	22-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	67 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_09-01-B_QTR_2021-07-05_N	E108	22-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	67 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_09-02-B_QTR_2021-07-05_N	E108	22-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	68 hrs	* EHTR-FM





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE FR_FLD_QTR_2021-07-05_N	E108	22-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	68 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_FRABCH_WEK_2021-07-19	E108	22-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	68 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_09-02-A_QTR_2021-07-05_N	E108	22-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	69 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_DC2_QTR_2021-07-05_N	E108	22-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	69 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_09-01-A_QTR_2021-07-05_N	E162	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_09-01-B_QTR_2021-07-05_N	E162	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_09-02-A_QTR_2021-07-05_N	E162	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_09-02-B_QTR_2021-07-05_N	E162	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_DC2_MON_2021-07-05_N	E162	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_DC2_QTR_2021-07-05_N	E162	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_FLD_QTR_2021-07-05_N	E162	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_FRABCH_WEK_2021-07-19	E162	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_SKP2H_MON_2021-07-05_N	E162	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_09-01-A_QTR_2021-07-05_N	E160-L	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_09-01-B_QTR_2021-07-05_N	E160-L	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_09-02-A_QTR_2021-07-05_N	E160-L	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_09-02-B_QTR_2021-07-05_N	E160-L	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_DC2_MON_2021-07-05_N	E160-L	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_DC2_QTR_2021-07-05_N	E160-L	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_FLD_QTR_2021-07-05_N	E160-L	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_FRABCH_WEK_2021-07-19	E160-L	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_SKP2H_MON_2021-07-05_N	E160-L	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_WWT_WW_2021-07-05_N	E160-L	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE FR_09-01-A_QTR_2021-07-05_N	E121	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE FR_09-01-B_QTR_2021-07-05_N	E121	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE FR_09-02-A_QTR_2021-07-05_N	E121	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE FR_09-02-B_QTR_2021-07-05_N	E121	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE FR_DC2_MON_2021-07-05_N	E121	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE FR_DC2_QTR_2021-07-05_N	E121	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE FR_FLD_QTR_2021-07-05_N	E121	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE FR_FRABCH_WEK_2021-07-19	E121	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE FR_SKP2H_MON_2021-07-05_N	E121	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE FR_WWT_WW_2021-07-05_N	E121	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✔
<b>Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS</b>										
Amber glass/Teflon lined cap (sodium bisulfate) FR_FRABCH_WEK_2021-07-19	E641A	22-Jul-2021	25-Jul-2021	14 days	3 days	✔	27-Jul-2021	40 days	2 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
HDPE total (nitric acid) FR_DC2_MON_2021-07-05_N	E420.Cr-L	22-Jul-2021	----	----	----		26-Jul-2021	180 days	4 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
HDPE total (nitric acid) FR_FRABCH_WEK_2021-07-19	E420.Cr-L	22-Jul-2021	----	----	----		26-Jul-2021	180 days	4 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_SKP2H_MON_2021-07-05_N	E420.Cr-L	22-Jul-2021	----	----	----		26-Jul-2021	180 days	4 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> FR_DC2_MON_2021-07-05_N	E508-L	22-Jul-2021	----	----	----		29-Jul-2021	28 days	7 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> FR_FRABCH_WEK_2021-07-19	E508-L	22-Jul-2021	----	----	----		29-Jul-2021	28 days	7 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> FR_SKP2H_MON_2021-07-05_N	E508-L	22-Jul-2021	----	----	----		29-Jul-2021	28 days	7 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_DC2_MON_2021-07-05_N	E420	22-Jul-2021	----	----	----		26-Jul-2021	180 days	4 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_FRABCH_WEK_2021-07-19	E420	22-Jul-2021	----	----	----		26-Jul-2021	180 days	4 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_SKP2H_MON_2021-07-05_N	E420	22-Jul-2021	----	----	----		26-Jul-2021	180 days	4 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	251124	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	251334	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	253525	2	40	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	251608	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	250860	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	250861	1	20	5.0	5.0	✓
Colour (True) by Spectrometer	E329	250847	1	3	33.3	5.0	✓
Conductivity in Water	E100	251332	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252830	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	254217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252831	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	253576	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	250424	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	250858	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	250862	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	250863	1	20	5.0	5.0	✓
ORP by Electrode	E125	254245	2	40	5.0	5.0	✓
pH by Meter	E108	251333	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	250859	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	253357	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	251565	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251514	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	254655	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	251566	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253577	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	253438	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	251149	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	251124	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	251334	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	253525	2	40	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	251608	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	250860	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	250861	1	20	5.0	5.0	✓
Colour (True) by Spectrometer	E329	250847	1	3	33.3	5.0	✓
Conductivity in Water	E100	251332	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252830	1	19	5.2	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Mercury in Water by CVAAS	E509	254217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252831	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	253576	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	250424	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	250858	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	250862	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	250863	1	20	5.0	5.0	✓
ORP by Electrode	E125	254245	2	40	5.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	251521	1	1	100.0	5.0	✓
pH by Meter	E108	251333	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	250859	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	253357	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	251565	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251514	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	254655	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	251566	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253577	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	253438	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	253352	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	251149	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	251124	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	251334	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	253525	2	40	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	251608	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	250860	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	250861	1	20	5.0	5.0	✓
Colour (True) by Spectrometer	E329	250847	1	3	33.3	5.0	✓
Conductivity in Water	E100	251332	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252830	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	254217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252831	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	253576	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	250424	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	250858	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	250862	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	250863	1	20	5.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	251521	1	1	100.0	5.0	✓
Sulfate in Water by IC	E235.SO4	250859	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	253357	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	251565	1	18	5.5	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Method Blanks (MB) - Continued</b>							
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251514	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	254655	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	251566	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253577	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	253438	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	253352	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	251149	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	253525	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	250860	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	250861	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252830	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	254217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252831	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	253576	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	250424	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	250858	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	250862	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	250863	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	250859	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	251565	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251514	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	254655	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	251566	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253577	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	253438	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Colour (True) by Spectrometer	E329 Calgary - Environmental	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
PAHs by Hexane LVI GC-MS	E641A Calgary - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.  Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
PHCs and PAHs Hexane Extraction	EP601 Calgary - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102787**

**Page** : 1 of 19

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 7/22/2021  
**Sampler** : Aric Keane  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 10  
**No. of samples analysed** : 10

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Jul-2021 08:50  
**Date Analysis Commenced** : 23-Jul-2021  
**Issue Date** : 10-Aug-2021 10:58

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 250847)</b>											
CG2102787-009	FR_WWT_WW_2021-07-05_N	colour, true	----	E329	5.0	CU	54.3	54.1	0.321%	20%	----
<b>Physical Tests (QC Lot: 251124)</b>											
CG2102787-001	FR_09-01-A_QTR_2021-07-05_N	acidity (as CaCO3)	----	E283	2.0	mg/L	12.6	12.3	0.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 251149)</b>											
CG2102775-022	Anonymous	turbidity	----	E121	0.10	NTU	19.6	20.1	2.32%	15%	----
<b>Physical Tests (QC Lot: 251332)</b>											
CG2102787-001	FR_09-01-A_QTR_2021-07-05_N	conductivity	----	E100	2.0	µS/cm	1220	1220	0.246%	10%	----
<b>Physical Tests (QC Lot: 251333)</b>											
CG2102787-001	FR_09-01-A_QTR_2021-07-05_N	pH	----	E108	0.10	pH units	8.12	8.18	0.736%	4%	----
<b>Physical Tests (QC Lot: 251334)</b>											
CG2102787-001	FR_09-01-A_QTR_2021-07-05_N	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	345	347	0.376%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	345	347	0.376%	20%	----
<b>Physical Tests (QC Lot: 253357)</b>											
CG2102775-022	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	2980	2920	1.69%	20%	----
<b>Physical Tests (QC Lot: 254245)</b>											
CG2102775-016	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	462	461	0.130%	15%	----
<b>Physical Tests (QC Lot: 254246)</b>											
CG2102787-007	FR_DC2_MON_2021-07-05_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	482	481	0.291%	15%	----
<b>Anions and Nutrients (QC Lot: 250424)</b>											
CG2102775-021	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250858)</b>											
CG2102787-001	FR_09-01-A_QTR_2021-07-05_N	fluoride	16984-48-8	E235.F	0.100	mg/L	0.216	0.200	0.016	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250859)</b>											
CG2102787-001	FR_09-01-A_QTR_2021-07-05_N	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	295	292	0.988%	20%	----
<b>Anions and Nutrients (QC Lot: 250860)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 250860) - continued</b>											
CG2102787-001	FR_09-01-A_QTR_2021-07-05_N	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250861)</b>											
CG2102787-001	FR_09-01-A_QTR_2021-07-05_N	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.35	1.07	0.28	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250862)</b>											
CG2102787-001	FR_09-01-A_QTR_2021-07-05_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	30.8	30.6	0.498%	20%	----
<b>Anions and Nutrients (QC Lot: 250863)</b>											
CG2102787-001	FR_09-01-A_QTR_2021-07-05_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 251514)</b>											
CG2102777-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.00	mg/L	89.9	82.5	8.58%	20%	----
<b>Anions and Nutrients (QC Lot: 253438)</b>											
CG2102775-021	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 253525)</b>											
CG2102775-012	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0500	mg/L	0.535	0.530	0.901%	20%	----
<b>Anions and Nutrients (QC Lot: 253526)</b>											
CG2102787-003	FR_09-02-A_QTR_2021-07-05_N	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0083	0.0057	0.0026	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 253576)</b>											
CG2102626-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.08	1.84	0.24	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 253577)</b>											
CG2102626-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.42	2.32	0.10	Diff <2x LOR	----
<b>Total Metals (QC Lot: 251565)</b>											
CG2102757-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00014	<0.00010	0.00004	Diff <2x LOR	----
<b>Total Metals (QC Lot: 251566)</b>											
CG2102757-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0552	0.0608	9.65%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00594	0.00583	1.93%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00132	0.00134	1.23%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.563	0.556	1.39%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.090	0.093	0.003	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0400	mg/L	<0.0400 µg/L	<0.0000400	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	67.1	67.8	0.995%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	4.66 µg/L	0.00468	0.414%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 251566) - continued</b>											
CG2102757-001	Anonymous	iron, total	7439-89-6	E420	0.010	mg/L	0.127	0.127	0.00916%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000210	0.000195	0.000015	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.398	0.397	0.171%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	32.6	32.1	1.40%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0265	0.0266	0.686%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0268	0.0266	0.499%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0277	0.0278	0.215%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	19.0	19.5	2.66%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	2.73 µg/L	0.00269	1.51%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.40	3.48	2.08%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	28.8	27.9	2.85%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.474	0.460	3.03%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	26.8	26.6	0.479%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000132	0.000135	2.21%	20%	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00299	0.00299	0.0282%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00152	0.00155	0.00003	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 254655)</b>											
CG2102775-008	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 252830)</b>											
CG2102775-027	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 252831)</b>											
CG2102775-027	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0031	0.0027	0.0004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00093	0.00087	0.00006	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0102	0.00998	2.33%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.079	0.075	0.005	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	<0.0100 µg/L	<0.0000100	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	532	504	5.34%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	44.7 µg/L	0.0441	1.42%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 252831) - continued</b>											
CG2102775-027	Anonymous	copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	1.88	1.88	0.0606%	20%	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.113	0.107	5.52%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	266	266	0.113%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	1.02	1.00	2.40%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.000965	0.000948	0.000016	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.216	0.215	0.478%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	7.40	7.27	1.78%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	3.77	3.72	1.35%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	9.24	9.17	0.761%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.477	0.468	1.92%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	600	603	0.402%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000055	0.000053	0.000001	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0303	0.0308	1.40%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0439	0.0430	1.88%	20%	----
<b>Dissolved Metals (QC Lot: 254217)</b>											
CG2102787-001	FR_09-01-A_QTR_2021-07-05_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 251608)</b>											
CG2102775-009	Anonymous	biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 250847)</b>						
colour, true	----	E329	5	CU	<5.0	----
<b>Physical Tests (QCLot: 251124)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 251149)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 251332)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 251334)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 253352)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 253357)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 250424)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 250858)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 250859)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 250860)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 250861)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 250862)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 250863)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 251514)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 253438)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 253438) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 253525)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 253526)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 253576)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 253577)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 251565)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 251566)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 251566) - continued</b>						
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 254655)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	---
<b>Dissolved Metals (QCLot: 252830)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 252831)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 252831) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	---
<b>Dissolved Metals (QCLot: 254217)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
<b>Aggregate Organics (QCLot: 251608)</b>						
biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 251521)</b>						
acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	---
acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	---
acridine	260-94-6	E641A	0.01	µg/L	<0.010	---
anthracene	120-12-7	E641A	0.01	µg/L	<0.010	---
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	---
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	---
benzo(b+j)fluoranthene	---	E641A	0.01	µg/L	<0.010	---
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	---
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	---
chrysene	218-01-9	E641A	0.01	µg/L	<0.010	---
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	---
fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	---
fluorene	86-73-7	E641A	0.01	µg/L	<0.010	---
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	---
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	---
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	---
naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	---
phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	---
pyrene	129-00-0	E641A	0.01	µg/L	<0.010	---
quinoline	6027-02-7	E641A	0.05	µg/L	<0.050	---



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 250847)</b>									
colour, true	---	E329	5	CU	100 CU	105	85.0	115	---
<b>Physical Tests (QCLot: 251124)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 251149)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.5	85.0	115	---
<b>Physical Tests (QCLot: 251332)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	95.5	90.0	110	---
<b>Physical Tests (QCLot: 251333)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 251334)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 253352)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	88.4	85.0	115	---
<b>Physical Tests (QCLot: 253357)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.3	85.0	115	---
<b>Physical Tests (QCLot: 254245)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Physical Tests (QCLot: 254246)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 250424)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	105	80.0	120	---
<b>Anions and Nutrients (QCLot: 250858)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 250859)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 250860)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 250861)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 250862)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 250863)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 250863) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 251514)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	75.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 253438)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	90.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 253525)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.4	85.0	115	----
<b>Anions and Nutrients (QCLot: 253526)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.8	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 253576)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	98.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 253577)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	96.0	80.0	120	----
<b>Total Metals (QCLot: 251565)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
<b>Total Metals (QCLot: 251566)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	93.4	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	93.3	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	92.4	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	109	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	91.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.5	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.1	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	95.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	90.8	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	92.4	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.5	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	100	80.0	120	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 251566) - continued</b>									
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	95.6	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.8	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	94.9	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	87.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	98.4	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.4	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	92.6	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	91.9	80.0	120	----
<b>Total Metals (QCLot: 254655)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	95.4	80.0	120	----
<b>Dissolved Metals (QCLot: 252830)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 252831)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	105	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.9	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----





Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 252831) - continued</b>									
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	107	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----
<b>Aggregate Organics (QCLot: 251608)</b>									
biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	96.6	85.0	115	----
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 251521)</b>									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	112	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	126	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	108	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	116	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	105	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	91.2	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	110	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	113	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	108	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	118	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	117	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	122	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	120	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	92.9	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	83.8	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	93.6	60.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	119	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	122	60.0	130	----
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	117	60.0	130	----





## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1x$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 250424)</b>										
CG2102775-022	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0507 mg/L	0.05 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 250858)</b>										
CG2102787-010	FR_FLD_QTR_2021-07-05_N	fluoride	16984-48-8	E235.F	0.986 mg/L	1 mg/L	98.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 250859)</b>										
CG2102787-010	FR_FLD_QTR_2021-07-05_N	sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 250860)</b>										
CG2102787-010	FR_FLD_QTR_2021-07-05_N	bromide	24959-67-9	E235.Br-L	0.513 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 250861)</b>										
CG2102787-010	FR_FLD_QTR_2021-07-05_N	chloride	16887-00-6	E235.Cl-L	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 250862)</b>										
CG2102787-010	FR_FLD_QTR_2021-07-05_N	nitrate (as N)	14797-55-8	E235.NO3-L	2.59 mg/L	2.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 250863)</b>										
CG2102787-010	FR_FLD_QTR_2021-07-05_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.522 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 251514)</b>										
CG2102778-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	ND mg/L	2.5 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 253438)</b>										
CG2102775-022	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0636 mg/L	0.0676 mg/L	94.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 253525)</b>										
CG2102775-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0920 mg/L	0.1 mg/L	92.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 253526)</b>										
CG2102787-010	FR_FLD_QTR_2021-07-05_N	ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 253576)</b>										
CG2102626-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.9 mg/L	23.9 mg/L	100.0	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 253577)</b>										
CG2102626-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.5 mg/L	23.9 mg/L	107	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 251565)</b>										
CG2102757-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
<b>Total Metals (QCLot: 251566)</b>										
CG2102757-002	Anonymous	aluminum, total	7429-90-5	E420	0.197 mg/L	0.2 mg/L	98.4	70.0	130	----
		antimony, total	7440-36-0	E420	0.0219 mg/L	0.02 mg/L	109	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00900 mg/L	0.01 mg/L	90.0	70.0	130	----
		boron, total	7440-42-8	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	1.96 mg/L	2 mg/L	98.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0439 mg/L	0.04 mg/L	110	70.0	130	----
		silicon, total	7440-21-3	E420	9.83 mg/L	10 mg/L	98.3	70.0	130	----
		silver, total	7440-22-4	E420	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00368 mg/L	0.004 mg/L	92.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		titanium, total	7440-32-6	E420	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, total	7440-66-6	E420	0.366 mg/L	0.4 mg/L	91.5	70.0	130	----
<b>Total Metals (QCLot: 254655)</b>										
CG2102787-006	FR_SKP2H_MON_2021-07-05_N	mercury, total	7439-97-6	E508-L	5.88 ng/L	5 ng/L	118	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 252830)</b>										
CG2102787-001	FR_09-01-A_QTR_2021-07-05_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 252831)</b>										
CG2102787-001	FR_09-01-A_QTR_2021-07-05_N	aluminum, dissolved	7429-90-5	E421	0.191 mg/L	0.2 mg/L	95.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00877 mg/L	0.01 mg/L	87.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.091 mg/L	0.1 mg/L	91.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00394 mg/L	0.004 mg/L	98.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.95 mg/L	2 mg/L	97.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0184 mg/L	0.02 mg/L	91.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0872 mg/L	0.1 mg/L	87.2	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0376 mg/L	0.04 mg/L	94.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.68 mg/L	4 mg/L	92.0	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.05 mg/L	10 mg/L	90.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00399 mg/L	0.004 mg/L	99.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00366 mg/L	0.004 mg/L	91.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.394 mg/L	0.4 mg/L	98.5	70.0	130	----
<b>Dissolved Metals (QCLot: 254217)</b>										
CG2102787-002	FR_09-01-B_QTR_2021-07-05_N	mercury, dissolved	7439-97-6	E509	0.0000786 mg/L	0.0001 mg/L	78.6	70.0	130	----



COC ID: 7/22/2021

TURNAROUND TIME:

RUSII:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#		Fording River Operation		Lab Name		ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager		Scott Roughead		Lab Contact		Lyudmyla Shvets		Email 1:	david.burroughs@teck.com	X	X	X
Email		scott.roughead@teck.com		Email		Lyudmyla.Shvets@ALSGlobal.com		Email 2:	brittanderson@teck.com	X	X	X
Address				Address		2559 29 Street NE		Email 3:	scott.roughead@teck.com	X	X	X
				Email 4:		teckcoal@equisonline.com		Email 5:	cruz.cantano@teck.com	X	X	X
				Email 6:		jamie.walsh@teck.com		PO number	VPO00741392	X	X	X
Elkford		Province	BC	City		Calgary	Province	AB				
		Country	Canada	Postal Code		T1Y 7B5	Country	Canada				
76				Phone Number		403 407 1794						

Environmental Division  
Calgary  
Work Order Reference  
**CG2102787**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-TKN/TOC	TECKCOAL-ROUTINE-VA	HG-D-CVAF-VA	HG-T-U-CVAF-VA	ALS Package-DOC	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	ALS Package-BOD	ALS Package-Colour	ALS Package-PAH	ALS Package-TSS/TURB	ALS Package-EPH	
FR_09-01-A_QTR_2021-07-05_N	FR_09-01-A	WS	NO	July 22, 2021	12:44	G	5	1	1	1		1	1							
FR_09-01-B_QTR_2021-07-05_N	FR_09-01-B	WS	NO	July 22, 2021	13:17	G	5	1	1	1		1	1							
FR_09-02-A_QTR_2021-07-05_N	FR_09-02-A	WS	NO	July 22, 2021	11:17	G	5	1	1	1		1	1							
FR_09-02-B_QTR_2021-07-05_N	FR_09-02-B	WS	NO	July 22, 2021	11:46	G	5	1	1	1		1	1							
FR_DC2_QTR_2021-07-05_N	FR_DC2	WS	NO	July 22, 2021	11:17	G	5	1	1	1		1	1							
FR_SKP2H_MON_2021-07-05_N	FR_SKP2H	WS	NO	July 22, 2021	13:24	G	7	1	1	1	1	1	1	1						
FR_DC2_MON_2021-07-05_N	FR_DC2	WS	NO	July 22, 2021	13:24	G	7	1	1	1	1	1	1	1						
FR_FRABCH_WEK_2021-07-19	FR_FRABCH	WS	NO	July 22, 2021	12:15	G	7	1	1	1	1	1	1	1						
FR_WWT_WW_2021-07-05_N	FR_WWT	WW	NO	July 22, 2021	10:20	G	2								1	1		1		
FR_FLD_QTR_2021-07-05_N	FR_FLD	WS	NO	July 22, 2021	11:46	G	5	1	1	1		1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Aric Keane	July 22, 2021		

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X	Aric Keane	250-427-1062
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		
	Sampler's Signature	Date/Time
		July 22, 2021

*Handwritten initials/signature*



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102852**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 7/26/2021  
**Sampler** : Aric Keane  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-Jul-2021 08:50  
**Date Analysis Commenced** : 27-Jul-2021  
**Issue Date** : 14-Aug-2021 12:11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

Samples Received with temperature >15 Degrees C. Samples were received at 16C.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC3_QTR_2 021-07-05_N	FR_GCMW-2_Q TR_2021-07-05 _N	---	---	---
Client sampling date / time					26-Jul-2021 13:15	26-Jul-2021 13:15	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2102852-001	CG2102852-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	8.3	8.8	---	---	---	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	236	226	---	---	---	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	236	226	---	---	---	
conductivity	----	E100	2.0	µS/cm	1360	1360	---	---	---	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	763	747	---	---	---	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	441	417	---	---	---	
pH	----	E108	0.10	pH units	8.14	8.18	---	---	---	
solids, total dissolved [TDS]	----	E162	10	mg/L	1090	1120	---	---	---	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	4.2	3.7	---	---	---	
turbidity	----	E121	0.10	NTU	0.20	0.18	---	---	---	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	287	276	---	---	---	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0102	0.0054	---	---	---	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	---	---	---	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.57	1.82	---	---	---	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.170	0.167	---	---	---	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	---	---	---	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	48.5	49.1	---	---	---	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0107	0.0133	---	---	---	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0023	0.0031	---	---	---	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	426	420	---	---	---	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.39	0.76	---	---	---	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.19	0.84	---	---	---	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC3_QTR_2 021-07-05_N	FR_GCMW-2_Q TR_2021-07-05 _N	---	---	---
Client sampling date / time					26-Jul-2021 13:15	26-Jul-2021 13:15	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2102852-001	CG2102852-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	17.1	16.8	---	---	---	
cation sum	---	EC101	0.10	meq/L	15.6	15.3	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	91.2	91.1	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	4.59	4.67	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0012	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00048	0.00048	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0677	0.0675	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	0.022	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0580	0.0522	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	167	165	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	0.00011	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00165	0.00178	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.186	0.191	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	84.1	81.4	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00010	0.00012	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00206	0.00209	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00274	0.00269	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.19	4.11	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	93.9	90.5	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.28	2.24	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.46	5.30	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.270	0.264	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC3_QTR_2 021-07-05_N	FR_GCMW-2_Q TR_2021-07-05 _N	----	----	----
Client sampling date / time					26-Jul-2021 13:15	26-Jul-2021 13:15	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102852-001	CG2102852-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	138	136	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00761	0.00741	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0085	0.0082	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102852</b>	Page	: 1 of 14
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 27-Jul-2021 08:50
PO	: VPO00741392	Issue Date	: 14-Aug-2021 12:12
C-O-C number	: 7/26/2021		
Sampler	: Aric Keane		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>								
Anions and Nutrients	CG2102852-002	FR_GCMW-2_QTR_2 021-07-05_N	Kjeldahl nitrogen, total [TKN]	----	E318	38.2 % MSTN	70.0-130%	Recovery less than lower data quality objective

**Result Qualifiers**

Qualifier	Description
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_DC3_QTR_2021-07-05_N	E298	26-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	2 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-2_QTR_2021-07-05_N	E298	26-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_DC3_QTR_2021-07-05_N	E235.Br-L	26-Jul-2021	----	----	----		27-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_GCMW-2_QTR_2021-07-05_N	E235.Br-L	26-Jul-2021	----	----	----		27-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_DC3_QTR_2021-07-05_N	E235.Cl-L	26-Jul-2021	----	----	----		27-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_GCMW-2_QTR_2021-07-05_N	E235.Cl-L	26-Jul-2021	----	----	----		27-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> FR_DC3_QTR_2021-07-05_N	E378-U	26-Jul-2021	----	----	----		27-Jul-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_GCMW-2_QTR_2021-07-05_N	E378-U	26-Jul-2021	----	----	----		27-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_DC3_QTR_2021-07-05_N	E235.F	26-Jul-2021	----	----	----		27-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_GCMW-2_QTR_2021-07-05_N	E235.F	26-Jul-2021	----	----	----		27-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_DC3_QTR_2021-07-05_N	E235.NO3-L	26-Jul-2021	----	----	----		27-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_GCMW-2_QTR_2021-07-05_N	E235.NO3-L	26-Jul-2021	----	----	----		27-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_DC3_QTR_2021-07-05_N	E235.NO2-L	26-Jul-2021	----	----	----		27-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_GCMW-2_QTR_2021-07-05_N	E235.NO2-L	26-Jul-2021	----	----	----		27-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_DC3_QTR_2021-07-05_N	E235.SO4	26-Jul-2021	----	----	----		27-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_GCMW-2_QTR_2021-07-05_N	E235.SO4	26-Jul-2021	----	----	----		27-Jul-2021	28 days	1 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC3_QTR_2021-07-05_N	E318	26-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-2_QTR_2021-07-05_N	E318	26-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC3_QTR_2021-07-05_N	E372-U	26-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-2_QTR_2021-07-05_N	E372-U	26-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC3_QTR_2021-07-05_N	E421.Cr-L	26-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_GCMW-2_QTR_2021-07-05_N	E421.Cr-L	26-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_DC3_QTR_2021-07-05_N	E509	26-Jul-2021	30-Jul-2021	----	----		30-Jul-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_GCMW-2_QTR_2021-07-05_N	E509	26-Jul-2021	30-Jul-2021	----	----		30-Jul-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC3_QTR_2021-07-05_N	E421	26-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	180 days	3 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_GCMW-2_QTR_2021-07-05_N	E421	26-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	180 days	3 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_DC3_QTR_2021-07-05_N	E358-L	26-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_GCMW-2_QTR_2021-07-05_N	E358-L	26-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC3_QTR_2021-07-05_N	E355-L	26-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-2_QTR_2021-07-05_N	E355-L	26-Jul-2021	29-Jul-2021	----	----		29-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_DC3_QTR_2021-07-05_N	E283	26-Jul-2021	----	----	----		27-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_GCMW-2_QTR_2021-07-05_N	E283	26-Jul-2021	----	----	----		27-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_DC3_QTR_2021-07-05_N	E290	26-Jul-2021	----	----	----		28-Jul-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_GCMW-2_QTR_2021-07-05_N	E290	26-Jul-2021	----	----	----		28-Jul-2021	14 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_DC3_QTR_2021-07-05_N	E100	26-Jul-2021	----	----	----		28-Jul-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_GCMW-2_QTR_2021-07-05_N	E100	26-Jul-2021	----	----	----		28-Jul-2021	28 days	2 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_DC3_QTR_2021-07-05_N	E125	26-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	73 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_GCMW-2_QTR_2021-07-05_N	E125	26-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	73 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE FR_DC3_QTR_2021-07-05_N	E108	26-Jul-2021	----	----	----		28-Jul-2021	0.25 hrs	51 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE FR_GCMW-2_QTR_2021-07-05_N	E108	26-Jul-2021	----	----	----		28-Jul-2021	0.25 hrs	51 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_DC3_QTR_2021-07-05_N	E162	26-Jul-2021	----	----	----		30-Jul-2021	7 days	4 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_GCMW-2_QTR_2021-07-05_N	E162	26-Jul-2021	----	----	----		30-Jul-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_DC3_QTR_2021-07-05_N	E160-L	26-Jul-2021	----	----	----		30-Jul-2021	7 days	4 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE</b> FR_GCMW-2_QTR_2021-07-05_N	E160-L	26-Jul-2021	----	----	----		30-Jul-2021	7 days	4 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_DC3_QTR_2021-07-05_N	E121	26-Jul-2021	----	----	----		28-Jul-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_GCMW-2_QTR_2021-07-05_N	E121	26-Jul-2021	----	----	----		28-Jul-2021	3 days	2 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	253053	1	8	12.5	5.0	✓
Alkalinity Species by Titration	E290	253931	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	253502	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	252933	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	252934	1	16	6.2	5.0	✓
Conductivity in Water	E100	253932	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	255012	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	255345	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	255013	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	254351	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	253111	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	252931	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	252935	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	252936	1	16	6.2	5.0	✓
ORP by Electrode	E125	254247	1	20	5.0	5.0	✓
pH by Meter	E108	253930	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	252932	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	255928	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	253856	1	3	33.3	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	254354	1	3	33.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	253518	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	253365	1	6	16.6	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	253053	1	8	12.5	5.0	✓
Alkalinity Species by Titration	E290	253931	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	253502	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	252933	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	252934	1	16	6.2	5.0	✓
Conductivity in Water	E100	253932	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	255012	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	255345	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	255013	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	254351	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	253111	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	252931	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	252935	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	252936	1	16	6.2	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	254247	1	20	5.0	5.0	✓
pH by Meter	E108	253930	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	252932	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	255928	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	253856	1	3	33.3	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	254354	1	3	33.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	253518	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	255929	1	2	50.0	5.0	✓
Turbidity by Nephelometry	E121	253365	1	6	16.6	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	253053	1	8	12.5	5.0	✓
Alkalinity Species by Titration	E290	253931	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	253502	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	252933	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	252934	1	16	6.2	5.0	✓
Conductivity in Water	E100	253932	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	255012	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	255345	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	255013	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	254351	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	253111	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	252931	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	252935	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	252936	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	252932	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	255928	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	253856	1	3	33.3	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	254354	1	3	33.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	253518	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	255929	1	2	50.0	5.0	✓
Turbidity by Nephelometry	E121	253365	1	6	16.6	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	253502	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	252933	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	252934	1	16	6.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	255012	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	255345	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	255013	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	254351	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	253111	1	6	16.6	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	252931	1	16	6.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	252935	1	16	6.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	252936	1	16	6.2	5.0	✔
Sulfate in Water by IC	E235.SO4	252932	1	16	6.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	253856	1	3	33.3	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	254354	1	3	33.3	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	253518	1	20	5.0	5.0	✔





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102852**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 7/26/2021  
**Sampler** : Aric Keane  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-Jul-2021 08:50  
**Date Analysis Commenced** : 27-Jul-2021  
**Issue Date** : 14-Aug-2021 12:11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
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Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
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Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2102852  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 253053)</b>											
CG2102851-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	22.1	19.0	15.2%	20%	----
<b>Physical Tests (QC Lot: 253365)</b>											
CG2102850-001	Anonymous	turbidity	----	E121	0.10	NTU	2.26	2.30	1.75%	15%	----
<b>Physical Tests (QC Lot: 253930)</b>											
CG2102824-027	Anonymous	pH	----	E108	0.10	pH units	7.97	7.99	0.251%	4%	----
<b>Physical Tests (QC Lot: 253931)</b>											
CG2102852-001	FR_DC3_QTR_2021-07-05_N	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	236	237	0.593%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	236	237	0.593%	20%	----
<b>Physical Tests (QC Lot: 253932)</b>											
CG2102852-001	FR_DC3_QTR_2021-07-05_N	conductivity	----	E100	2.0	µS/cm	1360	1370	0.587%	10%	----
<b>Physical Tests (QC Lot: 254247)</b>											
CG2102793-005	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	486	482	0.785%	15%	----
<b>Physical Tests (QC Lot: 255928)</b>											
CG2102852-001	FR_DC3_QTR_2021-07-05_N	solids, total dissolved [TDS]	----	E162	20	mg/L	1090	1070	1.76%	20%	----
<b>Anions and Nutrients (QC Lot: 252931)</b>											
CG2102846-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.179	0.173	0.006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 252932)</b>											
CG2102846-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	886	891	0.515%	20%	----
<b>Anions and Nutrients (QC Lot: 252933)</b>											
CG2102846-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	0.664	0.661	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 252934)</b>											
CG2102846-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	7.93	7.31	8.16%	20%	----
<b>Anions and Nutrients (QC Lot: 252935)</b>											
CG2102846-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	3.44	3.20	7.33%	20%	----
<b>Anions and Nutrients (QC Lot: 252936)</b>											
CG2102846-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 253111)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 253111) - continued</b>											
CG2102852-002	FR_GCMW-2_QTR_2021-07-05_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 253502)</b>											
CG2102775-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.211	0.213	1.08%	20%	----
<b>Anions and Nutrients (QC Lot: 253518)</b>											
CG2102798-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0027	0.0028	0.00009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 253856)</b>											
CG2102852-001	FR_DC3_QTR_2021-07-05_N	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 254351)</b>											
CG2102852-001	FR_DC3_QTR_2021-07-05_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.39	2.71	0.32	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 254354)</b>											
CG2102852-001	FR_DC3_QTR_2021-07-05_N	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.19	2.38	0.19	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 255012)</b>											
CG2102852-001	FR_DC3_QTR_2021-07-05_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	0.00011	0.000009	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 255013)</b>											
CG2102852-001	FR_DC3_QTR_2021-07-05_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0011	0.00006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00048	0.00048	0.000007	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0677	0.0685	1.19%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	0.022	0.00004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0580 µg/L	0.0000552	4.86%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	167	165	1.57%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00165	0.00169	0.00004	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.186	0.185	0.197%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	84.1	84.4	0.327%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00010	<0.00010	0.000002	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00206	0.00208	1.23%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00274	0.00289	0.00016	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.19	4.31	2.70%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 255013) - continued</b>											
CG2102852-001	FR_DC3_QTR_2021-07-05_N	selenium, dissolved	7782-49-2	E421	0.050	mg/L	93.9 µg/L	0.0923	1.70%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.28	2.30	1.02%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.46	5.38	1.53%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.270	0.266	1.41%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	138	140	1.31%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00761	0.00762	0.195%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0085	0.0084	0.00006	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 255345)</b>											
CG2102852-001	FR_DC3_QTR_2021-07-05_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 253053)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 253365)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 253931)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 253932)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 255928)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 255929)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 252931)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 252932)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 252933)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 252934)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 252935)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 252936)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 253111)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 253502)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 253518)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 253856)</b>						





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 253856) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 254351)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 254354)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 255012)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 255013)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 255013) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 255345)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 253053)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	102	85.0	115	----
<b>Physical Tests (QCLot: 253365)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	98.7	85.0	115	----
<b>Physical Tests (QCLot: 253930)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 253931)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	104	85.0	115	----
<b>Physical Tests (QCLot: 253932)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	95.2	90.0	110	----
<b>Physical Tests (QCLot: 254247)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----
<b>Physical Tests (QCLot: 255928)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.9	85.0	115	----
<b>Physical Tests (QCLot: 255929)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	96.7	85.0	115	----
<b>Anions and Nutrients (QCLot: 252931)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 252932)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 252933)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	----
<b>Anions and Nutrients (QCLot: 252934)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 252935)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 252936)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 253111)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	95.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 253502)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	92.6	85.0	115	----
<b>Anions and Nutrients (QCLot: 253518)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 253518) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	90.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 253856)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	85.4	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 254351)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	107	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 254354)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	111	80.0	120	----
<b>Dissolved Metals (QCLot: 255012)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
<b>Dissolved Metals (QCLot: 255013)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	111	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.6	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	111	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	107	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	106	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	112	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	107	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	109	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	110	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	114	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 255013) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	110	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	108	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	104	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.3	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 252931)</b>										
CG2102846-012	Anonymous	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 252932)</b>										
CG2102846-012	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	110 mg/L	100 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 252933)</b>										
CG2102846-012	Anonymous	bromide	24959-67-9	E235.Br-L	0.536 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 252934)</b>										
CG2102846-012	Anonymous	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 252935)</b>										
CG2102846-012	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.69 mg/L	2.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 252936)</b>										
CG2102846-012	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.546 mg/L	0.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 253111)</b>										
CG2102852-002	FR_GCMW-2_QTR_2021-07-05_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0520 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 253502)</b>										
CG2102862-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 253518)</b>										
CG2102798-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0639 mg/L	0.0676 mg/L	94.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 253856)</b>										
CG2102852-002	FR_GCMW-2_QTR_2021-07-05_N	Kjeldahl nitrogen, total [TKN]	----	E318	0.955 mg/L	2.5 mg/L	38.2	70.0	130	MSTN
<b>Organic / Inorganic Carbon (QCLot: 254351)</b>										
CG2102852-001	FR_DC3_QTR_2021-07-05_N	carbon, dissolved organic [DOC]	----	E358-L	23.8 mg/L	23.9 mg/L	99.4	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 254354)</b>										
CG2102852-001	FR_DC3_QTR_2021-07-05_N	carbon, total organic [TOC]	----	E355-L	25.2 mg/L	23.9 mg/L	106	70.0	130	----
<b>Dissolved Metals (QCLot: 255012)</b>										
CG2102852-002	FR_GCMW-2_QTR_2021-07-05_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0422 mg/L	0.04 mg/L	105	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 255013)</b>										
CG2102852-002	FR_GCMW-2_QTR_2021-07-05_N	aluminum, dissolved	7429-90-5	E421	0.214 mg/L	0.2 mg/L	107	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0219 mg/L	0.02 mg/L	110	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00956 mg/L	0.01 mg/L	95.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00406 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	98.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0222 mg/L	0.02 mg/L	111	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.71 mg/L	10 mg/L	97.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00433 mg/L	0.004 mg/L	108	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00420 mg/L	0.004 mg/L	105	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0429 mg/L	0.04 mg/L	107	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.405 mg/L	0.4 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 255345)</b>										
CG2102852-002	FR_GCMW-2_QTR_2021-07-05_N	mercury, dissolved	7439-97-6	E509	0.0000954 mg/L	0.0001 mg/L	95.4	70.0	130	----



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## Qualifiers

Qualifier	Description
MSTN	<i>TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.</i>

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COC ID: **7/26/2021**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO							
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution							
Project Manager	Scott Roughhead			Lab Contact	Lyudmyla Shvets			Email 1:	David.Burroughs@teck.com	X	X	X			
Email	scott.roughhead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	[REDACTED]	X	X	X			
Address				Address	2559 29 Street NE			Email 3:	scott.roughhead@teck.com	X	X	X			
City	Elkford		Province	BC		City	Calgary		Province	AB		Email 4:	teckcoal@equisonline.com		X
Postal Code			Country	Canada		Postal Code	T1Y 7B5		Country	Canada		Email 5:	cruz.carlas@teck.com	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00741392						

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-TKN/TOC	TECKCOAL-ROUTINE-VA	HC-D-CVAF-VA	HG-T-U-CVAF-VA	ALS_Package-DOC	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	ALS_Package-BOD	ALS_Package-Colour	ALS_Package-PAH	ALS_Package-TSS/TURB	ALS_Package-EPH	
FR_DC3_QTR_2021-07-05_N	FR_DC3	WS	NO	July 26, 2021	13:15	G	5	1	1	1		1	1							
FR_GCMW-2_QTR_2021-07-05_N	FR_GCMW-2	WS	NO	July 26, 2021	13:15	G	5	1	1	1		1	1							

*2852*

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Aric Keane	July 26, 2021	<i>[Signature]</i>	7/27 8:30

SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name	Aric Keane	Mobile #	250-427-1062
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	July 26, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

Environmental Division  
Calgary  
Work Order Reference  
**CG2102852**





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102873**  
**Client** : **Teck Coal Limited**  
**Contact** : Cameron Griffin  
**Address** : Fording River Operations PO BOX 100  
Elkford BC Canada V0B 1H0  
**Telephone** : 250 425 8746  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00769061  
**C-O-C number** : EC\_PC\_GW\_2021-07-27  
**Sampler** : Haley Pocaluyko  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 28-Jul-2021 08:50  
**Date Analysis Commenced** : 28-Jul-2021  
**Issue Date** : 14-Aug-2021 13:19

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_MW-EC2A_	FR_MW-EC2B_	FR_MW-EC3A_	FR_MW-EC3B_	----
(Matrix: Water)						2021-07-27	2021-07-27	2021-07-27	2021-07-27	
Client sampling date / time					27-Jul-2021 12:45	27-Jul-2021 13:57	27-Jul-2021 09:45	27-Jul-2021 11:05	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102873-001	CG2102873-002	CG2102873-003	CG2102873-004	-----	
					Result	Result	Result	Result	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	2.3	2.7	24.9	23.6	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	178	174	536	557	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	178	174	536	557	----	
conductivity	----	E100	2.0	µS/cm	659	627	3420	3440	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	356	360	2540	2550	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	445	430	437	455	----	
pH	----	E108	0.10	pH units	7.82	7.73	7.69	7.75	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	464	438	3480	3400	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
turbidity	----	E121	0.10	NTU	1.74	0.51	0.41	0.74	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	217	212	654	680	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0332	<0.0050	0.0159	0.0074	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.68	0.56	12.9	12.9	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.209	0.218	<0.100 <sup>DLDS</sup>	0.108	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	11.1	11.4	43.5	49.1	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0187	<0.0010	0.0192	0.0059	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0016	0.0139	0.0266	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0.0127	0.0230	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	159	143	1870	1880	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	1.48	1.45	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	1.69	1.36	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	7.69	7.30	53.1	54.1	----	



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					FR_MW-EC2A_	FR_MW-EC2B_	FR_MW-EC3A_	FR_MW-EC3B_	----
					2021-07-27	2021-07-27	2021-07-27	2021-07-27	----
Client sampling date / time					27-Jul-2021 12:45	27-Jul-2021 13:57	27-Jul-2021 09:45	27-Jul-2021 11:05	----
Analyte	CAS Number	Method	LOR	Unit	CG2102873-001	CG2102873-002	CG2102873-003	CG2102873-004	-----
					Result	Result	Result	Result	----
<b>Ion Balance</b>									
cation sum	----	EC101	0.10	meq/L	7.47	7.31	51.6	51.8	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	97.1	100	97.2	95.7	----
ion balance (cation-anion difference)	----	EC101	0.010	%	1.45	0.068	1.43	2.17	----
<b>Total Metals</b>									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0312	0.0042	<0.0150 <sup>DLA</sup>	0.0189	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00023	0.00021	0.00051	<0.00050 <sup>DLA</sup>	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00017	<0.00010	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0382	0.0604	0.0274	0.0295	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.100 <sup>DLA</sup>	<0.100 <sup>DLA</sup>	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000250 <sup>DLA</sup>	<0.000250 <sup>DLA</sup>	----
boron, total	7440-42-8	E420	0.010	mg/L	0.012	0.011	<0.050 <sup>DLA</sup>	<0.050 <sup>DLA</sup>	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0276	0.0216	0.409	0.601	----
calcium, total	7440-70-2	E420	0.050	mg/L	85.7	83.1	424	418	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00015	0.00011	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	0.64	<0.50 <sup>DLA</sup>	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00250 <sup>DLA</sup>	<0.00250 <sup>DLA</sup>	----
iron, total	7439-89-6	E420	0.010	mg/L	0.028	<0.010	<0.050 <sup>DLA</sup>	<0.050 <sup>DLA</sup>	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000250 <sup>DLA</sup>	<0.000250 <sup>DLA</sup>	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0294	0.0307	0.126	0.141	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	34.4	32.3	379	366	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00486	0.00026	0.0442	0.00119	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00917	0.00121	0.00219	0.00200	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00112	<0.00050	0.00986	0.0207	----
potassium, total	7440-09-7	E420	0.050	mg/L	1.37	1.56	6.32	6.51	----
selenium, total	7782-49-2	E420	0.050	µg/L	32.0	32.9	336	372	----
silicon, total	7440-21-3	E420	0.10	mg/L	2.38	2.30	3.04	3.05	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000050 <sup>DLA</sup>	<0.000050 <sup>DLA</sup>	----
sodium, total	17341-25-2	E420	0.050	mg/L	6.78	1.46	16.6	16.1	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.132	0.122	0.344	0.334	----
sulfur, total	7704-34-9	E420	0.50	mg/L	57.3	49.7	671	650	----
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000024	<0.000010	0.000065	<0.000050 <sup>DLA</sup>	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC2A_ 2021-07-27	FR_MW-EC2B_ 2021-07-27	FR_MW-EC3A_ 2021-07-27	FR_MW-EC3B_ 2021-07-27	----
Client sampling date / time					27-Jul-2021 12:45	27-Jul-2021 13:57	27-Jul-2021 09:45	27-Jul-2021 11:05	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102873-001	CG2102873-002	CG2102873-003	CG2102873-004	-----	
					Result	Result	Result	Result	----	
<b>Total Metals</b>										
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00067	<0.00030	<0.00150 <sup>DLA</sup>	<0.00150 <sup>DLA</sup>	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00224	0.00186	0.0301	0.0268	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00250 <sup>DLA</sup>	<0.00250 <sup>DLA</sup>	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0150 <sup>DLA</sup>	0.0158	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0024	0.0010	<0.0050 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00022	0.00019	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00013	<0.00010	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0394	0.0620	0.0265	0.0284	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.100 <sup>DLA</sup>	<0.100 <sup>DLA</sup>	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000250 <sup>DLA</sup>	<0.000250 <sup>DLA</sup>	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.011	0.012	<0.050 <sup>DLA</sup>	<0.050 <sup>DLA</sup>	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0282	0.0214	0.393	0.581	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	83.4	87.4	416	414	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00012	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	0.60	<0.50 <sup>DLA</sup>	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00027	<0.00020	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.050 <sup>DLA</sup>	<0.050 <sup>DLA</sup>	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000250 <sup>DLA</sup>	<0.000250 <sup>DLA</sup>	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0290	0.0342	0.126	0.146	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	35.9	34.5	364	368	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00355	0.00017	0.0410	<0.00050 <sup>DLA</sup>	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0100	0.00111	0.00225	0.00197	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00119	<0.00050	0.0104	0.0212	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.40	1.74	5.95	6.50	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	34.7	33.7	346	389	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.20	2.13	2.82	2.81	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000050 <sup>DLA</sup>	<0.000050 <sup>DLA</sup>	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.26	1.61	16.7	16.4	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.143	0.127	0.344	0.338	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	54.4	47.0	660	641	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000025	<0.000010	0.000052	<0.000050 <sup>DLA</sup>	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC2A_ 2021-07-27	FR_MW-EC2B_ 2021-07-27	FR_MW-EC3A_ 2021-07-27	FR_MW-EC3B_ 2021-07-27	----
Client sampling date / time					27-Jul-2021 12:45	27-Jul-2021 13:57	27-Jul-2021 09:45	27-Jul-2021 11:05	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102873-001	CG2102873-002	CG2102873-003	CG2102873-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00150 <sup>DLA</sup>	<0.00150 <sup>DLA</sup>	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00218	0.00173	0.0277	0.0257	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00250 <sup>DLA</sup>	<0.00250 <sup>DLA</sup>	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0.0071	0.0165	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102873**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Cameron Griffin  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : 250 425 8746  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00769061  
**C-O-C number** : EC\_PC\_GW\_2021-07-27  
**Sampler** : Haley Pocaluyko  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 28-Jul-2021 08:50  
**Date Analysis Commenced** : 28-Jul-2021  
**Issue Date** : 14-Aug-2021 13:19

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



Page : 2 of 17  
Work Order : CG2102873  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 254243)</b>											
CG2102868-010	Anonymous	turbidity	----	E121	0.10	NTU	4.56	4.68	2.55%	15%	----
<b>Physical Tests (QC Lot: 254486)</b>											
CG2102871-005	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	10.4	10.4	0.02	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 255479)</b>											
CG2102851-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	498	493	1.01%	15%	----
<b>Physical Tests (QC Lot: 256535)</b>											
CG2102869-010	Anonymous	pH	----	E108	0.10	pH units	7.81	7.84	0.383%	4%	----
<b>Physical Tests (QC Lot: 257002)</b>											
CG2102871-004	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1110	1140	2.09%	20%	----
<b>Physical Tests (QC Lot: 257874)</b>											
CG2102867-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	458	450	1.90%	15%	----
<b>Anions and Nutrients (QC Lot: 253699)</b>											
CG2102870-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	22.5	22.4	0.426%	20%	----
<b>Anions and Nutrients (QC Lot: 253700)</b>											
CG2102870-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 253701)</b>											
CG2102870-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.50	0.51	0.008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 253702)</b>											
CG2102870-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0131	0.0127	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 253703)</b>											
CG2102870-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 253704)</b>											
CG2102870-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.653	0.641	1.85%	20%	----
<b>Anions and Nutrients (QC Lot: 253751)</b>											
CG2102871-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 254503)</b>											
CG2102863-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.100	mg/L	4.66	4.99	6.90%	20%	----
<b>Anions and Nutrients (QC Lot: 254875)</b>											
CG2102867-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 254876)</b>											
CG2102873-003	FR_MW-EC3A_2021-07-27	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0127	0.0122	0.0005	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 255620)</b>											
CG2102869-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0118	0.0115	0.0003	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 256665)</b>											
CG2102730-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 256669)</b>											
CG2102730-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 256142)</b>											
CG2102873-001	FR_MW-EC2A_2021-07-27	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00015	0.00016	0.00001	Diff <2x LOR	----
<b>Total Metals (QC Lot: 256143)</b>											
CG2102873-001	FR_MW-EC2A_2021-07-27	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0312	0.0286	0.0026	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00023	0.00022	0.000007	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00017	0.00019	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0382	0.0385	0.876%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.012	0.012	0.0001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0276 µg/L	0.0000291	0.0000015	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	85.7	83.0	3.24%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.028	0.030	0.002	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0294	0.0289	1.62%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	34.4	34.4	0.127%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00486	0.00492	1.05%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00917	0.00899	1.97%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00112	0.00114	0.00001	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.37	1.34	2.25%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	32.0 µg/L	0.0324	1.34%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.38	2.39	0.585%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	6.78	6.64	2.08%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.132	0.130	1.97%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	57.3	56.9	0.791%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000024	0.000025	0.0000005	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 256143) - continued</b>											
CG2102873-001	FR_MW-EC2A_2021-07-27	titanium, total	7440-32-6	E420	0.00030	mg/L	0.00067	0.00045	0.00022	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00224	0.00225	0.450%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 255289)</b>											
CG2102853-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	<0.0010	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00016	0.00016	0.000001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0870	0.0852	2.02%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.013	0.014	0.0004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0414 µg/L	0.0000459	0.0000045	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	128	128	0.231%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0450	0.0442	1.96%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	65.4	64.8	0.954%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00557	0.00540	3.00%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00132	0.00132	0.330%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00189	0.00184	0.00004	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.30	2.22	3.25%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	85.7 µg/L	0.0861	0.427%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.78	1.77	0.795%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.80	2.75	2.02%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.164	0.164	0.214%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	93.5	94.0	0.474%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00346	0.00346	0.0145%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----

Page : 6 of 17  
 Work Order : CG2102873  
 Client : Teck Coal Limited  
 Project : FORDING RIVER OPERATIONS



Sub-Matrix: <b>Water</b>					<i>Laboratory Duplicate (DUP) Report</i>						
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 255289) - continued</b>											
CG2102853-001	Anonymous	zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0014	0.0015	0.0001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 255290)</b>											
CG2102853-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	0.00012	0.000003	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 254243)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 254486)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 256536)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 256537)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 256993)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 257002)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 253699)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 253700)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 253701)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 253702)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 253703)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 253704)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 253751)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 254503)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 254875)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 254876)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 254876) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 255620)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 256665)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 256669)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 256142)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 256143)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 256143) - continued</b>						
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 255289)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----





Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 255289) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 255290)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 254243)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.0	85.0	115	---
<b>Physical Tests (QCLot: 254486)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	96.6	85.0	115	---
<b>Physical Tests (QCLot: 255479)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.2	95.4	104	---
<b>Physical Tests (QCLot: 256535)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 256536)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.2	90.0	110	---
<b>Physical Tests (QCLot: 256537)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 256993)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	95.7	85.0	115	---
<b>Physical Tests (QCLot: 257002)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	94.2	85.0	115	---
<b>Physical Tests (QCLot: 257874)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.1	95.4	104	---
<b>Anions and Nutrients (QCLot: 253699)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 253700)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 253701)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 253702)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 253703)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 253704)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 253751)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	101	80.0	120	---
<b>Anions and Nutrients (QCLot: 254503)</b>									



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 254503) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 254875)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	95.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 254876)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	93.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 255620)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.4	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 256665)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 256669)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Total Metals (QCLot: 256142)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
<b>Total Metals (QCLot: 256143)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	99.5	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	93.0	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	100.0	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	86.1	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.7	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	92.5	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	99.0	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	96.6	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 256143) - continued</b>									
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.5	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	97.0	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	98.4	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	99.1	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.0	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.0	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	96.5	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.0	80.0	120	----
<b>Dissolved Metals (QCLot: 255289)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.8	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.3	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.5	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.3	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.4	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	89.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.3	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 255289) - continued</b>									
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.4	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.5	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.2	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 255290)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 253751)</b>										
CG2102871-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0512 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 254503)</b>										
CG2102870-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.07 mg/L	2.5 mg/L	82.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 254875)</b>										
CG2102867-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0608 mg/L	0.0676 mg/L	89.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 254876)</b>										
CG2102873-004	FR_MW-EC3B_2021-07-27	phosphorus, total	7723-14-0	E372-U	0.0475 mg/L	0.0676 mg/L	70.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 255620)</b>										
CG2102869-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0984 mg/L	0.1 mg/L	98.4	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 256665)</b>										
CG2102730-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	26.3 mg/L	23.9 mg/L	110	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 256669)</b>										
CG2102730-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.8 mg/L	23.9 mg/L	108	70.0	130	----
<b>Total Metals (QCLot: 256142)</b>										
CG2102873-002	FR_MW-EC2B_2021-07-27	chromium, total	7440-47-3	E420.Cr-L	0.0397 mg/L	0.04 mg/L	99.4	70.0	130	----
<b>Total Metals (QCLot: 256143)</b>										
CG2102873-002	FR_MW-EC2B_2021-07-27	aluminum, total	7429-90-5	E420	0.190 mg/L	0.2 mg/L	95.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0349 mg/L	0.04 mg/L	87.3	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00913 mg/L	0.01 mg/L	91.3	70.0	130	----
		boron, total	7440-42-8	E420	0.090 mg/L	0.1 mg/L	89.7	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00400 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		iron, total	7439-89-6	E420	1.88 mg/L	2 mg/L	93.8	70.0	130	----
		lead, total	7439-92-1	E420	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 256143) - continued</b>										
CG2102873-002	FR_MW-EC2B_2021-07-27	lithium, total	7439-93-2	E420	0.0879 mg/L	0.1 mg/L	87.9	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		potassium, total	7440-09-7	E420	3.86 mg/L	4 mg/L	96.4	70.0	130	----
		selenium, total	7782-49-2	E420	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----
		silicon, total	7440-21-3	E420	9.00 mg/L	10 mg/L	90.0	70.0	130	----
		silver, total	7440-22-4	E420	0.00386 mg/L	0.004 mg/L	96.6	70.0	130	----
		sodium, total	17341-25-2	E420	2.02 mg/L	2 mg/L	101	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00372 mg/L	0.004 mg/L	93.1	70.0	130	----
		tin, total	7440-31-5	E420	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, total	7440-32-6	E420	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		uranium, total	7440-61-1	E420	0.00374 mg/L	0.004 mg/L	93.4	70.0	130	----
		vanadium, total	7440-62-2	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, total	7440-66-6	E420	0.370 mg/L	0.4 mg/L	92.6	70.0	130	----
<b>Dissolved Metals (QCLot: 255289)</b>										
CG2102853-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0383 mg/L	0.04 mg/L	95.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00843 mg/L	0.01 mg/L	84.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.098 mg/L	0.1 mg/L	98.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0181 mg/L	0.02 mg/L	90.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 255289) - continued</b>										
CG2102853-002	Anonymous	nickel, dissolved	7440-02-0	E421	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.17 mg/L	10 mg/L	91.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00377 mg/L	0.004 mg/L	94.2	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00364 mg/L	0.004 mg/L	91.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0426 mg/L	0.04 mg/L	106	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.394 mg/L	0.4 mg/L	98.5	70.0	130	----
<b>Dissolved Metals (QCLot: 255290)</b>										
CG2102853-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0408 mg/L	0.04 mg/L	102	70.0	130	----



COC ID: **EC\_PC\_GW\_2021-07-27** TURNAROUND TIME: RUSH

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cameron Griffin			Lab Contact	Lyudmyla Shvets			Email 1:	Cameron.griffin@teck.com	X	X	X
Email				Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Scott.Roughhead@teck.com	X	X	X
Address	Shared Services Bag 2000 421 Pine Avenue			Address	2559 29 Street NE			Email 3:	David.Burroughs@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equisonline.com	X	X	X
	V0B 2G0	Country	CA	Postal Code	T1Y 7B5	Country	Canada	Email 5:	kwiesel@bcengineering.ca	X	X	X
				Phone Number	403 407 1794			Email 6:		X	X	X
								PO number	VPO00769061			

Environmental Division  
Calgary  
Work Order Reference  
**CG2102873**



Telephone : +1 403 407 1800

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None								
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN/Nutrients	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA								
<del>FR_MW-EC1A_2021-</del>	<del>FR_MW-EC1A</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>5</del>	1	1	1	1	1								
<del>FR_MW-EC1B_2021-</del>	<del>FR_MW-EC1B</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>5</del>	1	1	1	1	1								
FR_MW-EC2A_2021-07-27	FR_MW-EC2A	WG	N	2021-07-27	12:45	G	5	1	1	1	1	1								
FR_MW-EC2B_2021-07-27	FR_MW-EC2B	WG	N	2021-07-27	13:57	G	5	1	1	1	1	1								
FR_MW-EC3A_2021-07-27	FR_MW-EC3A	WG	N	2021-07-27	9:45	G	5	1	1	1	1	1								
FR_MW-EC3B_2021-07-27	FR_MW-EC3B	WG	N	2021-07-27	11:05	G	5	1	1	1	1	1								
<del>FR_MW-EC4A_2021-</del>	<del>FR_MW-EC4A</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>5</del>	1	1	1	1	1								
<del>FR_MW-EC4B_2021-</del>	<del>FR_MW-EC4B</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>5</del>	1	1	1	1	1								
<del>FR_DCI-WG_2021-08-NT</del>	<del>FR_DCI</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>5</del>	1	1	1	1	1								
<del>FR_FLD1-WG_2021-08-NT</del>	<del>FR_FLD1</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>5</del>	1	1	1	1	1								
<del>FR_TRP1-WG_2021-08-NT</del>	<del>FR_TRP1</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>3</del>	1		1		1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
*All samples field filtered and preserved as required.			

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Halley Pocaluyko	Mobile #	604 362 6626
					Sampler's Signature	Halley Pocaluyko	Date/Time	July 27, 2021

*[Handwritten Signature]*  
7/28  
850



CERTIFICATE OF ANALYSIS

Work Order : CG2102903
Client : Teck Coal Limited
Contact : Scott Roughead
Address : PO BOX 100
ELKFORD BC Canada V0B 1H0
Telephone : ---
Project : FORDING RIVER OPERATION
PO : VPO00741392
C-O-C number : 7/28/2021
Sampler : Hanna Whiting
Site : ---
Quote number : Teck Coal Master Quote
No. of samples received : 4
No. of samples analysed : 4

Page : 1 of 5
Laboratory : Calgary - Environmental
Account Manager : Justine Buma-a
Address : 2559 29th Street NE
Calgary AB Canada T1Y 7B5
Telephone : +1 403 407 1800
Date Samples Received : 29-Jul-2021 08:50
Date Analysis Commenced : 29-Jul-2021
Issue Date : 14-Aug-2021 13:44

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Lists names like Elke Tabora, Hannah Phung, Harpreet Chawla, Kevin Duarte, Maria Tuguinay, Monica Ko, Parker Sgarbossa, Ruifang Zheng, Sara Niroomand, Shaneel Dayal, Sristika Chand, and Vladka Stamenova with their respective roles and departments.



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					FR_09-04-A_QT R_2021-07-05_ N	FR_09-04-B_QT R_2021-07-05_ N	FR_MW-SK1A_ QTR_2021-07-0 5_N	FR_MW-SK1B_ QTR_2021-07-0 5_N	----
Client sampling date / time					28-Jul-2021 11:06	28-Jul-2021 10:46	28-Jul-2021 13:52	28-Jul-2021 13:36	----
Analyte	CAS Number	Method	LOR	Unit	CG2102903-001	CG2102903-002	CG2102903-003	CG2102903-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	15.3	14.9	15.5	5.7	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	329	357	281	255	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	329	357	281	255	----
conductivity	----	E100	2.0	µS/cm	1140	1180	1350	980	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	717	702	842	571	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	330	248	492	269	----
pH	----	E108	0.10	pH units	7.99	8.13	7.97	8.18	----
solids, total dissolved [TDS]	----	E162	10	mg/L	936	944	1160	785	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
turbidity	----	E121	0.10	NTU	0.81	0.50	0.52	0.49	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	401	436	343	311	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0221	0.0243	0.0204	0.0269	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	7.95	7.44	1.64	4.00	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.258	0.231	0.126	0.100	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	<0.050 <sup>TKNI</sup>	0.139 <sup>TKNI</sup>	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0300	0.0264	43.7	9.61	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	0.0557	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0021	0.0013	0.0029	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0028	0.0030	0.0028	<0.0020	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	402	402	390	312	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.61	3.85	3.03	1.74	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.56	3.28	2.69	2.36	----
<b>Ion Balance</b>									



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					FR_09-04-A_QT R_2021-07-05_ N	FR_09-04-B_QT R_2021-07-05_ N	FR_MW-SK1A_ QTR_2021-07-0 5_N	FR_MW-SK1B_ QTR_2021-07-0 5_N	----
Client sampling date / time					28-Jul-2021 11:06	28-Jul-2021 10:46	28-Jul-2021 13:52	28-Jul-2021 13:36	----
Analyte	CAS Number	Method	LOR	Unit	CG2102903-001	CG2102903-002	CG2102903-003	CG2102903-004	-----
					Result	Result	Result	Result	----
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	15.2	15.7	16.9	12.4	----
cation sum	----	EC101	0.10	meq/L	14.8	14.5	17.1	11.6	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	97.4	92.4	101	93.5	----
ion balance (cation-anion difference)	----	EC101	0.010	%	1.33	3.97	0.588	3.33	----
<b>Dissolved Metals</b>									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0018	<0.0010	0.0013	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00014	0.00014	0.00030	0.00040	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00010	<0.00010	0.00013	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.110	0.0982	0.0709	0.0326	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.031	0.033	0.024	0.015	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.802	0.688	0.0375	0.0354	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	144	152	200	154	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00013	<0.00010	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.77	0.68	0.13	1.14	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00212	0.00223	0.00127	0.00083	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000077	0.000071	0.000058	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0860	0.0913	0.0679	0.0120	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	86.9	78.4	83.2	45.2	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.37	1.32	0.00058	0.529	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00196	0.00173	0.00117	0.000391	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00793	0.00771	<0.00050	0.00402	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.93	5.44	3.45	1.28	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.101	0.174	166	11.3	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.87	2.85	2.39	3.25	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.38	7.14	4.70	4.48	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.234	0.221	0.185	0.241	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-04-A_QT R_2021-07-05_ N	FR_09-04-B_QT R_2021-07-05_ N	FR_MW-SK1A_ QTR_2021-07-0 5_N	FR_MW-SK1B_ QTR_2021-07-0 5_N	----
Client sampling date / time					28-Jul-2021 11:06	28-Jul-2021 10:46	28-Jul-2021 13:52	28-Jul-2021 13:36	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102903-001	CG2102903-002	CG2102903-003	CG2102903-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	133	142	135	106	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000065	0.000060	<0.000010	0.000019	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00635	0.00634	0.00609	0.00511	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0064	0.0058	0.0020	0.0022	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102903</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 29-Jul-2021 08:50
PO	: VPO00741392	Issue Date	: 14-Aug-2021 13:45
C-O-C number	: 7/28/2021		
Sampler	: Hanna Whiting		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_09-04-A_QTR_2021-07-05_N	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_09-04-B_QTR_2021-07-05_N	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1A_QTR_2021-07-05_N	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1B_QTR_2021-07-05_N	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_09-04-A_QTR_2021-07-05_N	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_09-04-B_QTR_2021-07-05_N	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_MW-SK1A_QTR_2021-07-05_N	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_MW-SK1B_QTR_2021-07-05_N	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_09-04-A_QTR_2021-07-05_N	E235.Cl-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_09-04-B_QTR_2021-07-05_N	E235.Cl-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_MW-SK1A_QTR_2021-07-05_N	E235.Cl-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_MW-SK1B_QTR_2021-07-05_N	E235.Cl-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_09-04-A_QTR_2021-07-05_N	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_09-04-B_QTR_2021-07-05_N	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_MW-SK1A_QTR_2021-07-05_N	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_MW-SK1B_QTR_2021-07-05_N	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_09-04-A_QTR_2021-07-05_N	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_09-04-B_QTR_2021-07-05_N	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_MW-SK1A_QTR_2021-07-05_N	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_MW-SK1B_QTR_2021-07-05_N	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-A_QTR_2021-07-05_N	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-B_QTR_2021-07-05_N	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-SK1A_QTR_2021-07-05_N	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-SK1B_QTR_2021-07-05_N	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-A_QTR_2021-07-05_N	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-B_QTR_2021-07-05_N	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-SK1A_QTR_2021-07-05_N	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-SK1B_QTR_2021-07-05_N	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_09-04-A_QTR_2021-07-05_N	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_09-04-B_QTR_2021-07-05_N	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW-SK1A_QTR_2021-07-05_N	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW-SK1B_QTR_2021-07-05_N	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-04-A_QTR_2021-07-05_N	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-04-B_QTR_2021-07-05_N	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1A_QTR_2021-07-05_N	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1B_QTR_2021-07-05_N	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-04-A_QTR_2021-07-05_N	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-04-B_QTR_2021-07-05_N	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1A_QTR_2021-07-05_N	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1B_QTR_2021-07-05_N	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-04-A_QTR_2021-07-05_N	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-04-B_QTR_2021-07-05_N	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-SK1A_QTR_2021-07-05_N	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-SK1B_QTR_2021-07-05_N	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_09-04-A_QTR_2021-07-05_N	E509	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_09-04-B_QTR_2021-07-05_N	E509	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_MW-SK1A_QTR_2021-07-05_N	E509	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_MW-SK1B_QTR_2021-07-05_N	E509	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-04-A_QTR_2021-07-05_N	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-04-B_QTR_2021-07-05_N	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-SK1A_QTR_2021-07-05_N	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-SK1B_QTR_2021-07-05_N	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-04-A_QTR_2021-07-05_N	E358-L	28-Jul-2021	01-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-04-B_QTR_2021-07-05_N	E358-L	28-Jul-2021	01-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-SK1A_QTR_2021-07-05_N	E358-L	28-Jul-2021	01-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-SK1B_QTR_2021-07-05_N	E358-L	28-Jul-2021	01-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-04-A_QTR_2021-07-05_N	E355-L	28-Jul-2021	01-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-04-B_QTR_2021-07-05_N	E355-L	28-Jul-2021	01-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1A_QTR_2021-07-05_N	E355-L	28-Jul-2021	01-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1B_QTR_2021-07-05_N	E355-L	28-Jul-2021	01-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_09-04-A_QTR_2021-07-05_N	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	1 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_09-04-B_QTR_2021-07-05_N	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_MW-SK1A_QTR_2021-07-05_N	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_MW-SK1B_QTR_2021-07-05_N	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_09-04-A_QTR_2021-07-05_N	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_09-04-B_QTR_2021-07-05_N	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW-SK1A_QTR_2021-07-05_N	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW-SK1B_QTR_2021-07-05_N	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_09-04-A_QTR_2021-07-05_N	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_09-04-B_QTR_2021-07-05_N	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-SK1A_QTR_2021-07-05_N	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-SK1B_QTR_2021-07-05_N	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-SK1A_QTR_2021-07-05_N	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	211 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-SK1B_QTR_2021-07-05_N	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	211 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_09-04-A_QTR_2021-07-05_N	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	214 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_09-04-B_QTR_2021-07-05_N	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	214 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW-SK1A_QTR_2021-07-05_N	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	213 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW-SK1B_QTR_2021-07-05_N	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	213 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_09-04-A_QTR_2021-07-05_N	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	215 hrs		* EHTR-FM





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> FR_09-04-B_QTR_2021-07-05_N	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	216 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_09-04-A_QTR_2021-07-05_N	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_09-04-B_QTR_2021-07-05_N	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_MW-SK1A_QTR_2021-07-05_N	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_MW-SK1B_QTR_2021-07-05_N	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_09-04-A_QTR_2021-07-05_N	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_09-04-B_QTR_2021-07-05_N	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_MW-SK1A_QTR_2021-07-05_N	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_MW-SK1B_QTR_2021-07-05_N	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_09-04-A_QTR_2021-07-05_N	E121	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_09-04-B_QTR_2021-07-05_N	E121	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_MW-SK1A_QTR_2021-07-05_N	E121	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_MW-SK1B_QTR_2021-07-05_N	E121	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	254579	2	29	6.9	5.0	✓
Alkalinity Species by Titration	E290	260202	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	256376	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	254660	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	254657	1	20	5.0	5.0	✓
Conductivity in Water	E100	260204	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256220	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	256934	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	256219	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256782	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	254619	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	254658	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	254661	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	254662	1	19	5.2	5.0	✓
ORP by Electrode	E125	259267	1	20	5.0	5.0	✓
pH by Meter	E108	260203	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	254659	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	257004	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	256652	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256784	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	255588	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	254904	2	36	5.5	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	254579	2	29	6.9	5.0	✓
Alkalinity Species by Titration	E290	260202	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	256376	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	254660	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	254657	1	20	5.0	5.0	✓
Conductivity in Water	E100	260204	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256220	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	256934	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	256219	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256782	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	254619	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	254658	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	254661	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	254662	1	19	5.2	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	259267	1	20	5.0	5.0	✔
pH by Meter	E108	260203	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	254659	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	257004	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	256652	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256784	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	255588	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	256995	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	254904	2	36	5.5	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	254579	2	29	6.9	5.0	✔
Alkalinity Species by Titration	E290	260202	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	256376	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	254660	1	19	5.2	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	254657	1	20	5.0	5.0	✔
Conductivity in Water	E100	260204	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256220	1	19	5.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	256934	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	256219	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256782	1	17	5.8	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	254619	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	254658	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	254661	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	254662	1	19	5.2	5.0	✔
Sulfate in Water by IC	E235.SO4	254659	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	257004	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	256652	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256784	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	255588	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	256995	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	254904	2	36	5.5	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	256376	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	254660	0	19	0.0	5.0	✖
Chloride in Water by IC (Low Level)	E235.Cl-L	254657	0	20	0.0	5.0	✖
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256220	1	19	5.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	256934	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	256219	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256782	1	17	5.8	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	254619	1	20	5.0	5.0	✔



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	254658	0	20	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	254661	0	19	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	254662	0	19	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	254659	0	20	0.0	5.0	✘
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	256652	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256784	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	255588	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2102903**

**Page** : 1 of 13

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 7/28/2021  
**Sampler** : Hanna Whiting  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-Jul-2021 08:50  
**Date Analysis Commenced** : 29-Jul-2021  
**Issue Date** : 14-Aug-2021 13:44

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 13  
Work Order : CG2102903  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 254579)</b>											
CG2102897-021	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	91.8	91.7	0.1	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 254580)</b>											
CG2102903-003	FR_MW-SK1A_QTR_2021-07-05_N	acidity (as CaCO3)	----	E283	2.0	mg/L	15.5	14.7	0.7	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 254904)</b>											
CG2102901-004	Anonymous	turbidity	----	E121	0.10	NTU	0.20	0.19	0.01	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 255365)</b>											
CG2102901-002	Anonymous	turbidity	----	E121	0.10	NTU	0.16	0.15	0.005	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 257004)</b>											
CG2102897-035	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2150	2140	0.420%	20%	----
<b>Physical Tests (QC Lot: 259267)</b>											
CG2102901-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	441	443	0.453%	15%	----
<b>Physical Tests (QC Lot: 260202)</b>											
CG2102902-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	148	140	5.48%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	2.6	1.6	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	148	143	3.65%	20%	----
<b>Physical Tests (QC Lot: 260203)</b>											
CG2102902-001	Anonymous	pH	----	E108	0.10	pH units	8.28	8.29	0.121%	4%	----
<b>Physical Tests (QC Lot: 260204)</b>											
CG2102902-001	Anonymous	conductivity	----	E100	2.0	µS/cm	593	597	0.672%	10%	----
<b>Anions and Nutrients (QC Lot: 254619)</b>											
CG2102901-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 254657)</b>											
CG2102895-001	Anonymous	chloride	16887-00-6	E235.Cl-L	1.00	mg/L	67.2	68.9	2.53%	20%	----
<b>Anions and Nutrients (QC Lot: 254658)</b>											
CG2102901-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.101	0.100	0.0006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 254659)</b>											
CG2102901-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	813	816	0.392%	20%	----
<b>Anions and Nutrients (QC Lot: 254660)</b>											
CG2102901-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 254661)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 254661) - continued</b>											
CG2102901-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	11.1	11.2	0.626%	20%	----
<b>Anions and Nutrients (QC Lot: 254662)</b>											
CG2102901-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 255588)</b>											
CG2102901-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0022	0.0029	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 256376)</b>											
CG2102892-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	1.25	mg/L	39.8	39.8	0.207%	20%	----
<b>Anions and Nutrients (QC Lot: 256652)</b>											
CG2102901-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 256782)</b>											
CG2102743-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 256784)</b>											
CG2102743-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.02	1.09	0.08	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 256219)</b>											
CG2102903-001	FR_09-04-A_QTR_2021-07-05_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00014	0.00014	0.000005	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.110	0.107	2.80%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.031	0.031	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.802 µg/L	0.000755	6.03%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	144	149	3.37%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.77 µg/L	0.00075	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00212	0.00213	0.752%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000077	0.000076	0.0000008	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0860	0.0893	3.75%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	86.9	84.8	2.49%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.37	1.40	2.30%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00196	0.00196	0.258%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00793	0.00804	1.35%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.93	5.88	0.939%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.101 µg/L	0.000082	0.000019	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.87	2.82	1.77%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 256219) - continued</b>											
CG2102903-001	FR_09-04-A_QTR_2021-07-05_N	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.38	7.46	1.13%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.234	0.244	4.47%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	133	128	3.73%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000065	0.000064	0.0000008	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00635	0.00634	0.216%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0064	0.0063	0.0001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 256220)</b>											
CG2102903-001	FR_09-04-A_QTR_2021-07-05_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 256934)</b>											
CG2102901-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	0.0000052	<0.0000050	0.0000002	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 254579)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 254580)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 254904)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 255365)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 256995)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 257004)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 260202)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 260204)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 254619)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 254657)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 254658)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 254659)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 254660)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 254661)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 254662)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 255588)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 255588) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 256376)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 256652)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 256782)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 256784)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 256219)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 256219) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 256220)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 256934)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 254579)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 254580)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	96.5	85.0	115	---
<b>Physical Tests (QCLot: 254904)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.6	85.0	115	---
<b>Physical Tests (QCLot: 255365)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	95.5	85.0	115	---
<b>Physical Tests (QCLot: 256995)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 257004)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	90.5	85.0	115	---
<b>Physical Tests (QCLot: 259267)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 260202)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 260203)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 260204)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 254619)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	110	80.0	120	---
<b>Anions and Nutrients (QCLot: 254657)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 254658)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 254659)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 254660)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 254661)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 254662)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 254662) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	109	90.0	110	----
<b>Anions and Nutrients (QCLot: 255588)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	96.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 256376)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Anions and Nutrients (QCLot: 256652)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	90.8	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 256782)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 256784)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 256219)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.0	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.5	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	110	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.5	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	108	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 256219) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	95.3	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 256220)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.3	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 254619)</b>										
CG2102901-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0472 mg/L	0.05 mg/L	94.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 255588)</b>										
CG2102901-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0575 mg/L	0.0676 mg/L	85.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 256376)</b>										
CG2102905-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.108 mg/L	0.1 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 256652)</b>										
CG2102901-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.47 mg/L	2.5 mg/L	98.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 256782)</b>										
CG2102743-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.1 mg/L	23.9 mg/L	101	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 256784)</b>										
CG2102743-001	Anonymous	carbon, total organic [TOC]	----	E355-L	26.0 mg/L	23.9 mg/L	109	70.0	130	----
<b>Dissolved Metals (QCLot: 256219)</b>										
CG2102903-001	FR_09-04-A_QTR_2021-07-05_N	aluminum, dissolved	7429-90-5	E421	0.205 mg/L	0.2 mg/L	103	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0376 mg/L	0.04 mg/L	94.1	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00903 mg/L	0.01 mg/L	90.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.092 mg/L	0.1 mg/L	92.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00411 mg/L	0.004 mg/L	103	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	98.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0185 mg/L	0.02 mg/L	92.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0868 mg/L	0.1 mg/L	86.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
molybdenum, dissolved	7439-98-7	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----		
nickel, dissolved	7440-02-0	E421	0.0371 mg/L	0.04 mg/L	92.8	70.0	130	----		



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 256219) - continued</b>										
CG2102903-001	FR_09-04-A_QTR_2021-07-05_N	potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.57 mg/L	10 mg/L	95.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00372 mg/L	0.004 mg/L	93.1	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00369 mg/L	0.004 mg/L	92.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.378 mg/L	0.4 mg/L	94.5	70.0	130	----
<b>Dissolved Metals (QCLot: 256220)</b>										
CG2102903-001	FR_09-04-A_QTR_2021-07-05_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0398 mg/L	0.04 mg/L	99.4	70.0	130	----
<b>Dissolved Metals (QCLot: 256934)</b>										
CG2102901-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000969 mg/L	0.0001 mg/L	96.9	70.0	130	----







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.





## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					FR_MW-EC1A_2021-07-28	FR_MW-EC1B_2021-07-28	FR_MW-EC4A_2021-07-28	FR_MW-EC4B_2021-07-28	FR_DC1_WG_2 021-07-28_NP
Client sampling date / time					28-Jul-2021 12:38	28-Jul-2021 09:15	28-Jul-2021 15:40	28-Jul-2021 14:18	28-Jul-2021 09:20
Analyte	CAS Number	Method	LOR	Unit	CG2102905-001	CG2102905-002	CG2102905-003	CG2102905-004	CG2102905-005
					Result	Result	Result	Result	Result
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	7.4	13.3	<2.0	23.0	12.2
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	246	316	302	417	288
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	26.4	<1.0	16.0
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	246	316	328	417	304
conductivity	----	E100	2.0	µS/cm	1570	2780	599	2590	2810
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	944	1980	51.9	1870	1970
oxidation-reduction potential [ORP]	----	E125	0.10	mV	238	266	301	238	275
pH	----	E108	0.10	pH units	8.18	7.97	8.67	8.16	8.37
solids, total dissolved [TDS]	----	E162	10	mg/L	1390	2520	444	2550	2790
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	21.8	<1.0	<1.0
turbidity	----	E121	0.10	NTU	3.29	0.13	112	0.48	0.13
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	300	385	368	509	351
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	15.8	<1.0	9.6
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0687	0.0070	0.117	0.0316	<0.0050
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.050	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	6.09	12.3	5.35	4.28	12.4
fluoride	16984-48-8	E235.F	0.020	mg/L	0.332	0.105	1.92	0.139	0.108
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	0.294	0.301	<0.050 <sup>TKNI</sup>
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	17.0	34.1	0.0065	2.69	34.6
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0420	0.0644	<0.0010	0.0149	0.0671
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0036	<0.0010	0.0063	0.0035
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0038	0.0058	0.106	0.0078	0.0041
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	756	1630	12.1	1530	1630
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	1.72	3.04	3.06	1.83
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	1.77	6.56	2.64	1.65
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	22.1	43.0	7.06	40.5	42.8



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC1A_ 2021-07-28	FR_MW-EC1B_ 2021-07-28	FR_MW-EC4A_ 2021-07-28	FR_MW-EC4B_ 2021-07-28	FR_DC1_WG_2 021-07-28_NP
Client sampling date / time					28-Jul-2021 12:38	28-Jul-2021 09:15	28-Jul-2021 15:40	28-Jul-2021 14:18	28-Jul-2021 09:20	
Analyte	CAS Number	Method	LOR	Unit	CG2102905-001	CG2102905-002	CG2102905-003	CG2102905-004	CG2102905-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
cation sum	----	EC101	0.10	meq/L	19.6	40.4	6.90	37.9	40.3	
ion balance (cations/anions ratio)	----	EC101	0.010	%	88.7	94.0	97.7	93.6	94.2	
ion balance (cation-anion difference)	----	EC101	0.010	%	6.00	3.12	1.15	3.32	3.01	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0061	<0.0060 DLA	1.96	0.0144	<0.0060 DLA	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00016	0.00055	0.00215	0.00044	0.00055	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00052	<0.00020 DLA	0.00121	0.00022	0.00034	
barium, total	7440-39-3	E420	0.00010	mg/L	0.271	0.0503	0.316	0.0360	0.0507	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.040 DLA	0.155	<0.040 DLA	<0.040 DLA	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000100 DLA	<0.000050	<0.000100 DLA	<0.000100 DLA	
boron, total	7440-42-8	E420	0.010	mg/L	0.057	0.048	0.340	0.047	0.049	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	0.399	0.0871	0.395	0.382	
calcium, total	7440-70-2	E420	0.050	mg/L	192	296	15.1	306	296	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00020 DLA	0.00305	<0.00020 DLA	<0.00020 DLA	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.94	<0.20 DLA	0.48	0.61	<0.20 DLA	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00100 DLA	0.00178	<0.00100 DLA	<0.00100 DLA	
iron, total	7439-89-6	E420	0.010	mg/L	0.443	<0.020 DLA	1.52	0.060	<0.020 DLA	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000100 DLA	0.000632	<0.000100 DLA	<0.000100 DLA	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0563	0.136	0.145	0.0631	0.138	
magnesium, total	7439-95-4	E420	0.0050	mg/L	126	312	6.13	294	316	
manganese, total	7439-96-5	E420	0.00010	mg/L	1.50	0.314	0.0886	0.979	0.314	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00441	0.00634	0.00565	0.00390	0.00648	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00218	0.0322	0.00187	0.00932	0.0324	
potassium, total	7440-09-7	E420	0.050	mg/L	1.52	6.41	2.88	5.32	6.50	
selenium, total	7782-49-2	E420	0.050	µg/L	137	313	0.485	131	314	
silicon, total	7440-21-3	E420	0.10	mg/L	4.21	2.01	6.23	3.57	2.03	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000020 DLA	0.000019	<0.000020 DLA	<0.000020 DLA	
sodium, total	17341-25-2	E420	0.050	mg/L	14.1	16.7	131	7.97	16.8	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.710	0.384	0.103	0.345	0.381	
sulfur, total	7704-34-9	E420	0.50	mg/L	256	576	4.73	542	601	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000034	0.000056	0.000039	<0.000020 DLA	0.000057	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00020 DLA	0.00080	<0.00020 DLA	<0.00020 DLA	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC1A_ 2021-07-28	FR_MW-EC1B_ 2021-07-28	FR_MW-EC4A_ 2021-07-28	FR_MW-EC4B_ 2021-07-28	FR_DC1_WG_2 021-07-28_NP
Client sampling date / time					28-Jul-2021 12:38	28-Jul-2021 09:15	28-Jul-2021 15:40	28-Jul-2021 14:18	28-Jul-2021 09:20	
Analyte	CAS Number	Method	LOR	Unit	CG2102905-001	CG2102905-002	CG2102905-003	CG2102905-004	CG2102905-005	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00060 <sup>DLA</sup>	0.00728	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00762	0.0185	0.000861	0.0212	0.0184	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	0.00788	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	0.0061	0.0106	0.0108	0.0061	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0019	<0.0020 <sup>DLA</sup>	0.0236	0.0020	0.0020	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00016	0.00054	0.00164	0.00043	0.00054	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00048	<0.00020 <sup>DLA</sup>	0.00087	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.281	0.0508	0.250	0.0364	0.0525	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.040 <sup>DLA</sup>	<0.020	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.055	0.047	0.332	0.044	0.050	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.363	0.0064	0.339	0.360	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	190	300	12.0	298	294	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.88	<0.20 <sup>DLA</sup>	<0.10	0.60	<0.20 <sup>DLA</sup>	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00082	0.00032	0.00077	<0.00040 <sup>DLA</sup>	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.423	<0.020 <sup>DLA</sup>	0.241	0.046	<0.020 <sup>DLA</sup>	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	0.000094	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0561	0.134	0.147	0.0631	0.134	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	114	298	5.32	274	301	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.44	0.300	0.0589	0.966	0.314	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00433	0.00636	0.00519	0.00394	0.00622	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00202	0.0314	<0.00050	0.00923	0.0329	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.52	6.34	2.12	5.35	6.69	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	132	300	0.211	133	307	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.01	1.86	3.19	3.38	1.92	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	13.8	16.3	133	7.77	16.8	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.662	0.375	0.0918	0.340	0.376	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	252	578	4.09	553	591	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000042	0.000058	<0.000010	<0.000020 <sup>DLA</sup>	0.000058	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC1A_ 2021-07-28	FR_MW-EC1B_ 2021-07-28	FR_MW-EC4A_ 2021-07-28	FR_MW-EC4B_ 2021-07-28	FR_DC1_WG_2 021-07-28_NP
Client sampling date / time					28-Jul-2021 12:38	28-Jul-2021 09:15	28-Jul-2021 15:40	28-Jul-2021 14:18	28-Jul-2021 09:20	
Analyte	CAS Number	Method	LOR	Unit	CG2102905-001	CG2102905-002	CG2102905-003	CG2102905-004	CG2102905-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	0.00034	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00743	0.0182	0.000569	0.0209	0.0184	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	0.00059	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0066	0.0030	0.0081	0.0054	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_FLD1_WG_2 021-07-28_NP	FR_TRP1_WG_ 2021-07-28_NP	----	----	----
Client sampling date / time					28-Jul-2021 09:25	28-Jul-2021 16:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102905-006	CG2102905-007	-----	-----	-----	
					Result	Result	---	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	<0.50	<0.50	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	399	413	----	----	----	
pH	----	E108	0.10	pH units	5.53	5.22	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	<0.10	<0.10	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	----	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	<0.10	----	----	----	
cation sum	----	EC101	0.10	meq/L	<0.10	<0.10	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_FLD1_WG_2 021-07-28_NP	FR_TRP1_WG_ 2021-07-28_NP	----	----	----
Client sampling date / time					28-Jul-2021 09:25	28-Jul-2021 16:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102905-006	CG2102905-007	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	100	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	<0.010	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	<0.050	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	----	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----	



## Analytical Results

Sub-Matrix: Water					Client sample ID		FR_FLD1_WG_2	FR_TRP1_WG_	---	---	---
(Matrix: Water)							021-07-28_NP	2021-07-28_NP			
					Client sampling date / time		28-Jul-2021 09:25	28-Jul-2021 16:00	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2102905-006	CG2102905-007	-----	-----	-----	-----	-----
					Result	Result	---	---	---	---	---
<b>Total Metals</b>											
uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	---	---	---	---	---	---
vanadium, total	7440-62-2	E420	0.000050	mg/L	<0.000050	---	---	---	---	---	---
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	---	---	---	---	---	---
<b>Dissolved Metals</b>											
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	---	---	---	---	---
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	---	---
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	---	---
barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	---	---
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	---	---
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	---	---
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	---	---	---	---	---
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	---	---	---	---	---
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	---	---	---	---	---
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	---	---
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---	---	---
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	---	---	---	---	---
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---	---	---
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	---	---
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	---	---	---	---	---
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	---	---	---	---	---
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	---	---
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	---	---
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	---	---
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	---	---	---	---	---
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	---	---	---	---	---
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	---	---	---	---	---
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	---	---
sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	<0.050	---	---	---	---	---
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	---	---	---	---	---
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	---	---	---	---	---
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	---	---
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_FLD1_WG_2 021-07-28_NP	FR_TRP1_WG_ 2021-07-28_NP	----	----	----
					Client sampling date / time	28-Jul-2021 09:25	28-Jul-2021 16:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102905-006	CG2102905-007	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102905</b>	Page	: 1 of 26
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cameron Griffin	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 8746	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 29-Jul-2021 08:45
PO	: VPO00769061	Issue Date	: 14-Aug-2021 14:02
C-O-C number	: EC_PC_GW_2021-07-28		
Sampler	: Katie Peterson		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_WG_2021-07-28_NP	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_WG_2021-07-28_NP	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1A_2021-07-28	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1B_2021-07-28	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4A_2021-07-28	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4B_2021-07-28	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP1_WG_2021-07-28_NP	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_DC1_WG_2021-07-28_NP	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_FLD1_WG_2021-07-28_NP	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_MW-EC1A_2021-07-28	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_MW-EC1B_2021-07-28	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_MW-EC4A_2021-07-28	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_MW-EC4B_2021-07-28	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_TRP1_WG_2021-07-28_NP	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_DC1_WG_2021-07-28_NP	E235.Cl-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_FLD1_WG_2021-07-28_NP	E235.Cl-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_MW-EC1A_2021-07-28	E235.CI-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_MW-EC1B_2021-07-28	E235.CI-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_MW-EC4A_2021-07-28	E235.CI-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_MW-EC4B_2021-07-28	E235.CI-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_TRP1_WG_2021-07-28_NP	E235.CI-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_DC1_WG_2021-07-28_NP	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_FLD1_WG_2021-07-28_NP	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_MW-EC1A_2021-07-28	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_MW-EC1B_2021-07-28	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_MW-EC4A_2021-07-28	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_MW-EC4B_2021-07-28	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_TRP1_WG_2021-07-28_NP	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_DC1_WG_2021-07-28_NP	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_FLD1_WG_2021-07-28_NP	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_MW-EC1A_2021-07-28	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_MW-EC1B_2021-07-28	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_MW-EC4A_2021-07-28	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_MW-EC4B_2021-07-28	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_TRP1_WG_2021-07-28_NP	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_DC1_WG_2021-07-28_NP	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_FLD1_WG_2021-07-28_NP	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_MW-EC1A_2021-07-28	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_MW-EC1B_2021-07-28	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_MW-EC4A_2021-07-28	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_MW-EC4B_2021-07-28	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_TRP1_WG_2021-07-28_NP	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_DC1_WG_2021-07-28_NP	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_FLD1_WG_2021-07-28_NP	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_MW-EC1A_2021-07-28	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_MW-EC1B_2021-07-28	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_MW-EC4A_2021-07-28	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_MW-EC4B_2021-07-28	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_TRP1_WG_2021-07-28_NP	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_DC1_WG_2021-07-28_NP	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_FLD1_WG_2021-07-28_NP	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_MW-EC1A_2021-07-28	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW-EC1B_2021-07-28	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW-EC4A_2021-07-28	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW-EC4B_2021-07-28	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_TRP1_WG_2021-07-28_NP	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_WG_2021-07-28_NP	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_WG_2021-07-28_NP	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1A_2021-07-28	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1B_2021-07-28	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4A_2021-07-28	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4B_2021-07-28	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP1_WG_2021-07-28_NP	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_WG_2021-07-28_NP	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_WG_2021-07-28_NP	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1A_2021-07-28	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1B_2021-07-28	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4A_2021-07-28	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4B_2021-07-28	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP1_WG_2021-07-28_NP	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC1_WG_2021-07-28_NP	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FLD1_WG_2021-07-28_NP	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC1A_2021-07-28	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC1B_2021-07-28	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC4A_2021-07-28	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC4B_2021-07-28	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TRP1_WG_2021-07-28_NP	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC1_WG_2021-07-28_NP	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FLD1_WG_2021-07-28_NP	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC1A_2021-07-28	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC1B_2021-07-28	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC4A_2021-07-28	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC4B_2021-07-28	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TRP1_WG_2021-07-28_NP	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_DC1_WG_2021-07-28_NP	E358-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_FLD1_WG_2021-07-28_NP	E358-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC1A_2021-07-28	E358-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC1B_2021-07-28	E358-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC4A_2021-07-28	E358-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC4B_2021-07-28	E358-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_WG_2021-07-28_NP	E355-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_WG_2021-07-28_NP	E355-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1A_2021-07-28	E355-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1B_2021-07-28	E355-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4A_2021-07-28	E355-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4B_2021-07-28	E355-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP1_WG_2021-07-28_NP	E355-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_DC1_WG_2021-07-28_NP	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	1 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_FLD1_WG_2021-07-28_NP	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	1 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_MW-EC1A_2021-07-28	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	1 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_MW-EC1B_2021-07-28	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	1 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_MW-EC4A_2021-07-28	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	1 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_MW-EC4B_2021-07-28	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	1 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_TRP1_WG_2021-07-28_NP	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	1 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_DC1_WG_2021-07-28_NP	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_FLD1_WG_2021-07-28_NP	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_MW-EC1A_2021-07-28	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_MW-EC1B_2021-07-28	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_MW-EC4A_2021-07-28	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_MW-EC4B_2021-07-28	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_TRP1_WG_2021-07-28_NP	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_DC1_WG_2021-07-28_NP	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_FLD1_WG_2021-07-28_NP	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_MW-EC1A_2021-07-28	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_MW-EC1B_2021-07-28	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-EC4A_2021-07-28	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-EC4B_2021-07-28	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_TRP1_WG_2021-07-28_NP	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-EC4A_2021-07-28	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	209 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_TRP1_WG_2021-07-28_NP	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	210 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-EC1A_2021-07-28	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	212 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-EC4B_2021-07-28	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	212 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-EC1B_2021-07-28	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	216 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_DC1_WG_2021-07-28_NP	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	217 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_FLD1_WG_2021-07-28_NP	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	217 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_TRP1_WG_2021-07-28_NP	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	210 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW-EC4A_2021-07-28	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	211 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW-EC4B_2021-07-28	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	212 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW-EC1A_2021-07-28	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	214 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_DC1_WG_2021-07-28_NP	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	217 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_FLD1_WG_2021-07-28_NP	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	217 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW-EC1B_2021-07-28	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	217 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_DC1_WG_2021-07-28_NP	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_FLD1_WG_2021-07-28_NP	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_MW-EC1A_2021-07-28	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_MW-EC1B_2021-07-28	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_MW-EC4A_2021-07-28	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_MW-EC4B_2021-07-28	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_TRP1_WG_2021-07-28_NP	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_DC1_WG_2021-07-28_NP	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_FLD1_WG_2021-07-28_NP	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_MW-EC1A_2021-07-28	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_MW-EC1B_2021-07-28	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_MW-EC4A_2021-07-28	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_MW-EC4B_2021-07-28	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_TRP1_WG_2021-07-28_NP	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_DC1_WG_2021-07-28_NP	E121	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_FLD1_WG_2021-07-28_NP	E121	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW-EC1B_2021-07-28	E121	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW-EC1A_2021-07-28	E121	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW-EC4A_2021-07-28	E121	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW-EC4B_2021-07-28	E121	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_TRP1_WG_2021-07-28_NP	E121	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_DC1_WG_2021-07-28_NP	E420.Cr-L	28-Jul-2021	----	----	----		01-Aug-2021	180 days	4 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_FLD1_WG_2021-07-28_NP	E420.Cr-L	28-Jul-2021	----	----	----		01-Aug-2021	180 days	4 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC1A_2021-07-28	E420.Cr-L	28-Jul-2021	----	----	----		01-Aug-2021	180 days	4 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC1B_2021-07-28	E420.Cr-L	28-Jul-2021	----	----	----		01-Aug-2021	180 days	4 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC4A_2021-07-28	E420.Cr-L	28-Jul-2021	----	----	----		01-Aug-2021	180 days	4 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC4B_2021-07-28	E420.Cr-L	28-Jul-2021	----	----	----		01-Aug-2021	180 days	4 days	✔	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_DC1_WG_2021-07-28_NP	E420	28-Jul-2021	----	----	----		01-Aug-2021	180 days	4 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_FLD1_WG_2021-07-28_NP	E420	28-Jul-2021	----	----	----		01-Aug-2021	180 days	4 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_MW-EC1A_2021-07-28	E420	28-Jul-2021	----	----	----		01-Aug-2021	180 days	4 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_MW-EC1B_2021-07-28	E420	28-Jul-2021	----	----	----		01-Aug-2021	180 days	4 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_MW-EC4A_2021-07-28	E420	28-Jul-2021	----	----	----		01-Aug-2021	180 days	4 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_MW-EC4B_2021-07-28	E420	28-Jul-2021	----	----	----		01-Aug-2021	180 days	4 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	254580	1	9	11.1	5.0	✓
Alkalinity Species by Titration	E290	260202	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	256376	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	254670	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	254671	1	20	5.0	5.0	✓
Conductivity in Water	E100	260204	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256833	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	256834	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256783	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	254620	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	254674	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	254672	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	254673	1	20	5.0	5.0	✓
ORP by Electrode	E125	259267	2	40	5.0	5.0	✓
pH by Meter	E108	260203	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	254669	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	257005	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	256162	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	256652	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	256163	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256785	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	255589	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	254904	2	36	5.5	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	254580	1	9	11.1	5.0	✓
Alkalinity Species by Titration	E290	260202	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	256376	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	254670	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	254671	1	20	5.0	5.0	✓
Conductivity in Water	E100	260204	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256833	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	256834	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256783	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	254620	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	254674	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	254672	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	254673	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	259267	2	40	5.0	5.0	✓
pH by Meter	E108	260203	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	254669	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	257005	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	256162	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	256652	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	256163	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256785	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	255589	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	256996	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	254904	2	36	5.5	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	254580	1	9	11.1	5.0	✓
Alkalinity Species by Titration	E290	260202	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	256376	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	254670	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	254671	1	20	5.0	5.0	✓
Conductivity in Water	E100	260204	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256833	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	256834	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256783	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	254620	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	254674	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	254672	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	254673	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	254669	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	257005	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	256162	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	256652	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	256163	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256785	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	255589	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	256996	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	254904	2	36	5.5	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	256376	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	254670	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	254671	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256833	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	256834	2	20	10.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256783	1	18	5.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	254620	1	17	5.8	5.0	✔
Fluoride in Water by IC	E235.F	254674	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	254672	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	254673	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	254669	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	256162	1	12	8.3	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	256652	2	40	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	256163	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256785	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	255589	1	20	5.0	5.0	✔





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2102905**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Cameron Griffin  
**Address** : Fording River Operations PO BOX 100  
                   Elkford BC Canada V0B 1H0  
**Telephone** : 250 425 8746  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00769061  
**C-O-C number** : EC\_PC\_GW\_2021-07-28  
**Sampler** : Katie Peterson  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 7  
**No. of samples analysed** : 7

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-Jul-2021 08:45  
**Date Analysis Commenced** : 29-Jul-2021  
**Issue Date** : 14-Aug-2021 14:02

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 254580)</b>											
CG2102903-003	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	15.5	14.7	0.7	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 254904)</b>											
CG2102901-004	Anonymous	turbidity	----	E121	0.10	NTU	0.20	0.19	0.01	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 255365)</b>											
CG2102901-002	Anonymous	turbidity	----	E121	0.10	NTU	0.16	0.15	0.005	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 257005)</b>											
CG2102904-005	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1410	1440	2.38%	20%	----
<b>Physical Tests (QC Lot: 259267)</b>											
CG2102901-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	441	443	0.453%	15%	----
<b>Physical Tests (QC Lot: 259268)</b>											
CG2102905-004	FR_MW-EC4B_2021-07-28	oxidation-reduction potential [ORP]	----	E125	0.10	mV	238	246	3.35%	15%	----
<b>Physical Tests (QC Lot: 260202)</b>											
CG2102902-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	148	140	5.48%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	2.6	1.6	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	148	143	3.65%	20%	----
<b>Physical Tests (QC Lot: 260203)</b>											
CG2102902-001	Anonymous	pH	----	E108	0.10	pH units	8.28	8.29	0.121%	4%	----
<b>Physical Tests (QC Lot: 260204)</b>											
CG2102902-001	Anonymous	conductivity	----	E100	2.0	µS/cm	593	597	0.672%	10%	----
<b>Physical Tests (QC Lot: 260205)</b>											
CG2102905-002	FR_MW-EC1B_2021-07-28	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	316	318	0.662%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	316	318	0.662%	20%	----
<b>Physical Tests (QC Lot: 260206)</b>											
CG2102905-002	FR_MW-EC1B_2021-07-28	pH	----	E108	0.10	pH units	7.97	7.99	0.251%	4%	----
<b>Physical Tests (QC Lot: 260207)</b>											
CG2102905-002	FR_MW-EC1B_2021-07-28	conductivity	----	E100	2.0	µS/cm	2780	2800	0.717%	10%	----
<b>Anions and Nutrients (QC Lot: 254620)</b>											
CG2102904-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 254669)</b>											
CG2102905-001	FR_MW-EC1A_2021-07-28	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	756	765	1.24%	20%	----
<b>Anions and Nutrients (QC Lot: 254670)</b>											
CG2102905-001	FR_MW-EC1A_2021-07-28	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 254671)</b>											
CG2102905-001	FR_MW-EC1A_2021-07-28	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	6.09	6.21	1.93%	20%	----
<b>Anions and Nutrients (QC Lot: 254672)</b>											
CG2102905-001	FR_MW-EC1A_2021-07-28	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	17.0	17.8	4.65%	20%	----
<b>Anions and Nutrients (QC Lot: 254673)</b>											
CG2102905-001	FR_MW-EC1A_2021-07-28	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0420	0.0447	0.0027	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 254674)</b>											
CG2102905-001	FR_MW-EC1A_2021-07-28	fluoride	16984-48-8	E235.F	0.100	mg/L	0.332	0.325	0.007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 255589)</b>											
CG2102904-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0174	0.0190	0.0016	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 256376)</b>											
CG2102892-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	1.25	mg/L	39.8	39.8	0.207%	20%	----
<b>Anions and Nutrients (QC Lot: 256652)</b>											
CG2102901-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 256653)</b>											
CG2102905-002	FR_MW-EC1B_2021-07-28	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 256783)</b>											
CG2102904-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.27	1.46	0.19	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 256785)</b>											
CG2102904-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	5.61	6.49	14.6%	20%	----
<b>Total Metals (QC Lot: 256162)</b>											
YL2100886-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00031	0.00029	0.00002	Diff <2x LOR	----
<b>Total Metals (QC Lot: 256163)</b>											
YL2100886-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.114	0.116	1.24%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00011	0.00012	0.000005	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00041	0.00043	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0707	0.0695	1.74%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.596	0.604	1.33%	20%	----
		cadmium, total	7440-43-9	E420	0.0000200	mg/L	<0.0000200	<0.0000200	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	115	118	2.86%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 256163) - continued</b>											
YL2100886-001	Anonymous	cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00099	0.00099	0.000006	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00195	0.00183	0.00012	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.132	0.131	0.520%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000079	0.000080	0.0000008	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0181	0.0182	0.124%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	46.0	46.7	1.48%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.191	0.192	0.631%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0237	0.0235	0.833%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00675	0.00660	2.26%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	19.8	20.0	0.815%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000368	0.000367	0.000001	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.22	3.26	1.08%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	73.8	72.3	2.00%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	1.32	1.29	2.28%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	87.9	88.0	0.0907%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000011	0.000012	0.0000008	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00436	0.00474	8.34%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.0204	0.0207	1.81%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00094	0.00091	0.00003	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 256833)</b>											
CG2102905-001	FR_MW-EC1A_2021-07-28	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 256834)</b>											
CG2102905-001	FR_MW-EC1A_2021-07-28	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0019	0.0019	0.00004	Diff <2x LOR	----
CG2102905-001	FR_MW-EC1A_2021-07-28	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00016	0.00016	0.000005	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00048	0.00046	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.281	0.275	2.29%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.055	0.055	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	190	186	2.29%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.88 µg/L	0.00087	0.00002	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 256834) - continued</b>											
CG2102905-001	FR_MW-EC1A_2021-07-28	copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00022	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.423	0.415	1.72%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0561	0.0556	0.907%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	114	113	1.11%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.44	1.44	0.0752%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00433	0.00428	1.17%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00202	0.00201	0.000005	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.52	1.50	0.927%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	132 µg/L	0.136	2.73%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.01	3.90	2.73%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	13.8	13.7	0.918%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.662	0.665	0.423%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	252	248	1.65%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000042	0.000039	0.000003	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00743	0.00732	1.58%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0028	0.0010	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 254580)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 254904)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 255365)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 256996)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 257005)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 260202)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 260204)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 260205)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 260207)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 254620)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 254669)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 254670)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 254671)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 254672)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 254673)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 254674)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 255589)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 256376)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 256652)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 256653)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 256783)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 256785)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 256162)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 256163)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 256163) - continued</b>						
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 256833)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 256834)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	MBRR
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 256834) - continued</b>						
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----

**Qualifiers**

Qualifier	Description
MBRR	Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 254580)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	96.5	85.0	115	---
<b>Physical Tests (QCLot: 254904)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.6	85.0	115	---
<b>Physical Tests (QCLot: 255365)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	95.5	85.0	115	---
<b>Physical Tests (QCLot: 256996)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	110	85.0	115	---
<b>Physical Tests (QCLot: 257005)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.4	85.0	115	---
<b>Physical Tests (QCLot: 259267)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 259268)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Physical Tests (QCLot: 260202)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 260203)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 260204)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.5	90.0	110	---
<b>Physical Tests (QCLot: 260205)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 260206)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 260207)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 254620)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	99.0	80.0	120	---
<b>Anions and Nutrients (QCLot: 254669)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 254670)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 254671)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		
						Low	High		
<b>Anions and Nutrients (QCLot: 254671) - continued</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 254672)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 254673)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 254674)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 255589)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	97.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 256376)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Anions and Nutrients (QCLot: 256652)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	90.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 256653)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	117	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 256783)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 256785)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 256162)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
<b>Total Metals (QCLot: 256163)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.8	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.9	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 256163) - continued</b>									
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	95.8	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.3	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	101	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	98.9	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 256833)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 256834)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.8	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 256834) - continued</b>									
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.5	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.4	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----





## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 254620)</b>										
CG2102904-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0422 mg/L	0.05 mg/L	84.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 254669)</b>										
CG2102905-007	FR_TRP1_WG_2021-07-28_NP	sulfate (as SO4)	14808-79-8	E235.SO4	111 mg/L	100 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 254670)</b>										
CG2102905-007	FR_TRP1_WG_2021-07-28_NP	bromide	24959-67-9	E235.Br-L	0.616 mg/L	0.5 mg/L	123	75.0	125	----
<b>Anions and Nutrients (QCLot: 254671)</b>										
CG2102905-007	FR_TRP1_WG_2021-07-28_NP	chloride	16887-00-6	E235.Cl-L	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 254672)</b>										
CG2102905-007	FR_TRP1_WG_2021-07-28_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.78 mg/L	2.5 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 254673)</b>										
CG2102905-007	FR_TRP1_WG_2021-07-28_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.580 mg/L	0.5 mg/L	116	75.0	125	----
<b>Anions and Nutrients (QCLot: 254674)</b>										
CG2102905-007	FR_TRP1_WG_2021-07-28_NP	fluoride	16984-48-8	E235.F	1.22 mg/L	1 mg/L	122	75.0	125	----
<b>Anions and Nutrients (QCLot: 255589)</b>										
CG2102904-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0541 mg/L	0.0676 mg/L	80.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 256376)</b>										
CG2102905-006	FR_FLD1_WG_2021-07-28_NP	ammonia, total (as N)	7664-41-7	E298	0.108 mg/L	0.1 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 256652)</b>										
CG2102901-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.47 mg/L	2.5 mg/L	98.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 256653)</b>										
CG2102905-003	FR_MW-EC4A_2021-07-28	Kjeldahl nitrogen, total [TKN]	----	E318	2.34 mg/L	2.5 mg/L	93.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 256783)</b>										
CG2102904-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.0 mg/L	23.9 mg/L	101	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 256785)</b>										
CG2102904-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.8 mg/L	23.9 mg/L	95.3	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 256162)</b>										
YL2100886-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
<b>Total Metals (QCLot: 256163)</b>										
YL2100886-002	Anonymous	aluminum, total	7429-90-5	E420	0.191 mg/L	0.2 mg/L	95.4	70.0	130	----
		antimony, total	7440-36-0	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		barium, total	7440-39-3	E420	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0384 mg/L	0.04 mg/L	96.1	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00940 mg/L	0.01 mg/L	94.0	70.0	130	----
		boron, total	7440-42-8	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00394 mg/L	0.004 mg/L	98.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0195 mg/L	0.02 mg/L	97.3	70.0	130	----
		copper, total	7440-50-8	E420	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		iron, total	7439-89-6	E420	1.86 mg/L	2 mg/L	92.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.0966 mg/L	0.1 mg/L	96.6	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		nickel, total	7440-02-0	E420	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		potassium, total	7440-09-7	E420	3.74 mg/L	4 mg/L	93.4	70.0	130	----
		selenium, total	7782-49-2	E420	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		silicon, total	7440-21-3	E420	9.63 mg/L	10 mg/L	96.3	70.0	130	----
		silver, total	7440-22-4	E420	0.00388 mg/L	0.004 mg/L	96.9	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	18.3 mg/L	20 mg/L	91.5	70.0	130	----
		thallium, total	7440-28-0	E420	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		titanium, total	7440-32-6	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, total	7440-61-1	E420	0.00390 mg/L	0.004 mg/L	97.4	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0973 mg/L	0.1 mg/L	97.3	70.0	130	----
		zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	96.1	70.0	130	----
<b>Dissolved Metals (QCLot: 256833)</b>										
CG2102905-002	FR_MW-EC1B_2021-07-28	chromium, dissolved	7440-47-3	E421.Cr-L	0.0808 mg/L	0.08 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 256834)</b>										




Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 256834) - continued</b>										
CG2102905-002	FR_MW-EC1B_2021-07-28	aluminum, dissolved	7429-90-5	E421	0.405 mg/L	0.4 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.764 mg/L	0.8 mg/L	95.5	70.0	130	----
CG2102905-002	FR_MW-EC1B_2021-07-28	antimony, dissolved	7440-36-0	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0756 mg/L	0.08 mg/L	94.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0176 mg/L	0.02 mg/L	88.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.186 mg/L	0.2 mg/L	93.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00799 mg/L	0.008 mg/L	99.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.84 mg/L	4 mg/L	95.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.177 mg/L	0.2 mg/L	88.4	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0754 mg/L	0.08 mg/L	94.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	8.08 mg/L	8 mg/L	101	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.8 mg/L	20 mg/L	94.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00787 mg/L	0.008 mg/L	98.3	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00741 mg/L	0.008 mg/L	92.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0410 mg/L	0.04 mg/L	103	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0819 mg/L	0.08 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.206 mg/L	0.2 mg/L	103	70.0	130	----

COC ID: **EC\_PC\_GW\_2021**      TURNAROUND TIME:      RUSH

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cameron Griffin			Lab Contact	Lyudmyla Shvets			Email 1:	Cameron.griffin@teck.com	X	X	X
Email				Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Scott.Roughhead@teck.com	X	X	X
Address	Shared Services Bag 2000 421 Pine Avenue			Address	2559 29 Street NE			Email 3:	David.Burroughs@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equisonline.com	X	X	X
Postal Code	V0B 2G0	Country	CA	Postal Code	T1Y 7B5	Country	Canada	Email 5:	kwiezel@bcengineering.ca	X	X	X
Phone Number	250 425 8137			Phone Number	403 407 1794			PO number:	VPO00769061			

SAMPLE DETAILS								ANALYSIS REQUESTED							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL IOC/TKN/Nutrients	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None		
FR_MW-EC1A_2021-07-28	FR_MW-EC1A	WG	N	2021/07/28	12:38	G	5	1	1	1	1	1	Environmental Division Calgary Work Order Reference <b>CG2102905</b>  Telephone: +1 403 407 1800		
FR_MW-EC1B_2021-07-28	FR_MW-EC1B	WG	N	2021/07/28	9:15	G	5	1	1	1	1	1			
<del>FR_MW-EC1A_2021-07-28</del>	<del>FR_MW-EC1A</del>	<del>WG</del>	<del>N</del>	<del>2021/07/28</del>	<del>12:38</del>	<del>G</del>	<del>5</del>	1	1	1	1	1			
<del>FR_MW-EC2B_2021-07-28</del>	<del>FR_MW-EC2B</del>	<del>WG</del>	<del>N</del>	<del>2021/07/28</del>	<del>9:15</del>	<del>G</del>	<del>5</del>	1	1	1	1	1			
<del>FR_MW-EC3A_2021-07-28</del>	<del>FR_MW-EC3A</del>	<del>WG</del>	<del>N</del>	<del>2021/07/28</del>	<del>15:40</del>	<del>G</del>	<del>5</del>	1	1	1	1	1			
<del>FR_MW-EC3B_2021-07-28</del>	<del>FR_MW-EC3B</del>	<del>WG</del>	<del>N</del>	<del>2021/07/28</del>	<del>14:18</del>	<del>G</del>	<del>5</del>	1	1	1	1	1			
FR_MW-EC4A_2021-07-28	FR_MW-EC4A	WG	N	2021/07/28	15:40	G	5	1	1	1	1	1			
FR_MW-EC4B_2021-07-28	FR_MW-EC4B	WG	N	2021/07/28	14:18	G	5	1	1	1	1	1			
FR_DC1_WG_2021-07-28	FR_DC1	WG	N	2021/07/28	9:20	G	5	1	1	1	1	1			
FR_FLD1_WG_2021-07-28	FR_FLD1	WG	N	2021/07/28	9:25	G	5	1	1	1	1	1			
FR_TRP1_WG_2021-07-28	FR_TRP1	WG	N	2021/07/28	16:00	G	3	1		1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
*All samples field filtered and preserved as required.		<i>[Signature]</i>	29/07/21

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	<i>Kate Peterson</i>		Mobile #	250-946-5029
Sampler's Signature	<i>[Signature]</i>		Date/Time	07/28/2021

*[Handwritten initials/signature]*

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103178**  
**Client** : **Teck Coal Limited**  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
                   Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-08  
**Sampler** : Katie Peterson  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 11-Aug-2021 08:30  
**Date Analysis Commenced** : 11-Aug-2021  
**Issue Date** : 02-Sep-2021 14:56

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

13°C: Samples Received with temperature >10 Degrees C

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					FR_KB-1_WG_2 021-08_NP	FR_KB-5PW_W G_2021-08_NP	FR_KB-6PW_W G_2021-08_NP	FR_KB-7PW_W G_2021-08_NP	----
Client sampling date / time					10-Aug-2021 08:40	10-Aug-2021 09:45	10-Aug-2021 12:25	10-Aug-2021 14:10	----
Analyte	CAS Number	Method	LOR	Unit	CG2103178-001	CG2103178-002	CG2103178-003	CG2103178-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	10.6	11.3	<2.0	16.9	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	385	394	504	418	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	78.8	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	385	394	583	418	----
conductivity	----	E100	2.0	µS/cm	1540	1540	1000	1920	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	970	964	13.5	1230	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	492	487	497	480	----
pH	----	E108	0.10	pH units	8.02	7.96	9.02	7.96	----
solids, total dissolved [TDS]	----	E162	10	mg/L	1270	1230	599	1640	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	1.6	<1.0	----
turbidity	----	E121	0.10	NTU	0.16	0.15	0.74	0.11	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	469	481	615	510	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	47.3	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0146	0.0075	0.439	0.0089	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.10	0.81	1.44	1.10	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.141	0.143	3.09	0.169	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.231 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	0.395	<0.050 <sup>TKNI</sup>	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	45.6	46.2	1.30	50.2	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0022	0.0012	0.0326	0.0018	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0052	<0.0020	0.0374	0.0024	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	422	408	10.1	644	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.88	0.77	1.03	0.90	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.82	0.89	1.00	0.89	----
<b>Ion Balance</b>									



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-1_WG_2 021-08_NP	FR_KB-5PW_W G_2021-08_NP	FR_KB-6PW_W G_2021-08_NP	FR_KB-7PW_W G_2021-08_NP	----
Client sampling date / time					10-Aug-2021 08:40	10-Aug-2021 09:45	10-Aug-2021 12:25	10-Aug-2021 14:10	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103178-001	CG2103178-002	CG2103178-003	CG2103178-004	-----	
					Result	Result	Result	Result	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	19.8	19.7	12.2	25.4	----	
cation sum	----	EC101	0.10	meq/L	19.7	19.6	11.6	25.0	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	99.5	99.5	95.1	98.4	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.253	0.254	2.52	0.794	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0.0162	<0.0030	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00060	0.00057	<0.00010	0.00013	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00012	<0.00010	0.00017	0.00013	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0362	0.0317	0.253	0.0372	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.028	0.028	0.854	0.044	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.648	0.664	<0.0050	0.0775	----	
calcium, total	7440-70-2	E420	0.050	mg/L	224	218	1.60	266	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00014	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	<0.10	0.27	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0.035	<0.010	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0.000227	0.000098	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.123	0.119	0.345	0.111	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	100	98.7	2.31	141	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0.00763	0.00044	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00177	0.00175	0.000708	0.000614	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0254	0.0287	<0.00050	0.00054	----	
potassium, total	7440-09-7	E420	0.050	mg/L	4.40	4.29	0.748	4.45	----	
selenium, total	7782-49-2	E420	0.050	µg/L	160	157	<0.050	185	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.11	2.14	3.10	3.39	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, total	17341-25-2	E420	0.050	mg/L	4.69	4.70	241	5.66	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.215	0.208	0.141	0.228	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	146	146	<0.50	233	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-1_WG_2 021-08_NP	FR_KB-5PW_W G_2021-08_NP	FR_KB-6PW_W G_2021-08_NP	FR_KB-7PW_W G_2021-08_NP	----
Client sampling date / time					10-Aug-2021 08:40	10-Aug-2021 09:45	10-Aug-2021 12:25	10-Aug-2021 14:10	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103178-001	CG2103178-002	CG2103178-003	CG2103178-004	-----	
					Result	Result	Result	Result	---	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000022	0.000019	<0.000010	<0.000010	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00900	0.00912	0.000021	0.00886	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0161	0.0156	<0.0030	<0.0030	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0033	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00058	0.00056	<0.00010	0.00012	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0.00016	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0357	0.0340	0.269	0.0373	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.029	0.028	0.805	0.037	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.636	0.723	<0.0050	0.0760	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	224	218	1.45	259	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00012	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	0.27	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00025	0.00022	<0.00020	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0.020	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.117	0.115	0.320	0.108	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	99.8	102	2.39	142	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0.00776	0.00045	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00179	0.00184	0.000660	0.000576	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0252	0.0291	<0.00050	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.51	4.62	0.817	4.52	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	186	183	0.149	213	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.09	2.02	3.12	3.28	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.87	5.01	259	5.67	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-1_WG_2 021-08_NP	FR_KB-5PW_W G_2021-08_NP	FR_KB-6PW_W G_2021-08_NP	FR_KB-7PW_W G_2021-08_NP	----
Client sampling date / time					10-Aug-2021 08:40	10-Aug-2021 09:45	10-Aug-2021 12:25	10-Aug-2021 14:10	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103178-001	CG2103178-002	CG2103178-003	CG2103178-004	-----	
					Result	Result	Result	Result	---	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.224	0.222	0.129	0.225	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	133	128	0.54	226	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000019	0.000017	<0.000010	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00868	0.00888	0.000020	0.00888	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0140	0.0150	<0.0010	<0.0010	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103178</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Paul Dore	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 11-Aug-2021 08:30
PO	: VPO00765458	Issue Date	: 02-Sep-2021 14:57
C-O-C number	: QTR_KC_GW_2021-08		
Sampler	: Katie Peterson		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-1_WG_2021-08_NP	E298	10-Aug-2021	13-Aug-2021	----	----		13-Aug-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-5PW_WG_2021-08_NP	E298	10-Aug-2021	13-Aug-2021	----	----		13-Aug-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-6PW_WG_2021-08_NP	E298	10-Aug-2021	13-Aug-2021	----	----		13-Aug-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-7PW_WG_2021-08_NP	E298	10-Aug-2021	13-Aug-2021	----	----		13-Aug-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-1_WG_2021-08_NP	E235.Br-L	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-5PW_WG_2021-08_NP	E235.Br-L	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-6PW_WG_2021-08_NP	E235.Br-L	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_KB-7PW_WG_2021-08_NP	E235.Br-L	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_KB-1_WG_2021-08_NP	E235.Cl-L	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_KB-5PW_WG_2021-08_NP	E235.Cl-L	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_KB-6PW_WG_2021-08_NP	E235.Cl-L	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_KB-7PW_WG_2021-08_NP	E235.Cl-L	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-1_WG_2021-08_NP	E378-U	10-Aug-2021	----	----	----		11-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-5PW_WG_2021-08_NP	E378-U	10-Aug-2021	----	----	----		11-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-6PW_WG_2021-08_NP	E378-U	10-Aug-2021	----	----	----		11-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-7PW_WG_2021-08_NP	E378-U	10-Aug-2021	----	----	----		11-Aug-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_KB-1_WG_2021-08_NP	E235.F	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_KB-5PW_WG_2021-08_NP	E235.F	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_KB-6PW_WG_2021-08_NP	E235.F	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_KB-7PW_WG_2021-08_NP	E235.F	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-1_WG_2021-08_NP	E235.NO3-L	10-Aug-2021	----	----	----		11-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-5PW_WG_2021-08_NP	E235.NO3-L	10-Aug-2021	----	----	----		11-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-6PW_WG_2021-08_NP	E235.NO3-L	10-Aug-2021	----	----	----		11-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-7PW_WG_2021-08_NP	E235.NO3-L	10-Aug-2021	----	----	----		11-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-1_WG_2021-08_NP	E235.NO2-L	10-Aug-2021	----	----	----		11-Aug-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_KB-5PW_WG_2021-08_NP	E235.NO2-L	10-Aug-2021	----	----	----		11-Aug-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_KB-6PW_WG_2021-08_NP	E235.NO2-L	10-Aug-2021	----	----	----		11-Aug-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_KB-7PW_WG_2021-08_NP	E235.NO2-L	10-Aug-2021	----	----	----		11-Aug-2021	3 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_KB-1_WG_2021-08_NP	E235.SO4	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_KB-5PW_WG_2021-08_NP	E235.SO4	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_KB-6PW_WG_2021-08_NP	E235.SO4	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_KB-7PW_WG_2021-08_NP	E235.SO4	10-Aug-2021	----	----	----		11-Aug-2021	28 days	1 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-1_WG_2021-08_NP	E318	10-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	7 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-5PW_WG_2021-08_NP	E318	10-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	7 days	✔





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-6PW_WG_2021-08_NP	E318	10-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-7PW_WG_2021-08_NP	E318	10-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-1_WG_2021-08_NP	E372-U	10-Aug-2021	16-Aug-2021	----	----		16-Aug-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-5PW_WG_2021-08_NP	E372-U	10-Aug-2021	16-Aug-2021	----	----		16-Aug-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-6PW_WG_2021-08_NP	E372-U	10-Aug-2021	16-Aug-2021	----	----		16-Aug-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-7PW_WG_2021-08_NP	E372-U	10-Aug-2021	16-Aug-2021	----	----		16-Aug-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-1_WG_2021-08_NP	E421.Cr-L	10-Aug-2021	14-Aug-2021	----	----		15-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-5PW_WG_2021-08_NP	E421.Cr-L	10-Aug-2021	14-Aug-2021	----	----		15-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-6PW_WG_2021-08_NP	E421.Cr-L	10-Aug-2021	14-Aug-2021	----	----		15-Aug-2021	180 days	5 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-7PW_WG_2021-08_NP	E421.Cr-L	10-Aug-2021	14-Aug-2021	----	----		15-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-1_WG_2021-08_NP	E421	10-Aug-2021	14-Aug-2021	----	----		15-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-5PW_WG_2021-08_NP	E421	10-Aug-2021	14-Aug-2021	----	----		15-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-6PW_WG_2021-08_NP	E421	10-Aug-2021	14-Aug-2021	----	----		15-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-7PW_WG_2021-08_NP	E421	10-Aug-2021	14-Aug-2021	----	----		15-Aug-2021	180 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-1_WG_2021-08_NP	E358-L	10-Aug-2021	12-Aug-2021	----	----		12-Aug-2021	28 days	2 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-5PW_WG_2021-08_NP	E358-L	10-Aug-2021	12-Aug-2021	----	----		12-Aug-2021	28 days	2 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-6PW_WG_2021-08_NP	E358-L	10-Aug-2021	12-Aug-2021	----	----		12-Aug-2021	28 days	2 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-7PW_WG_2021-08_NP	E358-L	10-Aug-2021	12-Aug-2021	----	----		12-Aug-2021	28 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-1_WG_2021-08_NP	E355-L	10-Aug-2021	12-Aug-2021	----	----		12-Aug-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-5PW_WG_2021-08_NP	E355-L	10-Aug-2021	12-Aug-2021	----	----		12-Aug-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-6PW_WG_2021-08_NP	E355-L	10-Aug-2021	12-Aug-2021	----	----		12-Aug-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-7PW_WG_2021-08_NP	E355-L	10-Aug-2021	12-Aug-2021	----	----		12-Aug-2021	28 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-1_WG_2021-08_NP	E283	10-Aug-2021	----	----	----		17-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-5PW_WG_2021-08_NP	E283	10-Aug-2021	----	----	----		17-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-6PW_WG_2021-08_NP	E283	10-Aug-2021	----	----	----		17-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-7PW_WG_2021-08_NP	E283	10-Aug-2021	----	----	----		17-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_KB-1_WG_2021-08_NP	E290	10-Aug-2021	----	----	----		17-Aug-2021	14 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_KB-5PW_WG_2021-08_NP	E290	10-Aug-2021	----	----	----		17-Aug-2021	14 days	7 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_KB-6PW_WG_2021-08_NP	E290	10-Aug-2021	----	----	----		17-Aug-2021	14 days	7 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_KB-7PW_WG_2021-08_NP	E290	10-Aug-2021	----	----	----		17-Aug-2021	14 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_KB-1_WG_2021-08_NP	E100	10-Aug-2021	----	----	----		17-Aug-2021	28 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_KB-5PW_WG_2021-08_NP	E100	10-Aug-2021	----	----	----		17-Aug-2021	28 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_KB-6PW_WG_2021-08_NP	E100	10-Aug-2021	----	----	----		17-Aug-2021	28 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_KB-7PW_WG_2021-08_NP	E100	10-Aug-2021	----	----	----		17-Aug-2021	28 days	7 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_KB-7PW_WG_2021-08_NP	E125	10-Aug-2021	----	----	----		18-Aug-2021	0.34 hrs	184 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_KB-6PW_WG_2021-08_NP	E125	10-Aug-2021	----	----	----		18-Aug-2021	0.34 hrs	186 hrs	* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-5PW_WG_2021-08_NP	E125	10-Aug-2021	----	----	----		18-Aug-2021	0.34 hrs	188 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-1_WG_2021-08_NP	E125	10-Aug-2021	----	----	----		18-Aug-2021	0.34 hrs	190 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-7PW_WG_2021-08_NP	E108	10-Aug-2021	----	----	----		17-Aug-2021	0.25 hrs	166 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-6PW_WG_2021-08_NP	E108	10-Aug-2021	----	----	----		17-Aug-2021	0.25 hrs	168 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-5PW_WG_2021-08_NP	E108	10-Aug-2021	----	----	----		17-Aug-2021	0.25 hrs	170 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-1_WG_2021-08_NP	E108	10-Aug-2021	----	----	----		17-Aug-2021	0.25 hrs	171 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_KB-1_WG_2021-08_NP	E162	10-Aug-2021	----	----	----		16-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_KB-5PW_WG_2021-08_NP	E162	10-Aug-2021	----	----	----		16-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_KB-6PW_WG_2021-08_NP	E162	10-Aug-2021	----	----	----		16-Aug-2021	7 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_KB-7PW_WG_2021-08_NP	E162	10-Aug-2021	----	----	----		16-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_KB-1_WG_2021-08_NP	E160-L	10-Aug-2021	----	----	----		16-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_KB-5PW_WG_2021-08_NP	E160-L	10-Aug-2021	----	----	----		16-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_KB-6PW_WG_2021-08_NP	E160-L	10-Aug-2021	----	----	----		16-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_KB-7PW_WG_2021-08_NP	E160-L	10-Aug-2021	----	----	----		16-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE FR_KB-1_WG_2021-08_NP	E121	10-Aug-2021	----	----	----		12-Aug-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE FR_KB-5PW_WG_2021-08_NP	E121	10-Aug-2021	----	----	----		12-Aug-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE FR_KB-6PW_WG_2021-08_NP	E121	10-Aug-2021	----	----	----		13-Aug-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE FR_KB-7PW_WG_2021-08_NP	E121	10-Aug-2021	----	----	----		13-Aug-2021	3 days	3 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-1_WG_2021-08_NP	E420.Cr-L	10-Aug-2021	----	----	----		16-Aug-2021	180 days	6 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-5PW_WG_2021-08_NP	E420.Cr-L	10-Aug-2021	----	----	----		16-Aug-2021	180 days	6 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-6PW_WG_2021-08_NP	E420.Cr-L	10-Aug-2021	----	----	----		16-Aug-2021	180 days	6 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-7PW_WG_2021-08_NP	E420.Cr-L	10-Aug-2021	----	----	----		16-Aug-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-1_WG_2021-08_NP	E420	10-Aug-2021	----	----	----		16-Aug-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-5PW_WG_2021-08_NP	E420	10-Aug-2021	----	----	----		16-Aug-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-6PW_WG_2021-08_NP	E420	10-Aug-2021	----	----	----		16-Aug-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-7PW_WG_2021-08_NP	E420	10-Aug-2021	----	----	----		16-Aug-2021	180 days	6 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	268962	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	268844	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	266011	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	264390	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	264391	1	20	5.0	5.0	✔
Conductivity in Water	E100	268845	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	266879	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	266878	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	265597	1	18	5.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	264154	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	264388	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	264386	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	264387	1	20	5.0	5.0	✔
ORP by Electrode	E125	269262	1	20	5.0	5.0	✔
pH by Meter	E108	268843	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	264385	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	267659	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	267530	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	267947	0	20	0.0	5.0	✖
Total Metals in Water by CRC ICPMS	E420	267529	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	265598	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	268047	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	265131	2	40	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	268962	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	268844	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	266011	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	264390	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	264391	1	20	5.0	5.0	✔
Conductivity in Water	E100	268845	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	266879	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	266878	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	265597	1	18	5.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	264154	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	264388	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	264386	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	264387	1	20	5.0	5.0	✔





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	269262	1	20	5.0	5.0	✓
pH by Meter	E108	268843	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	264385	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	267659	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	267530	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	267947	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	267529	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	265598	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	268047	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	267655	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	265131	2	40	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	268962	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	268844	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	266011	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	264390	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	264391	1	20	5.0	5.0	✓
Conductivity in Water	E100	268845	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	266879	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	266878	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	265597	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	264154	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	264388	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	264386	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	264387	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	264385	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	267659	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	267530	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	267947	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	267529	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	265598	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	268047	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	267655	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	265131	2	40	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	266011	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	264390	0	20	0.0	5.0	*
Chloride in Water by IC (Low Level)	E235.Cl-L	264391	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	266879	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	266878	1	20	5.0	5.0	✓





Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	265597	1	18	5.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	264154	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	264388	0	20	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	264386	0	20	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	264387	0	20	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	264385	0	20	0.0	5.0	✘
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	267530	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	267947	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	267529	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	265598	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	268047	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2103178**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-08  
**Sampler** : Katie Peterson  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 11-Aug-2021 08:30  
**Date Analysis Commenced** : 11-Aug-2021  
**Issue Date** : 02-Sep-2021 14:56

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2103178  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 265131)</b>											
CG2103172-001	Anonymous	turbidity	----	E121	0.10	NTU	37.0	38.7	4.44%	15%	----
<b>Physical Tests (QC Lot: 265948)</b>											
CG2103176-003	Anonymous	turbidity	----	E121	0.10	NTU	1.18	1.13	0.05	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 267659)</b>											
CG2103172-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	631	620	1.76%	20%	----
<b>Physical Tests (QC Lot: 268843)</b>											
CG2103171-001	Anonymous	pH	----	E108	0.10	pH units	8.17	8.13	0.491%	4%	----
<b>Physical Tests (QC Lot: 268844)</b>											
CG2103171-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	498	490	1.62%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	498	490	1.62%	20%	----
<b>Physical Tests (QC Lot: 268845)</b>											
CG2103171-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1250	1270	1.59%	10%	----
<b>Physical Tests (QC Lot: 268962)</b>											
CG2103176-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 269262)</b>											
CG2103176-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	488	482	1.40%	15%	----
<b>Anions and Nutrients (QC Lot: 264154)</b>											
CG2103170-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0500	mg/L	3.04	3.08	1.55%	20%	----
<b>Anions and Nutrients (QC Lot: 264385)</b>											
CG2103170-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	30.9	30.9	0.0447%	20%	----
<b>Anions and Nutrients (QC Lot: 264386)</b>											
CG2103170-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.402	0.401	0.423%	20%	----
<b>Anions and Nutrients (QC Lot: 264387)</b>											
CG2103170-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.135	0.137	1.69%	20%	----
<b>Anions and Nutrients (QC Lot: 264388)</b>											
CG2103170-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 264390)</b>											
CG2103170-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 264391)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 264391) - continued</b>											
CG2103176-001	Anonymous	chloride	16887-00-6	E235.CI-L	0.10	mg/L	0.21	0.22	0.01	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 266011)</b>											
CG2103176-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 268047)</b>											
CG2103170-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.200	mg/L	3.27	3.10	5.51%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 265597)</b>											
CG2103176-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.95	0.92	0.03	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 265598)</b>											
CG2103176-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.75	0.66	0.09	Diff <2x LOR	----
<b>Total Metals (QC Lot: 267529)</b>											
CG2103178-001	FR_KB-1_WG_2021-08_N P	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00060	0.00058	0.00002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00012	0.00013	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0362	0.0347	4.09%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.028	0.028	0.00006	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.648 µg/L	0.000641	1.09%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	224	223	0.490%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.123	0.121	1.36%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	100	98.8	1.43%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00177	0.00176	0.936%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0254	0.0248	2.34%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	4.40	4.26	3.32%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	160 µg/L	0.158	1.75%	20%	----
	silicon, total	7440-21-3	E420	0.10	mg/L	2.11	2.16	2.38%	20%	----	
	silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----	
	sodium, total	17341-25-2	E420	0.050	mg/L	4.69	4.60	1.96%	20%	----	
	strontium, total	7440-24-6	E420	0.00020	mg/L	0.215	0.214	0.723%	20%	----	
	sulfur, total	7704-34-9	E420	0.50	mg/L	146	147	0.514%	20%	----	





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 267529) - continued</b>											
CG2103178-001	FR_KB-1_WG_2021-08_N P	thallium, total	7440-28-0	E420	0.000010	mg/L	0.000022	0.000020	0.000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00900	0.00897	0.322%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0161	0.0146	0.0016	Diff <2x LOR	----
<b>Total Metals (QC Lot: 267530)</b>											
CG2103178-001	FR_KB-1_WG_2021-08_N P	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 266878)</b>											
CG2103176-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	0.0013	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	0.00011	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0443	0.0447	0.967%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0062 µg/L	0.0000067	0.0000005	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	41.1	42.1	2.22%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0016	0.0016	0.00002	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	9.76	9.64	1.30%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00165	0.00162	1.91%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000991	0.000991	0.0560%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.369	0.367	0.002	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.620 µg/L	0.000705	12.9%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.71	1.74	1.55%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.606	0.604	0.283%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.198	0.202	2.05%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	5.18	5.38	3.84%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 266878) - continued</b>											
CG2103176-001	Anonymous	thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000594	0.000573	3.57%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 266879)</b>											
CG2103176-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00019	0.00015	0.00004	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 265131)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 265948)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 267655)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 267659)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 268844)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 268845)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 268962)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 264154)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 264385)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 264386)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 264387)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 264388)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 264390)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 264391)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 266011)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 267947)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 267947) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 268047)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 265597)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 265598)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 267529)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 267529) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 267530)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 266878)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 266878) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 266879)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 265131)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	97.5	85.0	115	---
<b>Physical Tests (QCLot: 265948)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.8	85.0	115	---
<b>Physical Tests (QCLot: 267655)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	91.0	85.0	115	---
<b>Physical Tests (QCLot: 267659)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.2	85.0	115	---
<b>Physical Tests (QCLot: 268843)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 268844)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	99.6	85.0	115	---
<b>Physical Tests (QCLot: 268845)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.4	90.0	110	---
<b>Physical Tests (QCLot: 268962)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 269262)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Anions and Nutrients (QCLot: 264154)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	93.4	80.0	120	---
<b>Anions and Nutrients (QCLot: 264385)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 264386)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 264387)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 264388)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 264390)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 264391)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	97.7	90.0	110	---
<b>Anions and Nutrients (QCLot: 266011)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Anions and Nutrients (QCLot: 266011) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.8	85.0	115	----
<b>Anions and Nutrients (QCLot: 267947)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	86.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 268047)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.5	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 265597)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 265598)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	112	80.0	120	----
<b>Total Metals (QCLot: 267529)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	92.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	96.2	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.2	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	101	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	106	80.0	120	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 267529) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	96.5	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	98.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	107	80.0	120	----
<b>Total Metals (QCLot: 267530)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 266878)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.2	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.7	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.6	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	100	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 266878) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.5	80.0	120	----
<b>Dissolved Metals (QCLot: 266879)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.9	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 264154)</b>										
CG2103175-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0506 mg/L	0.05 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 264391)</b>										
CG2103176-008	Anonymous	chloride	16887-00-6	E235.Cl-L	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 266011)</b>										
CG2103176-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 267947)</b>										
CG2103176-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.28 mg/L	2.5 mg/L	91.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 268047)</b>										
CG2103176-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0741 mg/L	0.0676 mg/L	110	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 265597)</b>										
CG2103176-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.6 mg/L	23.9 mg/L	103	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 265598)</b>										
CG2103176-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.3 mg/L	23.9 mg/L	106	70.0	130	----
<b>Total Metals (QCLot: 267529)</b>										
CG2103178-002	FR_KB-5PW_WG_2021-08_NP	aluminum, total	7429-90-5	E420	0.196 mg/L	0.2 mg/L	98.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00874 mg/L	0.01 mg/L	87.4	70.0	130	----
		boron, total	7440-42-8	E420	0.088 mg/L	0.1 mg/L	88.4	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00392 mg/L	0.004 mg/L	98.0	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0186 mg/L	0.02 mg/L	92.8	70.0	130	----
		copper, total	7440-50-8	E420	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		iron, total	7439-89-6	E420	1.90 mg/L	2 mg/L	94.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0182 mg/L	0.02 mg/L	90.8	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 267529) - continued</b>										
CG2103178-002	FR_KB-5PW_WG_2021-08_NP	manganese, total	7439-96-5	E420	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0211 mg/L	0.02 mg/L	105	70.0	130	----
		nickel, total	7440-02-0	E420	0.0353 mg/L	0.04 mg/L	88.2	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.36 mg/L	10 mg/L	93.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00388 mg/L	0.004 mg/L	96.9	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00362 mg/L	0.004 mg/L	90.4	70.0	130	----
		tin, total	7440-31-5	E420	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
vanadium, total	7440-62-2	E420	0.0998 mg/L	0.1 mg/L	99.8	70.0	130	----		
zinc, total	7440-66-6	E420	0.408 mg/L	0.4 mg/L	102	70.0	130	----		
<b>Total Metals (QCLot: 267530)</b>										
CG2103178-002	FR_KB-5PW_WG_2021-08_NP	chromium, total	7440-47-3	E420.Cr-L	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
<b>Dissolved Metals (QCLot: 266878)</b>										
CG2103176-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.191 mg/L	0.2 mg/L	95.4	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00957 mg/L	0.01 mg/L	95.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.094 mg/L	0.1 mg/L	94.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0935 mg/L	0.1 mg/L	93.5	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 266878) - continued</b>										
CG2103176-002	Anonymous	molybdenum, dissolved	7439-98-7	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0370 mg/L	0.04 mg/L	92.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.01 mg/L	4 mg/L	100	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0399 mg/L	0.04 mg/L	99.6	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.00 mg/L	10 mg/L	90.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00387 mg/L	0.004 mg/L	96.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.94 mg/L	2 mg/L	97.1	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.2 mg/L	20 mg/L	96.0	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00389 mg/L	0.004 mg/L	97.3	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0995 mg/L	0.1 mg/L	99.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.379 mg/L	0.4 mg/L	94.7	70.0	130	----
<b>Dissolved Metals (QCLot: 266879)</b>										
CG2103176-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2103235**  
**Client** : **Teck Coal Limited**  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-08  
**Sampler** : KATIE PETERSON  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 7  
**No. of samples analysed** : 7

**Page** : 1 of 10  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 12-Aug-2021 08:50  
**Date Analysis Commenced** : 12-Aug-2021  
**Issue Date** : 30-Sep-2021 10:49

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
RRV	Reported result verified by repeat analysis.





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-18MW_WG_2021-08_N P	FR_KB-11MW_WG_2021-08_N P	FR_KB-13B_WG_2021-08_NP	FR_KB-14MW_WG_2021-08_N P	FR_KB-17MW_WG_2021-08_N P
Client sampling date / time					11-Aug-2021 11:30	11-Aug-2021 13:45	11-Aug-2021 14:43	11-Aug-2021 09:45	11-Aug-2021 12:50	
Analyte	CAS Number	Method	LOR	Unit	CG2103235-001 Result	CG2103235-002 Result	CG2103235-003 Result	CG2103235-004 Result	CG2103235-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	11.1	12.8	<2.0	10.0	8.4	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	382	405	391	372	385	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	382	405	391	372	385	
conductivity	----	E100	2.0	µS/cm	1470	1610	1480	1420	1500	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	946	1040	955	893	945	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	488	490	492	462	468	
pH	----	E108	0.10	pH units	7.55	7.63	7.69	7.65	7.67	
solids, total dissolved [TDS]	----	E162	10	mg/L	1280	1410	1260	1200	1280	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
turbidity	----	E121	0.10	NTU	0.22	0.30	<0.10	<0.10	0.18	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	466	494	478	454	469	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0694	0.0542	0.0178	0.0346	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.48	1.46	4.70	1.19	1.24	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.182	0.106	<0.100 <sup>DLDS</sup>	<0.100 <sup>DLDS</sup>	0.159	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	46.2 <sup>HTD</sup>	44.1 <sup>HTD</sup>	47.0 <sup>HTD</sup>	43.6 <sup>HTD</sup>	47.0 <sup>HTD</sup>	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0086 <sup>HTD</sup>	<0.0050 <sup>DLDS, HTD</sup>	0.0071 <sup>HTD</sup>	0.0056 <sup>HTD</sup>	0.0084 <sup>HTD</sup>	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0013	0.0013	<0.0010	0.0021	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0023	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	379	474	384	362	382	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.75	0.89	0.68	0.66	0.67	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.63	0.83	0.67	0.66	0.68	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-18MW_ WG_2021-08_N P	FR_KB-11MW_ WG_2021-08_N P	FR_KB-13B_WG _2021-08_NP	FR_KB-14MW_ WG_2021-08_N P	FR_KB-17MW_ WG_2021-08_N P
Client sampling date / time					11-Aug-2021 11:30	11-Aug-2021 13:45	11-Aug-2021 14:43	11-Aug-2021 09:45	11-Aug-2021 12:50	
Analyte	CAS Number	Method	LOR	Unit	CG2103235-001 Result	CG2103235-002 Result	CG2103235-003 Result	CG2103235-004 Result	CG2103235-005 Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	18.9	21.2	19.3	18.1	19.0	
cation sum	----	EC101	0.10	meq/L	19.2	21.2	19.4	18.2	19.2	
ion balance (cations/anions ratio)	----	EC101	0.010	%	102	100	100	100	101	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.787	<0.010	0.258	0.275	0.524	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0068	0.0042	<0.0030	<0.0030	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00055	0.00030	0.00054	0.00041	0.00058	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00010	0.00011	<0.00010	<0.00010	0.00014	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0331	0.0395	0.0360	0.0472	0.0336	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	0.030	0.035	0.030	0.029	0.031	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.522	0.0919	0.512	0.0781	0.504	
calcium, total	7440-70-2	E420	0.050	mg/L	220	222	223	213	226	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00012	<0.00010	<0.00010	<0.00010	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000057	<0.000050	<0.000050	<0.000050	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.123	0.116	0.129	0.111	0.126	
magnesium, total	7439-95-4	E420	0.0050	mg/L	107	115	106	102	104	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00023	0.00042	0.00038	0.00134	0.00033	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00166	0.00139	0.00176	0.00123	0.00183	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0236	0.00107	0.0206	0.00339	0.0217	
potassium, total	7440-09-7	E420	0.050	mg/L	4.94	4.64	4.87	4.58	4.75	
selenium, total	7782-49-2	E420	0.050	µg/L	159	150	161	157	161	
silicon, total	7440-21-3	E420	0.10	mg/L	2.27	2.64	2.31	2.30	2.18	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, total	17341-25-2	E420	0.050	mg/L	5.37	4.74	5.49	5.22	5.33	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.218	0.212	0.220	0.204	0.224	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-18MW_ WG_2021-08_N P	FR_KB-11MW_ WG_2021-08_N P	FR_KB-13B_WG _2021-08_NP	FR_KB-14MW_ WG_2021-08_N P	FR_KB-17MW_ WG_2021-08_N P
Client sampling date / time					11-Aug-2021 11:30	11-Aug-2021 13:45	11-Aug-2021 14:43	11-Aug-2021 09:45	11-Aug-2021 12:50	
Analyte	CAS Number	Method	LOR	Unit	CG2103235-001 Result	CG2103235-002 Result	CG2103235-003 Result	CG2103235-004 Result	CG2103235-005 Result	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	158	174	155	146	151	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000015	<0.000010	0.000020	<0.000010	0.000018	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00908	0.00907	0.00922	0.00882	0.00910	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0114	0.0036	0.0132	0.0030	0.0125	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00052	0.00027	0.00051	0.00036	0.00054	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00013	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0328	0.0396	0.0353	0.0462	0.0327	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.029	0.035	0.030	0.028	0.030	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.550	0.0958	0.520	0.0859	0.526	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	218	227	221	206	217	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00023	<0.00020	0.00024	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.117	0.112	0.120	0.105	0.119	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	97.6	116	98.0	92.0	97.9	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00011	0.00026	<0.00010	0.00109	0.00029	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00162	0.00138	0.00168	0.00119	0.00178	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0228	0.00106	0.0206	0.00338	0.0213	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.32	4.77	4.33	4.06	4.40	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	186	180	186	178	186	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.05	2.60	2.10	2.16	2.06	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-18MW_ WG_2021-08_N P	FR_KB-11MW_ WG_2021-08_N P	FR_KB-13B_WG _2021-08_NP	FR_KB-14MW_ WG_2021-08_N P	FR_KB-17MW_ WG_2021-08_N P
Client sampling date / time					11-Aug-2021 11:30	11-Aug-2021 13:45	11-Aug-2021 14:43	11-Aug-2021 09:45	11-Aug-2021 12:50	
Analyte	CAS Number	Method	LOR	Unit	CG2103235-001 Result	CG2103235-002 Result	CG2103235-003 Result	CG2103235-004 Result	CG2103235-005 Result	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.86	4.80	4.86	4.59	4.95	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.220	0.216	0.219	0.203	0.224	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	135	174	136	130	138	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000012	<0.000010	0.000016	<0.000010	0.000016	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00886	0.00908	0.00868	0.00813	0.00874	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0108	0.0033	0.0110	0.0024	0.0117	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC1_WG_2 021-08_NP	FR_FLD1_WG_2 021-08_NP	----	----	----
Client sampling date / time					11-Aug-2021 11:35	11-Aug-2021 11:40	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103235-006	CG2103235-007	-----	-----	-----	
					Result	Result	---	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	9.5	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	375	<1.0	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	375	<1.0	----	----	----	
conductivity	----	E100	2.0	µS/cm	1470	<2.0	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	940	<0.50	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	490	456	----	----	----	
pH	----	E108	0.10	pH units	7.67	5.69	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	1270	<10	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	0.17	<0.10	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	458	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0207	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.92	<0.10	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.136	<0.020	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	45.2 <sup>HTD</sup>	<0.0050 <sup>HTD</sup>	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS, HTD</sup>	0.0020 <sup>HTD</sup>	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	402	<0.30	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.71	<0.50	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.72	<0.50	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	19.1	<0.10	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC1_WG_2 021-08_NP	FR_FLD1_WG_2 021-08_NP	----	----	----
Client sampling date / time					11-Aug-2021 11:35	11-Aug-2021 11:40	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103235-006	CG2103235-007	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
cation sum	----	EC101	0.10	meq/L	19.1	<0.10	---	---	---	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	100 <sup>RRV</sup>	---	---	---	
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	<0.010	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0038	<0.0030	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00056	<0.00010	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0321	<0.00010	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	0.029	<0.010	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.550	<0.0050	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	217	<0.050	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00015	<0.00010	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.122	<0.0010	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	104	<0.0050	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00025	<0.00010	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00177	<0.000050	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0243	<0.00050	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	4.63	<0.050	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	164	<0.050	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	2.22	<0.10	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	5.38	<0.050	---	---	---	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.222	<0.00020	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	152	<0.50	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000014	<0.000010	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC1_WG_2 021-08_NP	FR_FLD1_WG_2 021-08_NP	----	----	----
Client sampling date / time					11-Aug-2021 11:35	11-Aug-2021 11:40	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103235-006	CG2103235-007	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00927	<0.000010	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0113	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00052	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0328	<0.00010	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.029	<0.010	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.544	<0.0050	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	216	<0.050	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.119	<0.0010	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	97.2	<0.0050	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00012	<0.00010	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00167	<0.000050	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0229	<0.00050	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.30	<0.050	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	186	<0.050	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.05	<0.050	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.92	<0.050	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.221	<0.00020	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC1_WG_2 021-08_NP	FR_FLD1_WG_2 021-08_NP	----	----	----
Client sampling date / time					11-Aug-2021 11:35	11-Aug-2021 11:40	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103235-006	CG2103235-007	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	133	<0.50	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00861	<0.000010	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0109	<0.0010	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103235</b>	Page	: 1 of 26
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Paul Dore	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 12-Aug-2021 08:50
PO	: VPO00765458	Issue Date	: 30-Sep-2021 10:50
C-O-C number	: QTR_KC_GW_2021-08		
Sampler	: KATIE PETERSON		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_WG_2021-08_NP	E298	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_WG_2021-08_NP	E298	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-11MW_WG_2021-08_NP	E298	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-13B_WG_2021-08_NP	E298	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-14MW_WG_2021-08_NP	E298	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-17MW_WG_2021-08_NP	E298	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-18MW_WG_2021-08_NP	E298	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_DC1_WG_2021-08_NP	E235.Br-L	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_FLD1_WG_2021-08_NP	E235.Br-L	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_KB-11MW_WG_2021-08_NP	E235.Br-L	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_KB-13B_WG_2021-08_NP	E235.Br-L	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_KB-14MW_WG_2021-08_NP	E235.Br-L	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_KB-17MW_WG_2021-08_NP	E235.Br-L	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_KB-18MW_WG_2021-08_NP	E235.Br-L	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_DC1_WG_2021-08_NP	E235.Cl-L	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_FLD1_WG_2021-08_NP	E235.Cl-L	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-11MW_WG_2021-08_NP	E235.CI-L	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-13B_WG_2021-08_NP	E235.CI-L	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-14MW_WG_2021-08_NP	E235.CI-L	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-17MW_WG_2021-08_NP	E235.CI-L	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-18MW_WG_2021-08_NP	E235.CI-L	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_DC1_WG_2021-08_NP	E378-U	11-Aug-2021	----	----	----		12-Aug-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_FLD1_WG_2021-08_NP	E378-U	11-Aug-2021	----	----	----		12-Aug-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-11MW_WG_2021-08_NP	E378-U	11-Aug-2021	----	----	----		12-Aug-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-13B_WG_2021-08_NP	E378-U	11-Aug-2021	----	----	----		12-Aug-2021	3 days	1 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-14MW_WG_2021-08_NP	E378-U	11-Aug-2021	----	----	----		12-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-17MW_WG_2021-08_NP	E378-U	11-Aug-2021	----	----	----		12-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-18MW_WG_2021-08_NP	E378-U	11-Aug-2021	----	----	----		12-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_DC1_WG_2021-08_NP	E235.F	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_FLD1_WG_2021-08_NP	E235.F	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-11MW_WG_2021-08_NP	E235.F	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-13B_WG_2021-08_NP	E235.F	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-14MW_WG_2021-08_NP	E235.F	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-17MW_WG_2021-08_NP	E235.F	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-18MW_WG_2021-08_NP	E235.F	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_DC1_WG_2021-08_NP	E235.NO3-L	11-Aug-2021	----	----	----		19-Aug-2021	3 days	8 days	* EHT	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_FLD1_WG_2021-08_NP	E235.NO3-L	11-Aug-2021	----	----	----		19-Aug-2021	3 days	8 days	* EHT	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-11MW_WG_2021-08_NP	E235.NO3-L	11-Aug-2021	----	----	----		19-Aug-2021	3 days	8 days	* EHT	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-13B_WG_2021-08_NP	E235.NO3-L	11-Aug-2021	----	----	----		19-Aug-2021	3 days	8 days	* EHT	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-14MW_WG_2021-08_NP	E235.NO3-L	11-Aug-2021	----	----	----		19-Aug-2021	3 days	8 days	* EHT	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-17MW_WG_2021-08_NP	E235.NO3-L	11-Aug-2021	----	----	----		19-Aug-2021	3 days	8 days	* EHT	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-18MW_WG_2021-08_NP	E235.NO3-L	11-Aug-2021	----	----	----		19-Aug-2021	3 days	8 days	* EHT	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_DC1_WG_2021-08_NP	E235.NO2-L	11-Aug-2021	----	----	----		19-Aug-2021	3 days	8 days	* EHT	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_FLD1_WG_2021-08_NP	E235.NO2-L	11-Aug-2021	----	----	----		19-Aug-2021	3 days	8 days	*	EHT
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-11MW_WG_2021-08_NP	E235.NO2-L	11-Aug-2021	----	----	----		19-Aug-2021	3 days	8 days	*	EHT
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-13B_WG_2021-08_NP	E235.NO2-L	11-Aug-2021	----	----	----		19-Aug-2021	3 days	8 days	*	EHT
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-14MW_WG_2021-08_NP	E235.NO2-L	11-Aug-2021	----	----	----		19-Aug-2021	3 days	8 days	*	EHT
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-17MW_WG_2021-08_NP	E235.NO2-L	11-Aug-2021	----	----	----		19-Aug-2021	3 days	8 days	*	EHT
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-18MW_WG_2021-08_NP	E235.NO2-L	11-Aug-2021	----	----	----		19-Aug-2021	3 days	8 days	*	EHT
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_DC1_WG_2021-08_NP	E235.SO4	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_FLD1_WG_2021-08_NP	E235.SO4	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_KB-11MW_WG_2021-08_NP	E235.SO4	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-13B_WG_2021-08_NP	E235.SO4	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-14MW_WG_2021-08_NP	E235.SO4	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-17MW_WG_2021-08_NP	E235.SO4	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-18MW_WG_2021-08_NP	E235.SO4	11-Aug-2021	----	----	----		19-Aug-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_WG_2021-08_NP	E318	11-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_WG_2021-08_NP	E318	11-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-11MW_WG_2021-08_NP	E318	11-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-13B_WG_2021-08_NP	E318	11-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-14MW_WG_2021-08_NP	E318	11-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	6 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-17MW_WG_2021-08_NP	E318	11-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-18MW_WG_2021-08_NP	E318	11-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_WG_2021-08_NP	E372-U	11-Aug-2021	18-Aug-2021	----	----		18-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_WG_2021-08_NP	E372-U	11-Aug-2021	18-Aug-2021	----	----		18-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-11MW_WG_2021-08_NP	E372-U	11-Aug-2021	18-Aug-2021	----	----		18-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-13B_WG_2021-08_NP	E372-U	11-Aug-2021	18-Aug-2021	----	----		18-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-14MW_WG_2021-08_NP	E372-U	11-Aug-2021	18-Aug-2021	----	----		18-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-17MW_WG_2021-08_NP	E372-U	11-Aug-2021	18-Aug-2021	----	----		18-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-18MW_WG_2021-08_NP	E372-U	11-Aug-2021	18-Aug-2021	----	----		18-Aug-2021	28 days	7 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC1_WG_2021-08_NP	E421.Cr-L	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FLD1_WG_2021-08_NP	E421.Cr-L	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-11MW_WG_2021-08_NP	E421.Cr-L	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-13B_WG_2021-08_NP	E421.Cr-L	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-14MW_WG_2021-08_NP	E421.Cr-L	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-17MW_WG_2021-08_NP	E421.Cr-L	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-18MW_WG_2021-08_NP	E421.Cr-L	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC1_WG_2021-08_NP	E421	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FLD1_WG_2021-08_NP	E421	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	180 days	3 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-11MW_WG_2021-08_NP	E421	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-13B_WG_2021-08_NP	E421	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-14MW_WG_2021-08_NP	E421	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-17MW_WG_2021-08_NP	E421	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-18MW_WG_2021-08_NP	E421	11-Aug-2021	14-Aug-2021	----	----		14-Aug-2021	180 days	3 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_DC1_WG_2021-08_NP	E358-L	11-Aug-2021	15-Aug-2021	----	----		15-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_FLD1_WG_2021-08_NP	E358-L	11-Aug-2021	15-Aug-2021	----	----		15-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-11MW_WG_2021-08_NP	E358-L	11-Aug-2021	15-Aug-2021	----	----		15-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-13B_WG_2021-08_NP	E358-L	11-Aug-2021	15-Aug-2021	----	----		15-Aug-2021	28 days	4 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-14MW_WG_2021-08_NP	E358-L	11-Aug-2021	15-Aug-2021	----	----		15-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-17MW_WG_2021-08_NP	E358-L	11-Aug-2021	15-Aug-2021	----	----		15-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-18MW_WG_2021-08_NP	E358-L	11-Aug-2021	15-Aug-2021	----	----		15-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_WG_2021-08_NP	E355-L	11-Aug-2021	15-Aug-2021	----	----		15-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_WG_2021-08_NP	E355-L	11-Aug-2021	15-Aug-2021	----	----		15-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-11MW_WG_2021-08_NP	E355-L	11-Aug-2021	15-Aug-2021	----	----		15-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-13B_WG_2021-08_NP	E355-L	11-Aug-2021	15-Aug-2021	----	----		15-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-14MW_WG_2021-08_NP	E355-L	11-Aug-2021	15-Aug-2021	----	----		15-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-17MW_WG_2021-08_NP	E355-L	11-Aug-2021	15-Aug-2021	----	----		15-Aug-2021	28 days	4 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-18MW_WG_2021-08_NP	E355-L	11-Aug-2021	15-Aug-2021	----	----		15-Aug-2021	28 days	4 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_DC1_WG_2021-08_NP	E283	11-Aug-2021	----	----	----		17-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_FLD1_WG_2021-08_NP	E283	11-Aug-2021	----	----	----		17-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-11MW_WG_2021-08_NP	E283	11-Aug-2021	----	----	----		17-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-13B_WG_2021-08_NP	E283	11-Aug-2021	----	----	----		17-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-14MW_WG_2021-08_NP	E283	11-Aug-2021	----	----	----		17-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-17MW_WG_2021-08_NP	E283	11-Aug-2021	----	----	----		17-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-18MW_WG_2021-08_NP	E283	11-Aug-2021	----	----	----		17-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_DC1_WG_2021-08_NP	E290	11-Aug-2021	----	----	----		18-Aug-2021	14 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_FLD1_WG_2021-08_NP	E290	11-Aug-2021	----	----	----		18-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-11MW_WG_2021-08_NP	E290	11-Aug-2021	----	----	----		18-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-13B_WG_2021-08_NP	E290	11-Aug-2021	----	----	----		18-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-14MW_WG_2021-08_NP	E290	11-Aug-2021	----	----	----		18-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-17MW_WG_2021-08_NP	E290	11-Aug-2021	----	----	----		18-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-18MW_WG_2021-08_NP	E290	11-Aug-2021	----	----	----		18-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_DC1_WG_2021-08_NP	E100	11-Aug-2021	----	----	----		18-Aug-2021	28 days	7 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_FLD1_WG_2021-08_NP	E100	11-Aug-2021	----	----	----		18-Aug-2021	28 days	7 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-11MW_WG_2021-08_NP	E100	11-Aug-2021	----	----	----		18-Aug-2021	28 days	7 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-13B_WG_2021-08_NP	E100	11-Aug-2021	----	----	----		18-Aug-2021	28 days	7 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-14MW_WG_2021-08_NP	E100	11-Aug-2021	----	----	----		18-Aug-2021	28 days	7 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-17MW_WG_2021-08_NP	E100	11-Aug-2021	----	----	----		18-Aug-2021	28 days	7 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-18MW_WG_2021-08_NP	E100	11-Aug-2021	----	----	----		18-Aug-2021	28 days	7 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-11MW_WG_2021-08_NP	E125	11-Aug-2021	----	----	----		18-Aug-2021	0.34 hrs	155 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-18MW_WG_2021-08_NP	E125	11-Aug-2021	----	----	----		18-Aug-2021	0.34 hrs	157 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-13B_WG_2021-08_NP	E125	11-Aug-2021	----	----	----		18-Aug-2021	0.34 hrs	168 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-17MW_WG_2021-08_NP	E125	11-Aug-2021	----	----	----		18-Aug-2021	0.34 hrs	170 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_DC1_WG_2021-08_NP	E125	11-Aug-2021	----	----	----		18-Aug-2021	0.34 hrs	171 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_FLD1_WG_2021-08_NP	E125	11-Aug-2021	----	----	----		18-Aug-2021	0.34 hrs	171 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-14MW_WG_2021-08_NP	E125	11-Aug-2021	----	----	----		18-Aug-2021	0.34 hrs	173 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-13B_WG_2021-08_NP	E108	11-Aug-2021	----	----	----		18-Aug-2021	0.25 hrs	166 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-11MW_WG_2021-08_NP	E108	11-Aug-2021	----	----	----		18-Aug-2021	0.25 hrs	167 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-17MW_WG_2021-08_NP	E108	11-Aug-2021	----	----	----		18-Aug-2021	0.25 hrs	168 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_DC1_WG_2021-08_NP	E108	11-Aug-2021	----	----	----		18-Aug-2021	0.25 hrs	169 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_FLD1_WG_2021-08_NP	E108	11-Aug-2021	----	----	----		18-Aug-2021	0.25 hrs	169 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-18MW_WG_2021-08_NP	E108	11-Aug-2021	----	----	----		18-Aug-2021	0.25 hrs	170 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-14MW_WG_2021-08_NP	E108	11-Aug-2021	----	----	----		18-Aug-2021	0.25 hrs	171 hrs	*	EHTR-FM





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_DC1_WG_2021-08_NP	E162	11-Aug-2021	----	----	----		17-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_FLD1_WG_2021-08_NP	E162	11-Aug-2021	----	----	----		17-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-11MW_WG_2021-08_NP	E162	11-Aug-2021	----	----	----		17-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-13B_WG_2021-08_NP	E162	11-Aug-2021	----	----	----		17-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-14MW_WG_2021-08_NP	E162	11-Aug-2021	----	----	----		17-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-17MW_WG_2021-08_NP	E162	11-Aug-2021	----	----	----		17-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-18MW_WG_2021-08_NP	E162	11-Aug-2021	----	----	----		17-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_DC1_WG_2021-08_NP	E160-L	11-Aug-2021	----	----	----		17-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_FLD1_WG_2021-08_NP	E160-L	11-Aug-2021	----	----	----		17-Aug-2021	7 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_KB-11MW_WG_2021-08_NP	E160-L	11-Aug-2021	----	----	----		17-Aug-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_KB-13B_WG_2021-08_NP	E160-L	11-Aug-2021	----	----	----		17-Aug-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_KB-14MW_WG_2021-08_NP	E160-L	11-Aug-2021	----	----	----		17-Aug-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_KB-17MW_WG_2021-08_NP	E160-L	11-Aug-2021	----	----	----		17-Aug-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_KB-18MW_WG_2021-08_NP	E160-L	11-Aug-2021	----	----	----		17-Aug-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_KB-14MW_WG_2021-08_NP	E121	11-Aug-2021	----	----	----		13-Aug-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_DC1_WG_2021-08_NP	E121	11-Aug-2021	----	----	----		14-Aug-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_FLD1_WG_2021-08_NP	E121	11-Aug-2021	----	----	----		14-Aug-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_KB-11MW_WG_2021-08_NP	E121	11-Aug-2021	----	----	----		14-Aug-2021	3 days	3 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-13B_WG_2021-08_NP	E121	11-Aug-2021	----	----	----		14-Aug-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-17MW_WG_2021-08_NP	E121	11-Aug-2021	----	----	----		14-Aug-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-18MW_WG_2021-08_NP	E121	11-Aug-2021	----	----	----		14-Aug-2021	3 days	3 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_DC1_WG_2021-08_NP	E420.Cr-L	11-Aug-2021	----	----	----		16-Aug-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_FLD1_WG_2021-08_NP	E420.Cr-L	11-Aug-2021	----	----	----		16-Aug-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_KB-13B_WG_2021-08_NP	E420.Cr-L	11-Aug-2021	----	----	----		16-Aug-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_KB-14MW_WG_2021-08_NP	E420.Cr-L	11-Aug-2021	----	----	----		16-Aug-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_KB-17MW_WG_2021-08_NP	E420.Cr-L	11-Aug-2021	----	----	----		16-Aug-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_KB-18MW_WG_2021-08_NP	E420.Cr-L	11-Aug-2021	----	----	----		16-Aug-2021	180 days	5 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-11MW_WG_2021-08_NP	E420.Cr-L	11-Aug-2021	----	----	----		16-Aug-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_DC1_WG_2021-08_NP	E420	11-Aug-2021	----	----	----		16-Aug-2021	180 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_FLD1_WG_2021-08_NP	E420	11-Aug-2021	----	----	----		16-Aug-2021	180 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-11MW_WG_2021-08_NP	E420	11-Aug-2021	----	----	----		16-Aug-2021	180 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-13B_WG_2021-08_NP	E420	11-Aug-2021	----	----	----		16-Aug-2021	180 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-14MW_WG_2021-08_NP	E420	11-Aug-2021	----	----	----		16-Aug-2021	180 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-17MW_WG_2021-08_NP	E420	11-Aug-2021	----	----	----		16-Aug-2021	180 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-18MW_WG_2021-08_NP	E420	11-Aug-2021	----	----	----		16-Aug-2021	180 days	5 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 EHT: Exceeded ALS recommended hold time prior to analysis.  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	269133	2	37	5.4	5.0	✔
Alkalinity Species by Titration	E290	270028	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	267109	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	265615	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	265616	1	20	5.0	5.0	✔
Conductivity in Water	E100	270027	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	266884	1	19	5.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	266885	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	267688	1	12	8.3	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	265331	2	40	5.0	5.0	✔
Fluoride in Water by IC	E235.F	265617	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	265613	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	265612	1	20	5.0	5.0	✔
ORP by Electrode	E125	269873	2	37	5.4	5.0	✔
pH by Meter	E108	270026	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	265614	1	19	5.2	5.0	✔
TDS by Gravimetry	E162	268493	2	40	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	268036	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	268061	0	20	0.0	5.0	✖
Total Metals in Water by CRC ICPMS	E420	268037	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	267689	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	268704	2	40	5.0	5.0	✔
Turbidity by Nephelometry	E121	266200	3	60	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	269133	2	37	5.4	5.0	✔
Alkalinity Species by Titration	E290	270028	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	267109	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	265615	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	265616	1	20	5.0	5.0	✔
Conductivity in Water	E100	270027	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	266884	1	19	5.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	266885	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	267688	1	12	8.3	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	265331	2	40	5.0	5.0	✔
Fluoride in Water by IC	E235.F	265617	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	265613	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	265612	1	20	5.0	5.0	✔



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	269873	2	37	5.4	5.0	✔
pH by Meter	E108	270026	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	265614	1	19	5.2	5.0	✔
TDS by Gravimetry	E162	268493	2	40	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	268036	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	268061	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	268037	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	267689	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	268704	2	40	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	268488	2	40	5.0	5.0	✔
Turbidity by Nephelometry	E121	266200	3	60	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	269133	2	37	5.4	5.0	✔
Alkalinity Species by Titration	E290	270028	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	267109	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	265615	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	265616	1	20	5.0	5.0	✔
Conductivity in Water	E100	270027	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	266884	1	19	5.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	266885	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	267688	1	12	8.3	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	265331	2	40	5.0	5.0	✔
Fluoride in Water by IC	E235.F	265617	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	265613	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	265612	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	265614	1	19	5.2	5.0	✔
TDS by Gravimetry	E162	268493	2	40	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	268036	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	268061	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	268037	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	267689	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	268704	2	40	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	268488	2	40	5.0	5.0	✔
Turbidity by Nephelometry	E121	266200	3	60	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	267109	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	265615	0	20	0.0	5.0	✖
Chloride in Water by IC (Low Level)	E235.Cl-L	265616	0	20	0.0	5.0	✖
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	266884	1	19	5.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	266885	1	19	5.2	5.0	✔



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	267688	1	12	8.3	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	265331	2	40	5.0	5.0	✔
Fluoride in Water by IC	E235.F	265617	0	20	0.0	5.0	✖
Nitrate in Water by IC (Low Level)	E235.NO3-L	265613	0	20	0.0	5.0	✖
Nitrite in Water by IC (Low Level)	E235.NO2-L	265612	0	20	0.0	5.0	✖
Sulfate in Water by IC	E235.SO4	265614	0	19	0.0	5.0	✖
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	268036	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	268061	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	268037	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	267689	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	268704	2	40	5.0	5.0	✔





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.  Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2103235**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-08  
**Sampler** : KATIE PETERSON  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 7  
**No. of samples analysed** : 7

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 12-Aug-2021 08:50  
**Date Analysis Commenced** : 12-Aug-2021  
**Issue Date** : 30-Sep-2021 10:49

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2103235  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 266200)</b>											
CG2103230-001	Anonymous	turbidity	----	E121	0.10	NTU	0.65	0.66	0.008	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 266954)</b>											
CG2103230-005	Anonymous	turbidity	----	E121	0.10	NTU	5.58	5.65	1.25%	15%	----
<b>Physical Tests (QC Lot: 267107)</b>											
CG2103230-023	Anonymous	turbidity	----	E121	0.10	NTU	3.42	3.45	0.874%	15%	----
<b>Physical Tests (QC Lot: 268493)</b>											
CG2103230-021	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2820	2850	0.811%	20%	----
<b>Physical Tests (QC Lot: 268494)</b>											
CG2103235-002	FR_KB-11MW_WG_2021-08_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	1410	1400	0.746%	20%	----
<b>Physical Tests (QC Lot: 269133)</b>											
CG2103230-021	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	64.7	57.0	7.7	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 269134)</b>											
CG2103235-003	FR_KB-13B_WG_2021-08_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 269873)</b>											
CG2103230-021	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	428	424	0.962%	15%	----
<b>Physical Tests (QC Lot: 269874)</b>											
CG2103235-003	FR_KB-13B_WG_2021-08_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	492	493	0.264%	15%	----
<b>Physical Tests (QC Lot: 270026)</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	pH	----	E108	0.10	pH units	7.55	7.62	0.923%	4%	----
<b>Physical Tests (QC Lot: 270027)</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	conductivity	----	E100	2.0	µS/cm	1470	1490	1.69%	10%	----
<b>Physical Tests (QC Lot: 270028)</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	382	385	0.730%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	382	385	0.730%	20%	----
<b>Anions and Nutrients (QC Lot: 265331)</b>											
CG2103232-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 265332)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 265332) - continued</b>											
CG2103235-005	FR_KB-17MW_WG_2021-08_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0021	0.0021	0.00002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 265612)</b>											
CG2103231-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0033	0.0031	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 265613)</b>											
CG2103231-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0170	0.0211	0.0041	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 265614)</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	379	384	1.30%	20%	----
<b>Anions and Nutrients (QC Lot: 265615)</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 265616)</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.48	1.40	0.08	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 265617)</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	fluoride	16984-48-8	E235.F	0.100	mg/L	0.182	0.162	0.020	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 267109)</b>											
CG2103232-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0107	0.0100	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 268704)</b>											
CG2103231-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0084	0.0088	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 268705)</b>											
CG2103235-004	FR_KB-14MW_WG_2021-08_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 267688)</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.75	0.74	0.01	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 267689)</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.63	0.67	0.04	Diff <2x LOR	----
<b>Total Metals (QC Lot: 268036)</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 268037)</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0032	0.0002	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00055	0.00055	0.000006	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00010	0.00010	0.000002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0331	0.0327	1.20%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----



Sub-Matrix: Water

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 268037) - continued</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.030	0.030	0.0006	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.522 µg/L	0.000547	4.61%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	220	223	1.11%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.123	0.125	1.89%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	107	104	2.64%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00023	0.00023	0.000007	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00166	0.00170	1.97%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0236	0.0239	1.47%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	4.94	4.67	5.49%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	159 µg/L	0.158	0.619%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.27	2.24	1.62%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	5.37	5.38	0.148%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.218	0.218	0.125%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	158	151	4.19%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000015	0.000015	0.00000008	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00908	0.00914	0.691%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0114	0.0117	0.0003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 266884)</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 266885)</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00052	0.00052	0.000006	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0328	0.0330	0.626%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 266885) - continued</b>											
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.029	0.029	0.00006	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.550 µg/L	0.000548	0.311%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	218	219	0.224%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.117	0.118	1.08%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	97.6	97.4	0.218%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00011	0.00011	0.000001	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00162	0.00171	5.48%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0228	0.0227	0.0289%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.32	4.29	0.555%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	186 µg/L	0.191	2.97%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.05	2.02	1.50%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.86	4.75	2.42%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.220	0.224	1.86%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	135	135	0.203%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000012	0.000015	0.000003	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00886	0.00898	1.35%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0108	0.0114	4.87%	20%	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 266200)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 266954)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 267107)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 268488)</b>						
solids, total suspended [TSS]	---	E160-L	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 268489)</b>						
solids, total suspended [TSS]	---	E160-L	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 268493)</b>						
solids, total dissolved [TDS]	---	E162	10	mg/L	<10	---
<b>Physical Tests (QCLot: 268494)</b>						
solids, total dissolved [TDS]	---	E162	10	mg/L	<10	---
<b>Physical Tests (QCLot: 269133)</b>						
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	<2.0	---
<b>Physical Tests (QCLot: 269134)</b>						
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	<2.0	---
<b>Physical Tests (QCLot: 270027)</b>						
conductivity	---	E100	1	µS/cm	<1.0	---
<b>Physical Tests (QCLot: 270028)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, carbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, hydroxide (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
<b>Anions and Nutrients (QCLot: 265331)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 265332)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 265612)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 265613)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 265614)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 265614) - continued</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 265615)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 265616)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 265617)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 267109)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 268061)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 268704)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 268705)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 267688)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 267689)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 268036)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 268037)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 268037) - continued</b>						
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 266884)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 266885)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 266885) - continued</b>						
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 266200)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.8	85.0	115	----
<b>Physical Tests (QCLot: 266954)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.5	85.0	115	----
<b>Physical Tests (QCLot: 267107)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	----
<b>Physical Tests (QCLot: 268488)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	95.9	85.0	115	----
<b>Physical Tests (QCLot: 268489)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.8	85.0	115	----
<b>Physical Tests (QCLot: 268493)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	101	85.0	115	----
<b>Physical Tests (QCLot: 268494)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	----
<b>Physical Tests (QCLot: 269133)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	101	85.0	115	----
<b>Physical Tests (QCLot: 269134)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	99.4	85.0	115	----
<b>Physical Tests (QCLot: 269873)</b>									
oxidation-reduction potential [ORP]	---	E125	----	mV	220 mV	101	95.4	104	----
<b>Physical Tests (QCLot: 269874)</b>									
oxidation-reduction potential [ORP]	---	E125	----	mV	220 mV	100	95.4	104	----
<b>Physical Tests (QCLot: 270026)</b>									
pH	---	E108	----	pH units	7 pH units	101	98.6	101	----
<b>Physical Tests (QCLot: 270027)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.5	90.0	110	----
<b>Physical Tests (QCLot: 270028)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	109	85.0	115	----
<b>Anions and Nutrients (QCLot: 265331)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	108	80.0	120	----
<b>Anions and Nutrients (QCLot: 265332)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	----
<b>Anions and Nutrients (QCLot: 265612)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 265612) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.1	90.0	110	----
<b>Anions and Nutrients (QCLot: 265613)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 265614)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.7	90.0	110	----
<b>Anions and Nutrients (QCLot: 265615)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.0	85.0	115	----
<b>Anions and Nutrients (QCLot: 265616)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 265617)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 267109)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	107	85.0	115	----
<b>Anions and Nutrients (QCLot: 268061)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	88.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 268704)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 268705)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	99.7	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 267688)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.4	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 267689)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	98.2	80.0	120	----
<b>Total Metals (QCLot: 268036)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.3	80.0	120	----
<b>Total Metals (QCLot: 268037)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.4	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	97.5	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	98.8	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.9	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	92.9	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.5	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.3	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 268037) - continued</b>									
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.8	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.9	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	100.0	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	96.0	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	96.8	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	95.2	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	94.8	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.2	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.9	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.4	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	96.2	80.0	120	----
<b>Dissolved Metals (QCLot: 266884)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
<b>Dissolved Metals (QCLot: 266885)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.2	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.5	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.9	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.4	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.0	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 266885) - continued</b>									
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.4	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.3	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.9	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	95.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.0	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 265331)</b>										
CG2103232-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0501 mg/L	0.05 mg/L	100	70.0	130	----
<b>Anions and Nutrients (QCLot: 265332)</b>										
CG2103235-006	FR_DC1_WG_2021-08_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0510 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 267109)</b>										
CG2103232-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.107 mg/L	0.1 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 268061)</b>										
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	Kjeldahl nitrogen, total [TKN]	----	E318	1.91 mg/L	2.5 mg/L	76.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 268704)</b>										
CG2103232-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0546 mg/L	0.0676 mg/L	80.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 268705)</b>										
CG2103235-005	FR_KB-17MW_WG_2021-08_NP	phosphorus, total	7723-14-0	E372-U	0.0519 mg/L	0.0676 mg/L	76.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 267688)</b>										
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	carbon, dissolved organic [DOC]	----	E358-L	23.9 mg/L	23.9 mg/L	99.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 267689)</b>										
CG2103235-001	FR_KB-18MW_WG_2021-08_NP	carbon, total organic [TOC]	----	E355-L	26.0 mg/L	23.9 mg/L	109	70.0	130	----
<b>Total Metals (QCLot: 268036)</b>										
CG2103235-002	FR_KB-11MW_WG_2021-08_NP	chromium, total	7440-47-3	E420.Cr-L	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
<b>Total Metals (QCLot: 268037)</b>										
CG2103235-002	FR_KB-11MW_WG_2021-08_NP	aluminum, total	7429-90-5	E420	0.197 mg/L	0.2 mg/L	98.5	70.0	130	----
		antimony, total	7440-36-0	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0379 mg/L	0.04 mg/L	94.7	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00873 mg/L	0.01 mg/L	87.3	70.0	130	----
		boron, total	7440-42-8	E420	0.098 mg/L	0.1 mg/L	98.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00379 mg/L	0.004 mg/L	94.7	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 268037) - continued</b>										
CG2103235-002	FR_KB-11MW_WG_2021-08_NP	calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		copper, total	7440-50-8	E420	0.0180 mg/L	0.02 mg/L	90.0	70.0	130	----
		iron, total	7439-89-6	E420	1.87 mg/L	2 mg/L	93.3	70.0	130	----
		lead, total	7439-92-1	E420	0.0179 mg/L	0.02 mg/L	89.4	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		nickel, total	7440-02-0	E420	0.0365 mg/L	0.04 mg/L	91.2	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	8.91 mg/L	10 mg/L	89.1	70.0	130	----
		silver, total	7440-22-4	E420	0.00386 mg/L	0.004 mg/L	96.6	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00367 mg/L	0.004 mg/L	91.7	70.0	130	----
		tin, total	7440-31-5	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		titanium, total	7440-32-6	E420	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.367 mg/L	0.4 mg/L	91.8	70.0	130	----
<b>Dissolved Metals (QCLot: 266884)</b>										
CG2103235-002	FR_KB-11MW_WG_2021-08_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
<b>Dissolved Metals (QCLot: 266885)</b>										
CG2103235-002	FR_KB-11MW_WG_2021-08_NP	aluminum, dissolved	7429-90-5	E421	0.194 mg/L	0.2 mg/L	96.8	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0211 mg/L	0.02 mg/L	105	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0369 mg/L	0.04 mg/L	92.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00870 mg/L	0.01 mg/L	87.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.092 mg/L	0.1 mg/L	91.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00421 mg/L	0.004 mg/L	105	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 266885) - continued</b>										
CG2103235-002	FR_KB-11MW_WG_2021-08_NP	cobalt, dissolved	7440-48-4	E421	0.0183 mg/L	0.02 mg/L	91.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0182 mg/L	0.02 mg/L	90.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0180 mg/L	0.02 mg/L	89.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0360 mg/L	0.04 mg/L	90.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.12 mg/L	10 mg/L	91.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00386 mg/L	0.004 mg/L	96.4	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00358 mg/L	0.004 mg/L	89.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.353 mg/L	0.4 mg/L	88.3	70.0	130	----

COC ID: **QTR\_KC\_GW\_2021-08**      TURNAROUND TIME:      RUSH:

**PROJECT/CLIENT INFO**

**LABORATORY**

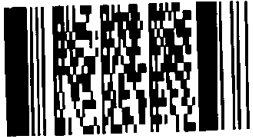
**OTHER INFO**

Facility Name / Job# **Fording River Operations**  
 Project Manager **Paul Dore**  
 Email **Paul.Dore@teck.com**  
 Address **Suite 1000, 205 - 9th Ave S.E.**  
 City **Calgary**      Province **AB**  
 T2G 0R3      Country **Canada**

Lab Name **ALS Calgary**  
 Lab Contact **Lyudmyla Shvets**  
 Email **Lyudmyla.Shvets@ALSGlobal.com**  
 Address **2559 29 Street NE**  
 City **Calgary**      Province **AB**  
 Postal Code **T1Y 7B5**      Country **Canada**  
 Phone Number **403 407 1794**

Report Format / Distribution      Excel      PDF      EDD  
 Email 1: **teckcoal@equisonline.com**      X      X      X  
 Email 2: **paul.dore@teck.com**      X      X      X  
 Email 3: **leslie.harker@snclavalin.com**      X      X      X  
 Email 4: **David.Burroughs@teck.com**      X      X      X  
 Email 5: **Stefan.Humphries@snclavalin.com**      X      X      X

**Environmental Division**  
**Calgary**  
 Work Order Reference  
**CG2103235**



Telephone : +1 403 407 1800

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FIL.	PRESERV.	ANALYSIS REQUESTED										
										TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN/Nutrients	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA						
1 FR_KB-18MW_WG_2021-08_NP	FR_KB-18MW	WG	N	8/11/2021	11:30	G	5		NONE	H2SO4	H2SO4	HNO3	HNO3							
2 FR_KB-11MW_WG_2021-08_NP	FR_KB-11MW	WG	N	8/11/2021	13:45	G	5													
3 FR_KB-13B_WG_2021-08_NP	FR_KB-13B	WG	N	8/11/2021	14:43	G	5													
4 FR_KB-14MW_WG_2021-08_NP	FR_KB-14MW	WG	N	8/11/2021	9:45	G	5													
5 FR_KB-17MW_WG_2021-08_NP	FR_KB-17MW	WG	N	8/11/2021	12:50	G	5													
6 FR_DC1_WG_2021-08_NP	FR_DC1	WG	N	8/11/2021	11:35	G	5													
7 FR_FLD1_WG_2021-08_NP	FR_FLD1	WG	N	8/11/2021	11:40	G	5													

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

\*All samples field filtered and preserved as required.

DATE/TIME      ACCEPTED BY/AFFILIATION      DATE/TIME

*[Signature]*      8/12/2021

**SERVICE REQUEST (rush - subject to availability)**

Regular (default)  X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

Katie Peterson

Mobile #

Sampler's Signature

Date/Time

August 11, 2021

*[Signature]*



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103296**  
**Client** : **Teck Coal Limited**  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-08  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Page** : 1 of 10  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 14-Aug-2021 08:40  
**Date Analysis Commenced** : 15-Aug-2021  
**Issue Date** : 30-Sep-2021 10:53

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
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## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					FR_KB-2_WG_2 021-08_NP	FR_KB-3A_WG_ 2021-08_NP	FR_KB-3B_WG_ 2021-08_NP	FR_KB-13A_WG _2021-08_NP	FR_KB-8PW_W G_2021-08_NP
Client sampling date / time					13-Aug-2021 12:15	13-Aug-2021 08:40	13-Aug-2021 10:10	13-Aug-2021 13:40	13-Aug-2021 10:55
Analyte	CAS Number	Method	LOR	Unit	CG2103296-001	CG2103296-002	CG2103296-003	CG2103296-004	CG2103296-005
					Result	Result	Result	Result	Result
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	22.2	19.0	16.5	13.4	11.2
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	383	370	363	435	431
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	383	370	363	435	431
conductivity	----	E100	2.0	µS/cm	1460	1860	1560	1550	1520
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	919	1180	962	961	940
oxidation-reduction potential [ORP]	----	E125	0.10	mV	415	414	354	433	478
pH	----	E108	0.10	pH units	7.75	7.85	7.82	7.99	8.06
solids, total dissolved [TDS]	----	E162	10	mg/L	1270	1620	1330	1320	1290
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.2	11.4	3.5	2.4	1.4
turbidity	----	E121	0.10	NTU	6.76	2.88	1.45	1.91	0.33
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	468	451	443	530	526
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0059	0.0262	0.0635	0.0120	0.0095
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.84	1.28	0.86	0.81	1.11
fluoride	16984-48-8	E235.F	0.020	mg/L	0.140	<0.100 <sup>DLDS</sup>	<0.100 <sup>DLDS</sup>	0.160	0.151
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.387 <sup>TKNI</sup>	<0.500 <sup>DLM,TKNI</sup>	2.96 <sup>DLM,TKNI</sup>	2.43 <sup>DLM,TKNI</sup>	2.78 <sup>DLM,TKNI</sup>
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	46.6	72.2	55.6	47.2	47.9
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	0.0466	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0012	0.0041	0.0010	0.0027	0.0014
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0113	0.0156	0.0032	0.0038	0.0035
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	395	606	450	409	407
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.62	0.57	0.62	0.77	0.59
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.83	0.69	<0.50	0.68	2.98
<b>Ion Balance</b>									





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-2_WG_2 021-08_NP	FR_KB-3A_WG_ 2021-08_NP	FR_KB-3B_WG_ 2021-08_NP	FR_KB-13A_WG_ _2021-08_NP	FR_KB-8PW_W G_2021-08_NP
Client sampling date / time					13-Aug-2021 12:15	13-Aug-2021 08:40	13-Aug-2021 10:10	13-Aug-2021 13:40	13-Aug-2021 10:55	
Analyte	CAS Number	Method	LOR	Unit	CG2103296-001	CG2103296-002	CG2103296-003	CG2103296-004	CG2103296-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	19.2	25.2	20.6	20.6	20.5	
cation sum	----	EC101	0.10	meq/L	18.7	23.8	19.5	19.5	19.1	
ion balance (cations/anions ratio)	----	EC101	0.010	%	97.4	94.4	94.7	94.7	93.2	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.32	2.86	2.74	2.74	3.54	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.158	0.0948	0.0203	0.0106	0.0035	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00047	0.00046	0.00014	0.00063	0.00055	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00015	0.00015	<0.00010	0.00016	<0.00010	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0484	0.0568	0.0518	0.0378	0.0419	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	0.030	0.020	0.023	0.033	0.031	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.159	0.0692	0.0257	0.816	0.364	
calcium, total	7440-70-2	E420	0.050	mg/L	222	304	241	229	227	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00037	0.00049	0.00017	0.00076	<0.00010	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.13	0.92	<0.10	0.16	<0.10	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	0.00189	<0.00050	0.00067	0.00057	
iron, total	7439-89-6	E420	0.010	mg/L	0.142	0.240	0.028	0.024	0.026	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000097	0.000225	<0.000050	0.000057	0.000758	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.115	0.0464	0.0818	0.126	0.123	
magnesium, total	7439-95-4	E420	0.0050	mg/L	100	119	94.2	103	98.6	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00990	0.0159	0.00155	0.00325	0.00036	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00150	0.000506	0.000501	0.00198	0.00172	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00719	0.00310	<0.00050	0.0185	0.0156	
potassium, total	7440-09-7	E420	0.050	mg/L	4.32	2.20	2.81	4.70	4.45	
selenium, total	7782-49-2	E420	0.050	µg/L	172	241	194	174	177	
silicon, total	7440-21-3	E420	0.10	mg/L	2.42	3.34	2.54	2.15	2.22	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, total	17341-25-2	E420	0.050	mg/L	4.94	4.83	4.40	5.07	5.20	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.218	0.334	0.228	0.222	0.225	
sulfur, total	7704-34-9	E420	0.50	mg/L	149	230	165	152	151	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-2_WG_2 021-08_NP	FR_KB-3A_WG_ 2021-08_NP	FR_KB-3B_WG_ 2021-08_NP	FR_KB-13A_WG_ _2021-08_NP	FR_KB-8PW_W G_2021-08_NP
Client sampling date / time					13-Aug-2021 12:15	13-Aug-2021 08:40	13-Aug-2021 10:10	13-Aug-2021 13:40	13-Aug-2021 10:55	
Analyte	CAS Number	Method	LOR	Unit	CG2103296-001	CG2103296-002	CG2103296-003	CG2103296-004	CG2103296-005	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	0.000022	<0.000010	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	0.00013	<0.00010	<0.00010	0.00012	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00384	0.0108	0.00042	0.00035	<0.00030	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00931	0.00628	0.00731	0.00947	0.00954	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00057	0.00057	<0.00050	<0.00050	<0.00050	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0057	0.0107	<0.0030	0.0284	0.0177	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0017	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00040	0.00044	0.00012	0.00059	0.00051	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00011	<0.00010	0.00013	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0440	0.0520	0.0540	0.0346	0.0394	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.028	0.019	0.021	0.032	0.030	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.146	0.0919	0.0195	0.787	0.353	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	207	288	225	221	214	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00012	0.00011	0.00031	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.88	<0.10	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00220	<0.00020	0.00040	0.00028	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.010	<0.010	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	0.000053	<0.000050	<0.000050	0.000290	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.105	0.0455	0.0728	0.118	0.111	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	97.6	112	97.1	99.3	98.5	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00018	0.0191	0.00010	0.00198	<0.00010	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00134	0.000590	0.000463	0.00188	0.00165	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00658	0.00606 <sup>DTC</sup>	<0.00050	0.0172	0.0152	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.18	2.03	2.79	4.48	4.27	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	185	230	210	192	190	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.10	2.98	2.37	2.04	2.05	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.62	4.33	4.24	4.55	4.71	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-2_WG_2 021-08_NP	FR_KB-3A_WG_ 2021-08_NP	FR_KB-3B_WG_ 2021-08_NP	FR_KB-13A_WG_ _2021-08_NP	FR_KB-8PW_W G_2021-08_NP
Client sampling date / time					13-Aug-2021 12:15	13-Aug-2021 08:40	13-Aug-2021 10:10	13-Aug-2021 13:40	13-Aug-2021 10:55	
Analyte	CAS Number	Method	LOR	Unit	CG2103296-001	CG2103296-002	CG2103296-003	CG2103296-004	CG2103296-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.196	0.324	0.210	0.213	0.211	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	134	204	147	137	135	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	0.000018	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	0.00017	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00851	0.00607	0.00693	0.00935	0.00937	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0050	0.0167 <sup>DTC</sup>	0.0012	0.0272	0.0149	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_TRP_WG_2	----	----	----	----
(Matrix: Water)						021-08_NP				
					Client sampling date / time	13-Aug-2021 16:00	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2103296-006	-----	-----	-----	-----	-----
						Result	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	<2.0	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	<0.50	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	465	----	----	----	----	----
pH	----	E108	0.10	pH units	4.24	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	----	----	----	----	----
turbidity	----	E121	0.10	NTU	<0.10	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0779 <sup>RRV</sup>	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.113 <sup>TKNI</sup>	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	<0.10	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_TRP_WG_2	----	----	----	----
(Matrix: Water)						021-08_NP				
Client sampling date / time					13-Aug-2021 16:00	----	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103296-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Ion Balance</b>										
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	----	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	----	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	----	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	----	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	----	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	----	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	----	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	----	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	----	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	----	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----



**Analytical Results**

Sub-Matrix: <b>Water</b>					Client sample ID	FR_TRP_WG_2	----	----	----	----
(Matrix: <b>Water</b> )						021-08_NP				
					Client sampling date / time	13-Aug-2021 16:00	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103296-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Dissolved Metals</b>										
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103296</b>	Page	: 1 of 23
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Paul Dore	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 14-Aug-2021 08:40
PO	: VPO00765458	Issue Date	: 30-Sep-2021 10:54
C-O-C number	: QTR_KC_GW_2021-08		
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-13A_WG_2021-08_NP	E298	13-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-2_WG_2021-08_NP	E298	13-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-3A_WG_2021-08_NP	E298	13-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-3B_WG_2021-08_NP	E298	13-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-8PW_WG_2021-08_NP	E298	13-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP_WG_2021-08_NP	E298	13-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-13A_WG_2021-08_NP	E235.Br-L	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_KB-2_WG_2021-08_NP	E235.Br-L	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_KB-3A_WG_2021-08_NP	E235.Br-L	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_KB-3B_WG_2021-08_NP	E235.Br-L	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_KB-8PW_WG_2021-08_NP	E235.Br-L	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_TRP_WG_2021-08_NP	E235.Br-L	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-13A_WG_2021-08_NP	E235.Cl-L	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-2_WG_2021-08_NP	E235.Cl-L	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-3A_WG_2021-08_NP	E235.Cl-L	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-3B_WG_2021-08_NP	E235.Cl-L	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-8PW_WG_2021-08_NP	E235.CI-L	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_TRP_WG_2021-08_NP	E235.CI-L	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-13A_WG_2021-08_NP	E378-U	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-2_WG_2021-08_NP	E378-U	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-3A_WG_2021-08_NP	E378-U	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-3B_WG_2021-08_NP	E378-U	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-8PW_WG_2021-08_NP	E378-U	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_TRP_WG_2021-08_NP	E378-U	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_KB-13A_WG_2021-08_NP	E235.F	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_KB-2_WG_2021-08_NP	E235.F	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_KB-3A_WG_2021-08_NP	E235.F	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_KB-3B_WG_2021-08_NP	E235.F	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_KB-8PW_WG_2021-08_NP	E235.F	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_TRP_WG_2021-08_NP	E235.F	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-13A_WG_2021-08_NP	E235.NO3-L	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-2_WG_2021-08_NP	E235.NO3-L	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-3A_WG_2021-08_NP	E235.NO3-L	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-3B_WG_2021-08_NP	E235.NO3-L	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-8PW_WG_2021-08_NP	E235.NO3-L	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_TRP_WG_2021-08_NP	E235.NO3-L	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-13A_WG_2021-08_NP	E235.NO2-L	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-2_WG_2021-08_NP	E235.NO2-L	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-3A_WG_2021-08_NP	E235.NO2-L	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-3B_WG_2021-08_NP	E235.NO2-L	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-8PW_WG_2021-08_NP	E235.NO2-L	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_TRP_WG_2021-08_NP	E235.NO2-L	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_KB-13A_WG_2021-08_NP	E235.SO4	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-2_WG_2021-08_NP	E235.SO4	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-3A_WG_2021-08_NP	E235.SO4	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-3B_WG_2021-08_NP	E235.SO4	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-8PW_WG_2021-08_NP	E235.SO4	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_TRP_WG_2021-08_NP	E235.SO4	13-Aug-2021	----	----	----		15-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-13A_WG_2021-08_NP	E318	13-Aug-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	31 days	* EHT	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-2_WG_2021-08_NP	E318	13-Aug-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	31 days	* EHT	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-3A_WG_2021-08_NP	E318	13-Aug-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	31 days	* EHT	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-3B_WG_2021-08_NP	E318	13-Aug-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	31 days	* EHT	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-8PW_WG_2021-08_NP	E318	13-Aug-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	31 days	*	EHT
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP_WG_2021-08_NP	E318	13-Aug-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	31 days	*	EHT
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-13A_WG_2021-08_NP	E372-U	13-Aug-2021	20-Aug-2021	----	----		20-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-2_WG_2021-08_NP	E372-U	13-Aug-2021	20-Aug-2021	----	----		20-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-3A_WG_2021-08_NP	E372-U	13-Aug-2021	20-Aug-2021	----	----		20-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-3B_WG_2021-08_NP	E372-U	13-Aug-2021	20-Aug-2021	----	----		20-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-8PW_WG_2021-08_NP	E372-U	13-Aug-2021	20-Aug-2021	----	----		20-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP_WG_2021-08_NP	E372-U	13-Aug-2021	20-Aug-2021	----	----		20-Aug-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TRP_WG_2021-08_NP	E421.Cr-L	13-Aug-2021	24-Aug-2021	----	----		24-Aug-2021	180 days	11 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-13A_WG_2021-08_NP	E421.Cr-L	13-Aug-2021	18-Aug-2021	----	----		19-Aug-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-2_WG_2021-08_NP	E421.Cr-L	13-Aug-2021	18-Aug-2021	----	----		19-Aug-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-3A_WG_2021-08_NP	E421.Cr-L	13-Aug-2021	18-Aug-2021	----	----		19-Aug-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-3B_WG_2021-08_NP	E421.Cr-L	13-Aug-2021	18-Aug-2021	----	----		19-Aug-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-8PW_WG_2021-08_NP	E421.Cr-L	13-Aug-2021	18-Aug-2021	----	----		19-Aug-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TRP_WG_2021-08_NP	E421	13-Aug-2021	24-Aug-2021	----	----		24-Aug-2021	180 days	11 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-13A_WG_2021-08_NP	E421	13-Aug-2021	18-Aug-2021	----	----		19-Aug-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-2_WG_2021-08_NP	E421	13-Aug-2021	18-Aug-2021	----	----		19-Aug-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-3A_WG_2021-08_NP	E421	13-Aug-2021	18-Aug-2021	----	----		19-Aug-2021	180 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-3B_WG_2021-08_NP	E421	13-Aug-2021	18-Aug-2021	----	----		19-Aug-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-8PW_WG_2021-08_NP	E421	13-Aug-2021	18-Aug-2021	----	----		19-Aug-2021	180 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-13A_WG_2021-08_NP	E358-L	13-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-3A_WG_2021-08_NP	E358-L	13-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-3B_WG_2021-08_NP	E358-L	13-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-8PW_WG_2021-08_NP	E358-L	13-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-2_WG_2021-08_NP	E358-L	13-Aug-2021	17-Aug-2021	----	----		18-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-13A_WG_2021-08_NP	E355-L	13-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-2_WG_2021-08_NP	E355-L	13-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	4 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-3A_WG_2021-08_NP	E355-L	13-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP_WG_2021-08_NP	E355-L	13-Aug-2021	17-Aug-2021	----	----		17-Aug-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-3B_WG_2021-08_NP	E355-L	13-Aug-2021	17-Aug-2021	----	----		18-Aug-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-8PW_WG_2021-08_NP	E355-L	13-Aug-2021	17-Aug-2021	----	----		18-Aug-2021	28 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-13A_WG_2021-08_NP	E283	13-Aug-2021	----	----	----		20-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-2_WG_2021-08_NP	E283	13-Aug-2021	----	----	----		20-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-3A_WG_2021-08_NP	E283	13-Aug-2021	----	----	----		20-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-3B_WG_2021-08_NP	E283	13-Aug-2021	----	----	----		20-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-8PW_WG_2021-08_NP	E283	13-Aug-2021	----	----	----		20-Aug-2021	14 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_TRP_WG_2021-08_NP	E283	13-Aug-2021	----	----	----		20-Aug-2021	14 days	7 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-13A_WG_2021-08_NP	E290	13-Aug-2021	----	----	----		19-Aug-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-2_WG_2021-08_NP	E290	13-Aug-2021	----	----	----		19-Aug-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-3A_WG_2021-08_NP	E290	13-Aug-2021	----	----	----		19-Aug-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-3B_WG_2021-08_NP	E290	13-Aug-2021	----	----	----		19-Aug-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-8PW_WG_2021-08_NP	E290	13-Aug-2021	----	----	----		19-Aug-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_TRP_WG_2021-08_NP	E290	13-Aug-2021	----	----	----		19-Aug-2021	14 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-13A_WG_2021-08_NP	E100	13-Aug-2021	----	----	----		19-Aug-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-2_WG_2021-08_NP	E100	13-Aug-2021	----	----	----		19-Aug-2021	28 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-3A_WG_2021-08_NP	E100	13-Aug-2021	----	----	----		19-Aug-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-3B_WG_2021-08_NP	E100	13-Aug-2021	----	----	----		19-Aug-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-8PW_WG_2021-08_NP	E100	13-Aug-2021	----	----	----		19-Aug-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_TRP_WG_2021-08_NP	E100	13-Aug-2021	----	----	----		19-Aug-2021	28 days	6 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_TRP_WG_2021-08_NP	E125	13-Aug-2021	----	----	----		22-Aug-2021	0.34 hrs	216 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-13A_WG_2021-08_NP	E125	13-Aug-2021	----	----	----		22-Aug-2021	0.34 hrs	217 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-2_WG_2021-08_NP	E125	13-Aug-2021	----	----	----		22-Aug-2021	0.34 hrs	219 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-3B_WG_2021-08_NP	E125	13-Aug-2021	----	----	----		22-Aug-2021	0.34 hrs	221 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-8PW_WG_2021-08_NP	E125	13-Aug-2021	----	----	----		22-Aug-2021	0.34 hrs	221 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-3A_WG_2021-08_NP	E125	13-Aug-2021	----	----	----		22-Aug-2021	0.34 hrs	222 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_TRP_WG_2021-08_NP	E108	13-Aug-2021	----	----	----		19-Aug-2021	0.25 hrs	142 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-13A_WG_2021-08_NP	E108	13-Aug-2021	----	----	----		19-Aug-2021	0.25 hrs	144 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-2_WG_2021-08_NP	E108	13-Aug-2021	----	----	----		19-Aug-2021	0.25 hrs	146 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-8PW_WG_2021-08_NP	E108	13-Aug-2021	----	----	----		19-Aug-2021	0.25 hrs	147 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-3B_WG_2021-08_NP	E108	13-Aug-2021	----	----	----		19-Aug-2021	0.25 hrs	148 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-3A_WG_2021-08_NP	E108	13-Aug-2021	----	----	----		19-Aug-2021	0.25 hrs	149 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_KB-13A_WG_2021-08_NP	E162	13-Aug-2021	----	----	----		18-Aug-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_KB-2_WG_2021-08_NP	E162	13-Aug-2021	----	----	----		18-Aug-2021	7 days	5 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-3A_WG_2021-08_NP	E162	13-Aug-2021	----	----	----		18-Aug-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-3B_WG_2021-08_NP	E162	13-Aug-2021	----	----	----		18-Aug-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-8PW_WG_2021-08_NP	E162	13-Aug-2021	----	----	----		18-Aug-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_TRP_WG_2021-08_NP	E162	13-Aug-2021	----	----	----		18-Aug-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-13A_WG_2021-08_NP	E160-L	13-Aug-2021	----	----	----		18-Aug-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-2_WG_2021-08_NP	E160-L	13-Aug-2021	----	----	----		18-Aug-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-3A_WG_2021-08_NP	E160-L	13-Aug-2021	----	----	----		18-Aug-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-3B_WG_2021-08_NP	E160-L	13-Aug-2021	----	----	----		18-Aug-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-8PW_WG_2021-08_NP	E160-L	13-Aug-2021	----	----	----		18-Aug-2021	7 days	5 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_TRP_WG_2021-08_NP	E160-L	13-Aug-2021	----	----	----		18-Aug-2021	7 days	5 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-13A_WG_2021-08_NP	E121	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-2_WG_2021-08_NP	E121	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-3A_WG_2021-08_NP	E121	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-3B_WG_2021-08_NP	E121	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-8PW_WG_2021-08_NP	E121	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_TRP_WG_2021-08_NP	E121	13-Aug-2021	----	----	----		15-Aug-2021	3 days	2 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_KB-13A_WG_2021-08_NP	E420.Cr-L	13-Aug-2021	----	----	----		20-Aug-2021	180 days	7 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_KB-2_WG_2021-08_NP	E420.Cr-L	13-Aug-2021	----	----	----		20-Aug-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-3A_WG_2021-08_NP	E420.Cr-L	13-Aug-2021	----	----	----		20-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-3B_WG_2021-08_NP	E420.Cr-L	13-Aug-2021	----	----	----		20-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-8PW_WG_2021-08_NP	E420.Cr-L	13-Aug-2021	----	----	----		20-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-13A_WG_2021-08_NP	E420	13-Aug-2021	----	----	----		20-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-2_WG_2021-08_NP	E420	13-Aug-2021	----	----	----		20-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-3A_WG_2021-08_NP	E420	13-Aug-2021	----	----	----		20-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-3B_WG_2021-08_NP	E420	13-Aug-2021	----	----	----		20-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-8PW_WG_2021-08_NP	E420	13-Aug-2021	----	----	----		20-Aug-2021	180 days	7 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 EHT: Exceeded ALS recommended hold time prior to analysis.  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	272093	2	29	6.9	5.0	✓
Alkalinity Species by Titration	E290	271239	2	32	6.2	5.0	✓
Ammonia by Fluorescence	E298	268616	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	267532	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	267533	1	15	6.6	5.0	✓
Conductivity in Water	E100	271237	2	32	6.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	269593	2	21	9.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	269594	3	21	14.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	268780	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	267538	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	267536	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	267534	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	267535	1	15	6.6	5.0	✓
ORP by Electrode	E125	273215	2	40	5.0	5.0	✓
pH by Meter	E108	271238	2	32	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	267531	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	269590	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	272086	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	291897	2	34	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	272087	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	268781	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	270765	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	267599	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	272093	2	29	6.9	5.0	✓
Alkalinity Species by Titration	E290	271239	2	32	6.2	5.0	✓
Ammonia by Fluorescence	E298	268616	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	267532	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	267533	1	15	6.6	5.0	✓
Conductivity in Water	E100	271237	2	32	6.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	269593	2	21	9.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	269594	2	21	9.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	268780	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	267538	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	267536	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	267534	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	267535	1	15	6.6	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	273215	2	40	5.0	5.0	✓
pH by Meter	E108	271238	2	32	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	267531	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	269590	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	272086	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	291897	2	34	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	272087	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	268781	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	270765	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	269585	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	267599	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	272093	2	29	6.9	5.0	✓
Alkalinity Species by Titration	E290	271239	2	32	6.2	5.0	✓
Ammonia by Fluorescence	E298	268616	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	267532	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	267533	1	15	6.6	5.0	✓
Conductivity in Water	E100	271237	2	32	6.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	269593	2	21	9.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	269594	3	21	14.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	268780	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	267538	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	267536	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	267534	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	267535	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	267531	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	269590	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	272086	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	291897	2	34	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	272087	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	268781	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	270765	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	269585	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	267599	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	268616	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	267532	0	15	0.0	5.0	✗
Chloride in Water by IC (Low Level)	E235.Cl-L	267533	0	15	0.0	5.0	✗
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	269593	1	21	4.7	5.0	✗
Dissolved Metals in Water by CRC ICPMS	E421	269594	2	21	9.5	5.0	✓



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	268780	1	16	6.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	267538	1	18	5.5	5.0	✔
Fluoride in Water by IC	E235.F	267536	0	15	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	267534	0	15	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	267535	0	15	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	267531	0	15	0.0	5.0	✘
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	272086	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	291897	2	34	5.8	5.0	✔
Total Metals in Water by CRC ICPMS	E420	272087	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	268781	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	270765	2	40	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Waterloo - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Waterloo - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2103296**

**Page** : 1 of 21

**Client** : Teck Coal Limited  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-08  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 14-Aug-2021 08:40  
**Date Analysis Commenced** : 15-Aug-2021  
**Issue Date** : 30-Sep-2021 10:53

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kenson Lo		Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruby Pham	Lab Assistant	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta



Page : 3 of 21  
Work Order : CG2103296  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 267599)</b>											
CG2103289-021	Anonymous	turbidity	----	E121	0.10	NTU	1.08	0.99	0.09	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 269590)</b>											
CG2103290-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1010	1000	1.04%	20%	----
<b>Physical Tests (QC Lot: 271237)</b>											
CG2103289-021	Anonymous	conductivity	----	E100	2.0	µS/cm	2050	2060	0.487%	10%	----
<b>Physical Tests (QC Lot: 271238)</b>											
CG2103289-021	Anonymous	pH	----	E108	0.10	pH units	8.00	7.99	0.125%	4%	----
<b>Physical Tests (QC Lot: 271239)</b>											
CG2103289-021	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	469	483	2.98%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	469	483	2.98%	20%	----
<b>Physical Tests (QC Lot: 271240)</b>											
CG2103296-005	FR_KB-8PW_WG_2021-08_NP	conductivity	----	E100	2.0	µS/cm	1520	1530	0.657%	10%	----
<b>Physical Tests (QC Lot: 271241)</b>											
CG2103296-005	FR_KB-8PW_WG_2021-08_NP	pH	----	E108	0.10	pH units	8.06	8.08	0.248%	4%	----
<b>Physical Tests (QC Lot: 271242)</b>											
CG2103296-005	FR_KB-8PW_WG_2021-08_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	431	425	1.47%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	431	425	1.47%	20%	----
<b>Physical Tests (QC Lot: 272093)</b>											
CG2103289-021	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	27.0	25.5	1.5	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 272094)</b>											
CG2103296-005	FR_KB-8PW_WG_2021-08_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	11.2	9.2	2.0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 273215)</b>											
CG2103289-021	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	322	332	3.15%	15%	----
<b>Physical Tests (QC Lot: 273216)</b>											
CG2103296-005	FR_KB-8PW_WG_2021-08_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	478	471	1.56%	15%	----



Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 267531)</b>											
CG2103295-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	6.00	mg/L	1030	1040	0.792%	20%	----
<b>Anions and Nutrients (QC Lot: 267532)</b>											
CG2103295-001	Anonymous	bromide	24959-67-9	E235.Br-L	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 267533)</b>											
CG2103295-001	Anonymous	chloride	16887-00-6	E235.Cl-L	2.00	mg/L	3.79	3.30	0.49	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 267534)</b>											
CG2103295-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.100	mg/L	178	180	1.13%	20%	----
<b>Anions and Nutrients (QC Lot: 267535)</b>											
CG2103295-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 267536)</b>											
CG2103295-001	Anonymous	fluoride	16984-48-8	E235.F	0.400	mg/L	<0.400	<0.400	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 267538)</b>											
CG2103294-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0012	0.0014	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 268616)</b>											
CG2103289-026	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.389	0.444	13.2%	20%	----
<b>Anions and Nutrients (QC Lot: 270765)</b>											
CG2103289-021	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 270766)</b>											
CG2103296-005	FR_KB-8PW_WG_2021-08_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0035	0.0048	0.0013	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 288962)</b>											
CG2103296-001	FR_KB-2_WG_2021-08_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.387	0.356	0.031	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 291897)</b>											
RG2100489-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.500	mg/L	7.04	7.12	1.13%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 268780)</b>											
CG2103290-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.63	0.62	0.01	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 268781)</b>											
CG2103290-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	5.63	5.90	4.68%	20%	----
<b>Total Metals (QC Lot: 272086)</b>											
CG2103290-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 272087)</b>											
CG2103290-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0378	0.0440	15.0%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00965	0.00952	1.38%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00234	0.00230	1.64%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.530	0.538	1.62%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 272087) - continued</b>											
CG2103290-001	Anonymous	beryllium, total	7440-41-7	E420	0.020	mg/L	0.021 µg/L	0.000020	0.0000006	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.313	0.325	3.90%	20%	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0875 µg/L	0.0000756	14.6%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	50.4	47.2	6.64%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	5.99 µg/L	0.00594	0.805%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00062	0.00059	0.00003	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.034	0.034	0.0007	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000247	0.000256	0.000009	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	1.84	1.84	0.00309%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	15.2	15.0	0.988%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0506	0.0495	2.27%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0266	0.0264	0.833%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0266	0.0265	0.399%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	13.2	13.3	1.10%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	2.57 µg/L	0.00262	1.95%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.25	4.22	0.841%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	368	372	1.18%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.300	0.292	2.64%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	20.6	20.1	2.22%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000058	0.000063	0.000005	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00073	0.00075	0.00002	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00256	0.00261	1.95%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00137	0.00136	0.000003	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	0.0032	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 269593)</b>											
CG2103296-001	FR_KB-2_WG_2021-08_N P	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 269594)</b>											
CG2103296-001	FR_KB-2_WG_2021-08_N P	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
CG2103296-001	FR_KB-2_WG_2021-08_N P	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00040	0.00042	0.00002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0440	0.0420	4.73%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 269594) - continued</b>											
CG2103296-001	FR_KB-2_WG_2021-08_N P	beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.028	0.029	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.146 µg/L	0.000148	1.83%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	207	216	4.21%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.105	0.106	0.953%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	97.6	99.1	1.49%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00018	0.00015	0.00002	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00134	0.00141	5.63%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00658	0.00655	0.428%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.18	4.19	0.237%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	185 µg/L	0.185	0.238%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.10	2.04	2.94%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.62	4.64	0.278%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.196	0.205	4.72%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	134	133	0.577%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00851	0.00865	1.66%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0050	0.0049	0.0001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 274638)</b>											
CG2103296-006	FR_TRP_WG_2021-08_N P	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 274639)</b>											
CG2103296-006	FR_TRP_WG_2021-08_N P	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 274639) - continued</b>											
CG2103296-006	FR_TRP_WG_2021-08_N P	beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 267599)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 269585)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 269590)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 271237)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 271239)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 271240)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 271242)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 272093)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 272094)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 267531)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 267532)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 267533)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 267534)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 267535)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 267536)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 267538)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 268616)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 270765)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 270766)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 288962)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 291897)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 268780)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 268781)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 272086)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 272087)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 272087) - continued</b>						
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 269593)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 269594)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	MBRR
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 269594) - continued</b>						
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 274638)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 274639)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 274639) - continued</b>						
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----

**Qualifiers**

Qualifier	Description
MBRR	Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 267599)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.8	85.0	115	---
<b>Physical Tests (QCLot: 269585)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	95.0	85.0	115	---
<b>Physical Tests (QCLot: 269590)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.8	85.0	115	---
<b>Physical Tests (QCLot: 271237)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	104	90.0	110	---
<b>Physical Tests (QCLot: 271238)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 271239)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 271240)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.8	90.0	110	---
<b>Physical Tests (QCLot: 271241)</b>									
pH	---	E108	---	pH units	7 pH units	99.8	98.6	101	---
<b>Physical Tests (QCLot: 271242)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 272093)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 272094)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 273215)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Physical Tests (QCLot: 273216)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 267531)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 267532)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	---
<b>Anions and Nutrients (QCLot: 267533)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 267534)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 267534) - continued</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 267535)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 267536)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 267538)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	107	80.0	120	----
<b>Anions and Nutrients (QCLot: 268616)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 270765)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	92.4	80.0	120	----
<b>Anions and Nutrients (QCLot: 270766)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	93.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 288962)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 291897)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	108	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 268780)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	95.8	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 268781)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	104	80.0	120	----
<b>Total Metals (QCLot: 272086)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
<b>Total Metals (QCLot: 272087)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	109	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	112	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	109	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	108	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	110	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	107	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	108	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	108	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 272087) - continued</b>									
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	108	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	109	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	106	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	114	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	107	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	112	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	112	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	105	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	109	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	116	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	115	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	102	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	108	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	111	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	107	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	117	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	109	80.0	120	----
<b>Dissolved Metals (QCLot: 269593)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.2	80.0	120	----
<b>Dissolved Metals (QCLot: 269594)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.5	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.8	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.3	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 269594) - continued</b>									
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.3	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.4	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.5	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.1	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	98.4	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.5	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	95.6	80.0	120	----
<b>Dissolved Metals (QCLot: 274638)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
<b>Dissolved Metals (QCLot: 274639)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	105	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	110	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	109	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	108	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	105	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier	
					Concentration	LCS	Low	High		
<b>Dissolved Metals (QCLot: 274639) - continued</b>										
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	108	80.0	120	----	
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----	
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	115	80.0	120	----	
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----	
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	108	80.0	120	----	
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	103	80.0	120	----	
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	111	80.0	120	----	
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----	
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	105	80.0	120	----	
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	108	80.0	120	----	
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	104	80.0	120	----	
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	110	80.0	120	----	
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	104	80.0	120	----	
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	108	80.0	120	----	
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	108	80.0	120	----	





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 267538)</b>										
CG2103294-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0531 mg/L	0.05 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 268616)</b>										
CG2103289-026	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 270765)</b>										
CG2103289-022	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0719 mg/L	0.0676 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 270766)</b>										
CG2103296-006	FR_TRP_WG_2021-08_NP	phosphorus, total	7723-14-0	E372-U	0.0695 mg/L	0.0676 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 288962)</b>										
CG2103296-001	FR_KB-2_WG_2021-08_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.80 mg/L	2.5 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 291897)</b>										
RG2100489-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	27.4 mg/L	2.5 mg/L	110	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 268780)</b>										
CG2103290-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	28.4 mg/L	23.9 mg/L	119	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 268781)</b>										
CG2103290-001	Anonymous	carbon, total organic [TOC]	----	E355-L	19.2 mg/L	23.9 mg/L	80.2	70.0	130	----
<b>Total Metals (QCLot: 272086)</b>										
CG2103290-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0396 mg/L	0.04 mg/L	98.9	70.0	130	----
<b>Total Metals (QCLot: 272087)</b>										
CG2103290-002	Anonymous	aluminum, total	7429-90-5	E420	0.193 mg/L	0.2 mg/L	96.3	70.0	130	----
		antimony, total	7440-36-0	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00946 mg/L	0.01 mg/L	94.6	70.0	130	----
		boron, total	7440-42-8	E420	0.097 mg/L	0.1 mg/L	96.8	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 272087) - continued</b>										
CG2103290-002	Anonymous	iron, total	7439-89-6	E420	1.99 mg/L	2 mg/L	99.4	70.0	130	----
		lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0457 mg/L	0.04 mg/L	114	70.0	130	----
		silicon, total	7440-21-3	E420	9.59 mg/L	10 mg/L	95.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00362 mg/L	0.004 mg/L	90.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, total	7440-32-6	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.367 mg/L	0.4 mg/L	91.8	70.0	130	----
<b>Dissolved Metals (QCLot: 269593)</b>										
CG2103296-002	FR_KB-3A_WG_2021-08_N P	chromium, dissolved	7440-47-3	E421.Cr-L	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----
<b>Dissolved Metals (QCLot: 269594)</b>										
CG2103296-002	FR_KB-3A_WG_2021-08_N P	aluminum, dissolved	7429-90-5	E421	0.210 mg/L	0.2 mg/L	105	70.0	130	----
CG2103296-002	FR_KB-3A_WG_2021-08_N P	antimony, dissolved	7440-36-0	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00908 mg/L	0.01 mg/L	90.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00410 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0183 mg/L	0.02 mg/L	91.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0176 mg/L	0.02 mg/L	87.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.4	70.0	130	----

Page : 21 of 21  
 Work Order : CG2103296  
 Client : Teck Coal Limited  
 Project : FORDING RIVER OPERATIONS



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 269594) - continued</b>										
CG2103296-002	FR_KB-3A_WG_2021-08_N P	lead, dissolved	7439-92-1	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0898 mg/L	0.1 mg/L	89.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0183 mg/L	0.02 mg/L	91.7	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.74 mg/L	4 mg/L	93.6	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.02 mg/L	10 mg/L	90.2	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----

COC ID: **QTR\_KC\_GW\_2021-08**

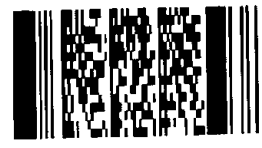
TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Paul Dore			Lab Contact	Lyudnyla Shvets			Email 1:	teckcoal@equisonline.com	X	X	X
Email	paul.dore@teck.com			Email	Lyudnyla.Shvets@ALSGlobal.com			Email 2:	paul.dore@teck.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	leslie.barker@snclavalin.com	X	X	X
								Email 4:	David.Burroughs@teck.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 5:	Stefan.Humbrias@snclavalin.com	X	X	X
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-433-6716			Phone Number	403 407 1794			PO number	VPO00765458			

SAMPLE DETAILS								ANALYSIS REQUESTED						Filtered - F: Field, L: Lab, FL: Field & Lab, N: None									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN/Nutrients	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA	PRESEV. NONE	H2SO4	H2SO4	HNO3	HNO3						
<del>FR_KB-1_WG_2021-08-NP</del>	<del>FR_KB-1</del>	<del>WG</del>	<del>N</del>	<del></del>	<del></del>	<del>G</del>	<del>5</del>	1	1	1	1	1											
FR_KB-2_WG_2021-08-NP	FR_KB-2	WG	N	2021/08/13	12:15	G	5	1	1	1	1	1											
FR_KB-3A_WG_2021-08-NP	FR_KB-3A	WG	N	2021/08/13	8:40	G	5	1	1	1	1	1											
FR_KB-3B_WG_2021-08-NP	FR_KB-3B	WG	N	2021/08/13	10:10	G	5	1	1	1	1	1											
FR_KB-13B_WG_2021-08-NP	FR_KB-13A	WG	N	2021/08/13	13:40	G	5	1	1	1	1	1											
<del>FR_KB-8PW_WG_2021-08-NP</del>	<del>FR_KB-8PW</del>	<del>WG</del>	<del>N</del>	<del></del>	<del></del>	<del>G</del>	<del>5</del>	1	1	1	1	1											
<del>FR_KB-8PW_WG_2021-08-NP</del>	<del>FR_KB-8PW</del>	<del>WG</del>	<del>N</del>	<del></del>	<del></del>	<del>G</del>	<del>5</del>	1	1	1	1	1											
<del>FR_KB-8PW_WG_2021-08-NP</del>	<del>FR_KB-8PW</del>	<del>WG</del>	<del>N</del>	<del></del>	<del></del>	<del>G</del>	<del>5</del>	1	1	1	1	1											
FR_KB-8PW_WG_2021-08-NP	FR_KB-8PW	WG	N	2021/08/13	10:55	G	5	1	1	1	1	1											
<del>FR_KB-8PW_WG_2021-08-NP</del>	<del>FR_KB-8PW</del>	<del>WG</del>	<del>N</del>	<del></del>	<del></del>	<del>G</del>	<del>5</del>	1	1	1	1	1											
<del>FR_KB-8PW_WG_2021-08-NP</del>	<del>FR_KB-8PW</del>	<del>WG</del>	<del>N</del>	<del></del>	<del></del>	<del>G</del>	<del>5</del>	1	1	1	1	1											

Environmental Division  
Calgary  
Work Order Reference  
**CG2103296**



Telephone: +1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS				DATE/TIME				ACCEPTED BY/AFFILIATION				DATE/TIME			
*All samples field filtered and preserved as required.								<i>[Signature]</i>				14/08/2021 8:40			
SERVICE REQUEST (rush - subject to availability)												(5)			
Regular (default) <input checked="" type="checkbox"/>				Sampler's Name				Mobile #							
Priority (2-3 business days) - 50% surcharge															
Emergency (1 Business Day) - 100% surcharge															
For Emergency <1 Day, ASAP or Weekend - Contact ALS				- Sampler's Signature								Date/Time			



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103387**  
**Client** : **Teck Coal Limited**  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-08  
**Sampler** : KATIE PETERSON  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Page** : 1 of 11  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 18-Aug-2021 08:50  
**Date Analysis Commenced** : 18-Aug-2021  
**Issue Date** : 30-Sep-2021 11:12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruby Pham	Lab Assistant	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-10MW_WG_2021-08_N P	FR_KB-12PW_WG_2021-08_N P	FR_KB-4MW_WG_2021-08_N P	FR_TRP2_WG_2021-08_N P	FR_DC2_WG_2021-08_N P
Client sampling date / time					17-Aug-2021 09:45	17-Aug-2021 08:15	17-Aug-2021 12:25	17-Aug-2021 16:00	17-Aug-2021 08:20	
Analyte	CAS Number	Method	LOR	Unit	CG2103387-001 Result	CG2103387-002 Result	CG2103387-003 Result	CG2103387-004 Result	CG2103387-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	12.2	6.8	14.6	<2.0	6.8	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	439	456	350	<1.0	438	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	439	456	350	<1.0	438	
conductivity	----	E100	2.0	µS/cm	1600	1630	2570	<2.0	1640	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	989	999	1580	<0.50	1030	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	410	409	387	512	407	
pH	----	E108	0.10	pH units	7.96	8.02	7.59	5.84	7.94	
solids, total dissolved [TDS]	----	E162	10	mg/L	1290	1350	2450	<10	1350	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.4	1.0	7.1	<1.5	<1.0	
turbidity	----	E121	0.10	NTU	0.21	<0.10	8.33	<0.10	<0.10	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	536	557	428	<1.0	534	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0257	0.0559	0.107 <sup>RRV</sup>	0.0094	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	0.595	<0.050	<0.250 <sup>DLDS</sup>	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.91	0.93	5.27	<0.10	0.93	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.123	0.138	0.188	<0.020	0.144	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	0.329 <sup>TKNI</sup>	0.513 <sup>TKNI</sup>	0.125	0.222 <sup>TKNI</sup>	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	47.2	49.3	9.82	<0.0050	48.6	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0072	0.0082	0.0456	<0.0010	0.0094	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0012	0.0027	0.0020	<0.0010	0.0027	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0024	0.0032	0.0161	<0.0020	0.0032	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	424	430	1500	<0.30	442	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.76	0.70	4.76	----	0.87	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.53	0.64	5.32	<0.50	0.79	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-10MW_WG_2021-08_NP	FR_KB-12PW_WG_2021-08_NP	FR_KB-4MW_WG_2021-08_NP	FR_TRP2_WG_2021-08_NP	FR_DC2_WG_2021-08_NP
Client sampling date / time					17-Aug-2021 09:45	17-Aug-2021 08:15	17-Aug-2021 12:25	17-Aug-2021 16:00	17-Aug-2021 08:20	
Analyte	CAS Number	Method	LOR	Unit	CG2103387-001	CG2103387-002	CG2103387-003	CG2103387-004	CG2103387-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	21.0	21.6	39.1	<0.10	21.4	
cation sum	----	EC101	0.10	meq/L	20.1	20.3	33.7	<0.10	21.0	
ion balance (cations/anions ratio)	----	EC101	0.010	%	95.7	94.0	86.2	100 <sup>RRV</sup>	98.1	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.19	3.10	7.42	<0.010	0.943	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0032	<0.0030	0.124	<0.0030	<0.0030	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00035	0.00047	0.00139	<0.00010	0.00046	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0.00030	<0.00010	<0.00010	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0483	0.0379	0.0304	<0.00010	0.0391	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.040 <sup>DLA</sup>	<0.020	<0.020	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	0.031	0.032	0.514	<0.010	0.034	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.104	0.238	1.22	<0.0050	0.232	
calcium, total	7440-70-2	E420	0.050	mg/L	218	220	422	<0.050	242	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00013	<0.00010	0.00130	<0.00010	<0.00010	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	0.62	<0.10	<0.10	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0.00504	<0.00050	<0.00050	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0.221	<0.010	<0.010	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0.000657	<0.000050	<0.000050	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.107	0.122	0.0965	<0.0010	0.128	
magnesium, total	7439-95-4	E420	0.0050	mg/L	104	107	157	<0.0050	107	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00052	0.00076	3.78	<0.00010	0.00071	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00122	0.00163	0.00174	<0.000050	0.00156	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00367	0.0105	0.00665	<0.00050	0.0107	
potassium, total	7440-09-7	E420	0.050	mg/L	4.29	4.64	8.05	<0.050	4.77	
selenium, total	7782-49-2	E420	0.050	µg/L	176	175	31.1	<0.050	177	
silicon, total	7440-21-3	E420	0.10	mg/L	2.42	2.32	15.0	<0.10	2.40	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0.000027	<0.000010	<0.000010	
sodium, total	17341-25-2	E420	0.050	mg/L	4.69	5.14	43.7	<0.050	5.00	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.210	0.222	0.616	<0.00020	0.218	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-10MW_WG_2021-08_NP	FR_KB-12PW_WG_2021-08_NP	FR_KB-4MW_WG_2021-08_NP	FR_TRP2_WG_2021-08_NP	FR_DC2_WG_2021-08_NP
Client sampling date / time					17-Aug-2021 09:45	17-Aug-2021 08:15	17-Aug-2021 12:25	17-Aug-2021 16:00	17-Aug-2021 08:20	
Analyte	CAS Number	Method	LOR	Unit	CG2103387-001	CG2103387-002	CG2103387-003	CG2103387-004	CG2103387-005	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	164	166	580	<0.50	155	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0.000208	<0.000010	<0.000010	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0.00207	<0.00030	<0.00030	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00855	0.00907	0.00152	<0.000010	0.0104	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0035	0.0065	0.0349	<0.0030	0.0068	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0064	----	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00033	0.00045	0.00093	----	0.00043	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	----	0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0486	0.0383	0.0258	----	0.0412	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.040 <sup>DLA</sup>	----	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	----	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.028	0.029	0.445	----	0.031	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.101	0.240	1.08	----	0.249	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	223	227	394	<0.050	237	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00074	----	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	0.52	----	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00022	<0.00020	0.00192	----	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.020 <sup>DLA</sup>	----	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0.000182	----	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.111	0.121	0.0934	----	0.130	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	105	105	144	<0.0050	107	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00039	0.00064	3.50	----	0.00068	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00118	0.00152	0.00167	----	0.00155	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00339	0.0100	0.00595	----	0.0109	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.31	4.58	7.67	<0.050	4.84	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	205	188	28.9	----	193	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.24	2.16	14.7	----	2.25	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-10MW_WG_2021-08_NP	FR_KB-12PW_WG_2021-08_NP	FR_KB-4MW_WG_2021-08_NP	FR_TRP2_WG_2021-08_NP	FR_DC2_WG_2021-08_NP
Client sampling date / time					17-Aug-2021 09:45	17-Aug-2021 08:15	17-Aug-2021 12:25	17-Aug-2021 16:00	17-Aug-2021 08:20	
Analyte	CAS Number	Method	LOR	Unit	CG2103387-001	CG2103387-002	CG2103387-003	CG2103387-004	CG2103387-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>	----	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.85	5.09	42.9	<0.050	5.10	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.212	0.224	0.583	----	0.216	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	147	156	518	----	141	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000010	0.000194	----	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	----	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00060 <sup>DLA</sup>	----	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00861	0.00912	0.00143	----	0.0100	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>	----	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0028	0.0069	0.0361	----	0.0068	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Laboratory	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_FLD2_WG_2	----	----	----	----
(Matrix: Water)						021-08_NP				
					Client sampling date / time	17-Aug-2021 08:25	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2103387-006	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	
conductivity	----	E100	2.0	µS/cm	<2.0	----	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	<0.50	----	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	474	----	----	----	----	
pH	----	E108	0.10	pH units	5.79	----	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	----	----	----	----	
turbidity	----	E121	0.10	NTU	<0.10	----	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	<1.0	----	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	----	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	----	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	----	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	----	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.072	----	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	----	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	----	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	----	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	----	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	----	----	----	----	



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_FLD2_WG_2	----	----	----	----
(Matrix: Water)						021-08_NP				
Client sampling date / time					17-Aug-2021 08:25	----	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103387-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Ion Balance</b>										
cation sum	----	EC101	0.10	meq/L	<0.10	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	----	----	----	----	----
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	----	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	----	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	----	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	----	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	----	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	----	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	----	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	----	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	----	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	----	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	----	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	----	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	<0.050	----	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	----	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	----	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_FLD2_WG_2	----	----	----	----
(Matrix: Water)						021-08_NP				
Client sampling date / time					17-Aug-2021 08:25	---	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2103387-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Total Metals</b>										
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	---	---	---	---	---
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	---	---	---	---	---
uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	---	---	---	---	---
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	---	---	---	---	---
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	---	---	---	---	---
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	---	---	---	---	---
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	---	---	---	---	---
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	---	---	---	---	---
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	---	---	---	---	---
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	---	---	---	---	---
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	---	---	---	---	---
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	---	---	---	---	---
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	---	---	---	---	---
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.012 <sup>RRV</sup>	---	---	---	---	---
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	---	---	---	---	---
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	0.0058 <sup>RRV</sup>	---	---	---	---	---
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00018 <sup>RRV</sup>	---	---	---	---	---
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	---	---	---	---	---
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	---	---	---	---	---
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	---	---	---	---	---
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	---	---	---	---	---
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	---	---	---	---	---
sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	---	---	---	---	---
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_FLD2_WG_2 021-08_NP	----	----	----	----
					Client sampling date / time	17-Aug-2021 08:25	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103387-006	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0013 <sup>RRV</sup>	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103387</b>	Page	: 1 of 24
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Paul Dore	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 18-Aug-2021 08:50
PO	: VPO00765458	Issue Date	: 30-Sep-2021 11:12
C-O-C number	: QTR_KC_GW_2021-08		
Sampler	: KATIE PETERSON		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC2_WG_2021-08_NP	E298	17-Aug-2021	21-Aug-2021	----	----		21-Aug-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD2_WG_2021-08_NP	E298	17-Aug-2021	21-Aug-2021	----	----		21-Aug-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-10MW_WG_2021-08_NP	E298	17-Aug-2021	21-Aug-2021	----	----		21-Aug-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-12PW_WG_2021-08_NP	E298	17-Aug-2021	21-Aug-2021	----	----		21-Aug-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-4MW_WG_2021-08_NP	E298	17-Aug-2021	21-Aug-2021	----	----		21-Aug-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP2_WG_2021-08_NP	E298	17-Aug-2021	21-Aug-2021	----	----		21-Aug-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC2_WG_2021-08_NP	E235.Br-L	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_FLD2_WG_2021-08_NP	E235.Br-L	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_KB-10MW_WG_2021-08_NP	E235.Br-L	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_KB-12PW_WG_2021-08_NP	E235.Br-L	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_KB-4MW_WG_2021-08_NP	E235.Br-L	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_TRP2_WG_2021-08_NP	E235.Br-L	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_DC2_WG_2021-08_NP	E235.Cl-L	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_FLD2_WG_2021-08_NP	E235.Cl-L	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-10MW_WG_2021-08_NP	E235.Cl-L	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-12PW_WG_2021-08_NP	E235.Cl-L	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_KB-4MW_WG_2021-08_NP	E235.CI-L	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_TRP2_WG_2021-08_NP	E235.CI-L	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_DC2_WG_2021-08_NP	E378-U	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_FLD2_WG_2021-08_NP	E378-U	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-10MW_WG_2021-08_NP	E378-U	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-12PW_WG_2021-08_NP	E378-U	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-4MW_WG_2021-08_NP	E378-U	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_TRP2_WG_2021-08_NP	E378-U	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_DC2_WG_2021-08_NP	E235.F	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_FLD2_WG_2021-08_NP	E235.F	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-10MW_WG_2021-08_NP	E235.F	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-12PW_WG_2021-08_NP	E235.F	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-4MW_WG_2021-08_NP	E235.F	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_TRP2_WG_2021-08_NP	E235.F	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_DC2_WG_2021-08_NP	E235.NO3-L	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_FLD2_WG_2021-08_NP	E235.NO3-L	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-10MW_WG_2021-08_NP	E235.NO3-L	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-12PW_WG_2021-08_NP	E235.NO3-L	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_KB-4MW_WG_2021-08_NP	E235.NO3-L	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_TRP2_WG_2021-08_NP	E235.NO3-L	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_DC2_WG_2021-08_NP	E235.NO2-L	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_FLD2_WG_2021-08_NP	E235.NO2-L	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_KB-10MW_WG_2021-08_NP	E235.NO2-L	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_KB-12PW_WG_2021-08_NP	E235.NO2-L	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_KB-4MW_WG_2021-08_NP	E235.NO2-L	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_TRP2_WG_2021-08_NP	E235.NO2-L	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_DC2_WG_2021-08_NP	E235.SO4	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_FLD2_WG_2021-08_NP	E235.SO4	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-10MW_WG_2021-08_NP	E235.SO4	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-12PW_WG_2021-08_NP	E235.SO4	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-4MW_WG_2021-08_NP	E235.SO4	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_TRP2_WG_2021-08_NP	E235.SO4	17-Aug-2021	----	----	----		18-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC2_WG_2021-08_NP	E318	17-Aug-2021	20-Sep-2021	----	----		22-Sep-2021	28 days	36 days	* EHT	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD2_WG_2021-08_NP	E318	17-Aug-2021	20-Sep-2021	----	----		22-Sep-2021	28 days	36 days	* EHT	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-10MW_WG_2021-08_NP	E318	17-Aug-2021	20-Sep-2021	----	----		22-Sep-2021	28 days	36 days	* EHT	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-12PW_WG_2021-08_NP	E318	17-Aug-2021	20-Sep-2021	----	----		22-Sep-2021	28 days	36 days	* EHT	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-4MW_WG_2021-08_NP	E318	17-Aug-2021	20-Sep-2021	----	----		22-Sep-2021	28 days	36 days	*	EHT
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP2_WG_2021-08_NP	E318	17-Aug-2021	20-Sep-2021	----	----		22-Sep-2021	28 days	36 days	*	EHT
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC2_WG_2021-08_NP	E372-U	17-Aug-2021	24-Aug-2021	----	----		24-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD2_WG_2021-08_NP	E372-U	17-Aug-2021	24-Aug-2021	----	----		24-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-10MW_WG_2021-08_NP	E372-U	17-Aug-2021	24-Aug-2021	----	----		24-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-12PW_WG_2021-08_NP	E372-U	17-Aug-2021	24-Aug-2021	----	----		24-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-4MW_WG_2021-08_NP	E372-U	17-Aug-2021	24-Aug-2021	----	----		24-Aug-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP2_WG_2021-08_NP	E372-U	17-Aug-2021	24-Aug-2021	----	----		24-Aug-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC2_WG_2021-08_NP	E421.Cr-L	17-Aug-2021	22-Aug-2021	----	----		24-Aug-2021	180 days	7 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FLD2_WG_2021-08_NP	E421.Cr-L	17-Aug-2021	22-Aug-2021	----	----		24-Aug-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-10MW_WG_2021-08_NP	E421.Cr-L	17-Aug-2021	22-Aug-2021	----	----		24-Aug-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-12PW_WG_2021-08_NP	E421.Cr-L	17-Aug-2021	22-Aug-2021	----	----		24-Aug-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-4MW_WG_2021-08_NP	E421.Cr-L	17-Aug-2021	22-Aug-2021	----	----		24-Aug-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TRP2_WG_2021-08_NP	E421	17-Aug-2021	22-Aug-2021	----	----		22-Aug-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC2_WG_2021-08_NP	E421	17-Aug-2021	22-Aug-2021	----	----		24-Aug-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FLD2_WG_2021-08_NP	E421	17-Aug-2021	22-Aug-2021	----	----		24-Aug-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-10MW_WG_2021-08_NP	E421	17-Aug-2021	22-Aug-2021	----	----		24-Aug-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-12PW_WG_2021-08_NP	E421	17-Aug-2021	22-Aug-2021	----	----		24-Aug-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-4MW_WG_2021-08_NP	E421	17-Aug-2021	22-Aug-2021	----	----		24-Aug-2021	180 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_DC2_WG_2021-08_NP	E358-L	17-Aug-2021	20-Aug-2021	----	----		20-Aug-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_FLD2_WG_2021-08_NP	E358-L	17-Aug-2021	20-Aug-2021	----	----		20-Aug-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-10MW_WG_2021-08_NP	E358-L	17-Aug-2021	20-Aug-2021	----	----		20-Aug-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-12PW_WG_2021-08_NP	E358-L	17-Aug-2021	20-Aug-2021	----	----		20-Aug-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-4MW_WG_2021-08_NP	E358-L	17-Aug-2021	20-Aug-2021	----	----		20-Aug-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC2_WG_2021-08_NP	E355-L	17-Aug-2021	22-Aug-2021	----	----		22-Aug-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD2_WG_2021-08_NP	E355-L	17-Aug-2021	22-Aug-2021	----	----		22-Aug-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-10MW_WG_2021-08_NP	E355-L	17-Aug-2021	22-Aug-2021	----	----		22-Aug-2021	28 days	5 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-12PW_WG_2021-08_NP	E355-L	17-Aug-2021	22-Aug-2021	----	----		22-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-4MW_WG_2021-08_NP	E355-L	17-Aug-2021	22-Aug-2021	----	----		22-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP2_WG_2021-08_NP	E355-L	17-Aug-2021	22-Aug-2021	----	----		22-Aug-2021	28 days	5 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_DC2_WG_2021-08_NP	E283	17-Aug-2021	----	----	----		23-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_FLD2_WG_2021-08_NP	E283	17-Aug-2021	----	----	----		23-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-10MW_WG_2021-08_NP	E283	17-Aug-2021	----	----	----		23-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-12PW_WG_2021-08_NP	E283	17-Aug-2021	----	----	----		23-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-4MW_WG_2021-08_NP	E283	17-Aug-2021	----	----	----		23-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_TRP2_WG_2021-08_NP	E283	17-Aug-2021	----	----	----		23-Aug-2021	14 days	6 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_DC2_WG_2021-08_NP	E290	17-Aug-2021	----	----	----		23-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_FLD2_WG_2021-08_NP	E290	17-Aug-2021	----	----	----		23-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-10MW_WG_2021-08_NP	E290	17-Aug-2021	----	----	----		23-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-12PW_WG_2021-08_NP	E290	17-Aug-2021	----	----	----		23-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-4MW_WG_2021-08_NP	E290	17-Aug-2021	----	----	----		23-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_TRP2_WG_2021-08_NP	E290	17-Aug-2021	----	----	----		23-Aug-2021	14 days	6 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_DC2_WG_2021-08_NP	E100	17-Aug-2021	----	----	----		23-Aug-2021	28 days	6 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_FLD2_WG_2021-08_NP	E100	17-Aug-2021	----	----	----		23-Aug-2021	28 days	6 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-10MW_WG_2021-08_NP	E100	17-Aug-2021	----	----	----		23-Aug-2021	28 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-12PW_WG_2021-08_NP	E100	17-Aug-2021	----	----	----		23-Aug-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-4MW_WG_2021-08_NP	E100	17-Aug-2021	----	----	----		23-Aug-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_TRP2_WG_2021-08_NP	E100	17-Aug-2021	----	----	----		23-Aug-2021	28 days	6 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_TRP2_WG_2021-08_NP	E125	17-Aug-2021	----	----	----		25-Aug-2021	0.34 hrs	185 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-4MW_WG_2021-08_NP	E125	17-Aug-2021	----	----	----		25-Aug-2021	0.34 hrs	189 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-10MW_WG_2021-08_NP	E125	17-Aug-2021	----	----	----		25-Aug-2021	0.34 hrs	191 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_DC2_WG_2021-08_NP	E125	17-Aug-2021	----	----	----		25-Aug-2021	0.34 hrs	193 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_FLD2_WG_2021-08_NP	E125	17-Aug-2021	----	----	----		25-Aug-2021	0.34 hrs	193 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-12PW_WG_2021-08_NP	E125	17-Aug-2021	----	----	----		25-Aug-2021	0.34 hrs	193 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : pH by Meter</b>											
HDPE FR_TRP2_WG_2021-08_NP	E108	17-Aug-2021	----	----	----		23-Aug-2021	0.25 hrs	140 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-4MW_WG_2021-08_NP	E108	17-Aug-2021	----	----	----		23-Aug-2021	0.25 hrs	144 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-10MW_WG_2021-08_NP	E108	17-Aug-2021	----	----	----		23-Aug-2021	0.25 hrs	147 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_DC2_WG_2021-08_NP	E108	17-Aug-2021	----	----	----		23-Aug-2021	0.25 hrs	148 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_FLD2_WG_2021-08_NP	E108	17-Aug-2021	----	----	----		23-Aug-2021	0.25 hrs	148 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-12PW_WG_2021-08_NP	E108	17-Aug-2021	----	----	----		23-Aug-2021	0.25 hrs	148 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_DC2_WG_2021-08_NP	E162	17-Aug-2021	----	----	----		23-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_FLD2_WG_2021-08_NP	E162	17-Aug-2021	----	----	----		23-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_KB-10MW_WG_2021-08_NP	E162	17-Aug-2021	----	----	----		23-Aug-2021	7 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-12PW_WG_2021-08_NP	E162	17-Aug-2021	----	----	----		23-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-4MW_WG_2021-08_NP	E162	17-Aug-2021	----	----	----		23-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_TRP2_WG_2021-08_NP	E162	17-Aug-2021	----	----	----		23-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_DC2_WG_2021-08_NP	E160-L	17-Aug-2021	----	----	----		23-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_FLD2_WG_2021-08_NP	E160-L	17-Aug-2021	----	----	----		23-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-10MW_WG_2021-08_NP	E160-L	17-Aug-2021	----	----	----		23-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-12PW_WG_2021-08_NP	E160-L	17-Aug-2021	----	----	----		23-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-4MW_WG_2021-08_NP	E160-L	17-Aug-2021	----	----	----		23-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_TRP2_WG_2021-08_NP	E160-L	17-Aug-2021	----	----	----		23-Aug-2021	7 days	6 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_DC2_WG_2021-08_NP	E121	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_FLD2_WG_2021-08_NP	E121	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-10MW_WG_2021-08_NP	E121	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-12PW_WG_2021-08_NP	E121	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-4MW_WG_2021-08_NP	E121	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_TRP2_WG_2021-08_NP	E121	17-Aug-2021	----	----	----		18-Aug-2021	3 days	1 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_DC2_WG_2021-08_NP	E420.Cr-L	17-Aug-2021	----	----	----		24-Aug-2021	180 days	7 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_FLD2_WG_2021-08_NP	E420.Cr-L	17-Aug-2021	----	----	----		24-Aug-2021	180 days	7 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_KB-10MW_WG_2021-08_NP	E420.Cr-L	17-Aug-2021	----	----	----		24-Aug-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-12PW_WG_2021-08_NP	E420.Cr-L	17-Aug-2021	----	----	----		24-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-4MW_WG_2021-08_NP	E420.Cr-L	17-Aug-2021	----	----	----		24-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_TRP2_WG_2021-08_NP	E420.Cr-L	17-Aug-2021	----	----	----		24-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_DC2_WG_2021-08_NP	E420	17-Aug-2021	----	----	----		24-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_FLD2_WG_2021-08_NP	E420	17-Aug-2021	----	----	----		24-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-10MW_WG_2021-08_NP	E420	17-Aug-2021	----	----	----		24-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-12PW_WG_2021-08_NP	E420	17-Aug-2021	----	----	----		24-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-4MW_WG_2021-08_NP	E420	17-Aug-2021	----	----	----		24-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_TRP2_WG_2021-08_NP	E420	17-Aug-2021	----	----	----		24-Aug-2021	180 days	7 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 18 of 24  
Work Order : CG2103387  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	273891	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	273886	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	273081	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	270299	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	270300	1	19	5.2	5.0	✓
Conductivity in Water	E100	273885	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	273526	2	38	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	273522	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	272177	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	270213	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	270297	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	270301	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	270302	1	19	5.2	5.0	✓
ORP by Electrode	E125	275374	1	18	5.5	5.0	✓
pH by Meter	E108	273884	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	270298	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	273642	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	273808	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	295152	2	39	5.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	273807	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	273318	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	272845	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	270335	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	273891	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	273886	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	273081	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	270299	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	270300	1	19	5.2	5.0	✓
Conductivity in Water	E100	273885	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	273526	2	38	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	273522	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	272177	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	270213	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	270297	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	270301	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	270302	1	19	5.2	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	275374	1	18	5.5	5.0	✔
pH by Meter	E108	273884	1	18	5.5	5.0	✔
Sulfate in Water by IC	E235.SO4	270298	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	273642	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	273808	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	295152	2	39	5.1	5.0	✔
Total Metals in Water by CRC ICPMS	E420	273807	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	273318	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	272845	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	273637	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	270335	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	273891	1	18	5.5	5.0	✔
Alkalinity Species by Titration	E290	273886	1	18	5.5	5.0	✔
Ammonia by Fluorescence	E298	273081	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	270299	1	19	5.2	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	270300	1	19	5.2	5.0	✔
Conductivity in Water	E100	273885	1	18	5.5	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	273526	2	38	5.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	273522	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	272177	1	16	6.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	270213	1	17	5.8	5.0	✔
Fluoride in Water by IC	E235.F	270297	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	270301	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	270302	1	19	5.2	5.0	✔
Sulfate in Water by IC	E235.SO4	270298	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	273642	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	273808	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	295152	2	39	5.1	5.0	✔
Total Metals in Water by CRC ICPMS	E420	273807	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	273318	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	272845	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	273637	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	270335	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	273081	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	270299	0	19	0.0	5.0	✖
Chloride in Water by IC (Low Level)	E235.Cl-L	270300	0	19	0.0	5.0	✖
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	273526	2	38	5.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	273522	1	20	5.0	5.0	✔



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	272177	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	270213	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	270297	0	20	0.0	5.0	*✗
Nitrate in Water by IC (Low Level)	E235.NO3-L	270301	0	19	0.0	5.0	*✗
Nitrite in Water by IC (Low Level)	E235.NO2-L	270302	0	19	0.0	5.0	*✗
Sulfate in Water by IC	E235.SO4	270298	0	20	0.0	5.0	*✗
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	273808	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	295152	2	39	5.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	273807	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	273318	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	272845	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Waterloo - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Waterloo - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2103387**

**Page** : 1 of 25

**Client** : Teck Coal Limited  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-08  
**Sampler** : KATIE PETERSON  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 18-Aug-2021 08:50  
**Date Analysis Commenced** : 18-Aug-2021  
**Issue Date** : 30-Sep-2021 11:12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruby Pham	Lab Assistant	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta





Page : 3 of 25  
Work Order : CG2103387  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 270335)</b>											
CG2103376-001	Anonymous	turbidity	----	E121	0.10	NTU	40.8	39.0	4.46%	15%	----
<b>Physical Tests (QC Lot: 273642)</b>											
CG2103385-005	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	163	161	2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 273884)</b>											
CG2103385-001	Anonymous	pH	----	E108	0.10	pH units	8.00	8.01	0.125%	4%	----
<b>Physical Tests (QC Lot: 273885)</b>											
CG2103385-001	Anonymous	conductivity	----	E100	2.0	µS/cm	737	736	0.136%	10%	----
<b>Physical Tests (QC Lot: 273886)</b>											
CG2103385-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	90.2	89.0	1.34%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	90.2	89.0	1.34%	20%	----
<b>Physical Tests (QC Lot: 273891)</b>											
CG2103385-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 275374)</b>											
CG2103385-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	368	363	1.31%	15%	----
<b>Anions and Nutrients (QC Lot: 270213)</b>											
CG2103387-001	FR_KB-10MW_WG_2021-08_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0012	0.0014	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 270297)</b>											
CG2103383-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.144	0.146	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 270298)</b>											
CG2103383-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	174	174	0.113%	20%	----
<b>Anions and Nutrients (QC Lot: 270299)</b>											
CG2103383-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 270300)</b>											
CG2103383-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.93	0.92	0.005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 270301)</b>											
CG2103383-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.747	0.746	0.134%	20%	----
<b>Anions and Nutrients (QC Lot: 270302)</b>											
CG2103383-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0029	0.0032	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 272845)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 272845) - continued</b>											
CG2103376-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0665	0.0653	1.78%	20%	----
<b>Anions and Nutrients (QC Lot: 273081)</b>											
CG2103385-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.241	0.243	0.950%	20%	----
<b>Anions and Nutrients (QC Lot: 295152)</b>											
CG2103371-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.449	0.514	0.065	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 300780)</b>											
RG2100547-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.00	mg/L	9.43	8.45	0.980	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 272177)</b>											
CG2103369-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.90	1.93	0.03	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 273318)</b>											
CG2103369-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.60	2.69	0.09	Diff <2x LOR	----
<b>Total Metals (QC Lot: 273807)</b>											
CG2103370-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.262	0.285	8.60%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00196	0.00196	0.445%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.343	0.341	0.446%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.057	0.056	0.0004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0502 µg/L	0.0000474	0.0000028	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	45.1	44.2	2.07%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.51 µg/L	0.00052	0.00001	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00081	0.00112	0.00030	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	2.08	2.13	2.40%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000340	0.000346	0.000006	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0302	0.0300	0.642%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	27.2	26.6	2.05%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.506	0.505	0.188%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00583	0.00595	2.04%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00190	0.00203	0.00012	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.87	2.89	0.638%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	0.614 µg/L	0.000639	4.10%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.77	3.82	1.41%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	11.7	11.9	1.81%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 273807) - continued</b>											
CG2103370-001	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	0.367	0.374	1.87%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	11.8	11.3	3.97%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000013	0.000012	0.000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00480	mg/L	<0.00480	0.00443	0.00037	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000257	0.000264	2.77%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00103	0.00108	0.00006	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0065	0.0064	0.0001	Diff <2x LOR	----
<b>Total Metals (QC Lot: 273808)</b>											
CG2103370-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00044	0.00048	0.00004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 273522)</b>											
CG2103363-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0057	0.0057	0.00002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00030	0.00028	0.00002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00011	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0128	0.0127	0.696%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.052	0.053	0.0005	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.000141	0.000124	12.4%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	128	130	1.14%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00078	0.00084	0.00006	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.594	0.604	1.67%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.00106	0.00106	0.231%	20%	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0294	0.0281	4.24%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	109	110	0.984%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0968	0.0971	0.303%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000765	0.000784	2.49%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0231	0.0234	1.26%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.00	2.98	0.503%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.0179	0.0192	7.03%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.50	2.50	0.106%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000017	0.000017	0.0000004	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	32.5	33.0	1.40%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.197	0.201	2.12%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 273522) - continued</b>											
CG2103363-002	Anonymous	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	193	198	2.28%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000037	0.000035	0.000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00522	0.00520	0.422%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0894	0.0912	2.03%	20%	----
<b>Dissolved Metals (QC Lot: 273525)</b>											
CG2103342-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0019	0.0018	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00052	0.00054	0.00002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00022	0.00025	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0429	0.0444	3.35%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.010	0.010	0.0001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0065 µg/L	0.0000077	0.0000013	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	157	160	2.14%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00033	0.00033	0.000004	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0171	0.0174	1.73%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	153	150	1.60%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00125	0.00127	1.73%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00175	0.00182	3.68%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00857	0.00878	2.43%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.73	2.74	0.412%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	141 µg/L	0.146	3.27%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.65	3.60	1.33%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.60	2.64	1.77%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.195	0.198	1.72%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	268	269	0.311%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 273525) - continued</b>											
CG2103342-001	Anonymous	titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00809	0.00870	7.21%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0039	0.0029	0.0009	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 273526)</b>											
CG2103342-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00010	<0.00010	0.000002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 273575)</b>											
CG2103368-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0017	0.0016	0.00008	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00018	0.00017	0.000005	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00043	0.00045	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0514	0.0522	1.54%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.015	0.015	0.0004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0139 µg/L	0.0000117	0.0000022	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	236	231	2.13%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.99 µg/L	0.00098	0.00001	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.013	0.013	0.0002	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0281	0.0276	2.07%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	150	149	0.590%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0531	0.0530	0.129%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00145	0.00141	3.24%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00390	0.00386	0.00004	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.29	3.32	0.932%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	136 µg/L	0.133	2.35%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.51	3.48	0.958%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.00	3.91	2.30%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.258	0.259	0.481%	20%	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	264	259	1.93%	20%	----		
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----		
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----		
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----		

Page : 9 of 25  
 Work Order : CG2103387  
 Client : Teck Coal Limited  
 Project : FORDING RIVER OPERATIONS



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 273575) - continued</b>											
CG2103368-008	Anonymous	uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00849	0.00852	0.369%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0017	0.0017	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 273576)</b>											
CG2103368-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 270335)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 273637)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 273642)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 273885)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 273886)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 273891)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 270213)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 270297)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 270298)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 270299)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 270300)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 270301)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 270302)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 272845)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 273081)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 295152)</b>						





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 295152) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 300780)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 272177)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 273318)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 273807)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 273807) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 273808)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 273522)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 273522) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 273525)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 273526)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 273575)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 273575) - continued</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 273576)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 270335)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	97.5	85.0	115	---
<b>Physical Tests (QCLot: 273637)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	88.8	85.0	115	---
<b>Physical Tests (QCLot: 273642)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.9	85.0	115	---
<b>Physical Tests (QCLot: 273884)</b>									
pH	---	E108	---	pH units	7 pH units	101	98.6	101	---
<b>Physical Tests (QCLot: 273885)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.4	90.0	110	---
<b>Physical Tests (QCLot: 273886)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	99.8	85.0	115	---
<b>Physical Tests (QCLot: 273891)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	97.1	85.0	115	---
<b>Physical Tests (QCLot: 275374)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 270213)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 270297)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	93.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 270298)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 270299)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 270300)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 270301)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 270302)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 272845)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 273081)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 273081) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.2	85.0	115	----
<b>Anions and Nutrients (QCLot: 295152)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 300780)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	106	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 272177)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	104	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 273318)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	99.6	80.0	120	----
<b>Total Metals (QCLot: 273807)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.6	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	99.0	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.7	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.8	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.9	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.3	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	102	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	112	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 273807) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.5	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 273808)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 273522)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.2	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	105	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	107	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.5	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	102	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 273522) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.0	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 273525)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.1	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.0	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.1	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.1	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.3	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.1	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.1	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.6	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.3	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.2	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	89.3	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.5	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.7	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.3	80.0	120	----
<b>Dissolved Metals (QCLot: 273526)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 273526) - continued</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.6	80.0	120	----
<b>Dissolved Metals (QCLot: 273575)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	94.7	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.7	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	93.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.9	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.5	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	92.2	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	94.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.9	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	97.3	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.5	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	91.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	97.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 273576)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 270213)</b>										
CG2103387-002	FR_KB-12PW_WG_2021-08_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0524 mg/L	0.05 mg/L	105	70.0	130	----
<b>Anions and Nutrients (QCLot: 272845)</b>										
CG2103376-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0573 mg/L	0.0676 mg/L	84.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 273081)</b>										
CG2103387-004	FR_TRP2_WG_2021-08_NP	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 295152)</b>										
CG2103371-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.61 mg/L	2.5 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 300780)</b>										
RG2100547-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	ND mg/L	2.5 mg/L	ND	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 272177)</b>										
CG2103369-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.6 mg/L	23.9 mg/L	103	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 273318)</b>										
CG2103369-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.9 mg/L	23.9 mg/L	104	70.0	130	----
<b>Total Metals (QCLot: 273807)</b>										
CG2103370-002	Anonymous	antimony, total	7440-36-0	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00921 mg/L	0.01 mg/L	92.1	70.0	130	----
		boron, total	7440-42-8	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00398 mg/L	0.004 mg/L	99.4	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		copper, total	7440-50-8	E420	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		iron, total	7439-89-6	E420	2.01 mg/L	2 mg/L	100	70.0	130	----
		lead, total	7439-92-1	E420	0.0189 mg/L	0.02 mg/L	94.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0942 mg/L	0.1 mg/L	94.2	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 273807) - continued</b>										
CG2103370-002	Anonymous	manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, total	7440-02-0	E420	0.0382 mg/L	0.04 mg/L	95.6	70.0	130	----
		potassium, total	7440-09-7	E420	4.10 mg/L	4 mg/L	103	70.0	130	----
		selenium, total	7782-49-2	E420	0.0453 mg/L	0.04 mg/L	113	70.0	130	----
		silicon, total	7440-21-3	E420	9.47 mg/L	10 mg/L	94.7	70.0	130	----
		silver, total	7440-22-4	E420	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	21.6 mg/L	20 mg/L	108	70.0	130	----
		thallium, total	7440-28-0	E420	0.00376 mg/L	0.004 mg/L	93.9	70.0	130	----
		tin, total	7440-31-5	E420	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		titanium, total	7440-32-6	E420	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, total	7440-61-1	E420	0.00413 mg/L	0.004 mg/L	103	70.0	130	----
		vanadium, total	7440-62-2	E420	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		zinc, total	7440-66-6	E420	0.413 mg/L	0.4 mg/L	103	70.0	130	----
<b>Total Metals (QCLot: 273808)</b>										
CG2103370-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 273522)</b>										
CG2103363-003	Anonymous	aluminum, dissolved	7429-90-5	E421	1.76 mg/L	2 mg/L	87.8	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.189 mg/L	0.2 mg/L	94.4	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.180 mg/L	0.2 mg/L	89.8	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.174 mg/L	0.2 mg/L	87.0	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.324 mg/L	0.4 mg/L	80.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0858 mg/L	0.1 mg/L	85.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.846 mg/L	1 mg/L	84.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0365 mg/L	0.04 mg/L	91.2	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.182 mg/L	0.2 mg/L	91.3	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.184 mg/L	0.2 mg/L	91.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	17.6 mg/L	20 mg/L	88.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.175 mg/L	0.2 mg/L	87.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.807 mg/L	1 mg/L	80.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.188 mg/L	0.2 mg/L	94.2	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.178 mg/L	0.2 mg/L	89.2	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 273522) - continued</b>										
CG2103363-003	Anonymous	nickel, dissolved	7440-02-0	E421	0.363 mg/L	0.4 mg/L	90.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	36.6 mg/L	40 mg/L	91.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.362 mg/L	0.4 mg/L	90.6	70.0	130	----
		silicon, dissolved	7440-21-3	E421	85.7 mg/L	100 mg/L	85.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0362 mg/L	0.04 mg/L	90.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	157 mg/L	200 mg/L	78.3	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0346 mg/L	0.04 mg/L	86.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.181 mg/L	0.2 mg/L	90.7	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.373 mg/L	0.4 mg/L	93.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0356 mg/L	0.04 mg/L	89.1	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.921 mg/L	1 mg/L	92.1	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.72 mg/L	4 mg/L	92.9	70.0	130	----
<b>Dissolved Metals (QCLot: 273525)</b>										
CG2103345-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.377 mg/L	0.4 mg/L	94.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0745 mg/L	0.08 mg/L	93.1	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0174 mg/L	0.02 mg/L	86.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.186 mg/L	0.2 mg/L	93.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00768 mg/L	0.008 mg/L	96.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0352 mg/L	0.04 mg/L	88.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.93 mg/L	4 mg/L	98.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0366 mg/L	0.04 mg/L	91.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0920 mg/L	0.08 mg/L	115	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.4 mg/L	20 mg/L	91.9	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 273525) - continued</b>										
CG2103345-001	Anonymous	silver, dissolved	7440-22-4	E421	0.00751 mg/L	0.008 mg/L	93.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00725 mg/L	0.008 mg/L	90.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0819 mg/L	0.08 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.750 mg/L	0.8 mg/L	93.8	70.0	130	----
<b>Dissolved Metals (QCLot: 273526)</b>										
CG2103345-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0784 mg/L	0.08 mg/L	98.0	70.0	130	----
<b>Dissolved Metals (QCLot: 273575)</b>										
CG2103368-009	Anonymous	aluminum, dissolved	7429-90-5	E421	0.376 mg/L	0.4 mg/L	94.0	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0763 mg/L	0.08 mg/L	95.3	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0182 mg/L	0.02 mg/L	90.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.188 mg/L	0.2 mg/L	93.9	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00768 mg/L	0.008 mg/L	96.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0372 mg/L	0.04 mg/L	93.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0368 mg/L	0.04 mg/L	92.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.81 mg/L	4 mg/L	95.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0372 mg/L	0.04 mg/L	93.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.193 mg/L	0.2 mg/L	96.4	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0726 mg/L	0.08 mg/L	90.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	7.91 mg/L	8 mg/L	98.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0860 mg/L	0.08 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.8 mg/L	20 mg/L	94.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00779 mg/L	0.008 mg/L	97.4	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----

Page : 25 of 25  
 Work Order : CG2103387  
 Client : Teck Coal Limited  
 Project : FORDING RIVER OPERATIONS



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 273575) - continued</b>										
CG2103368-009	Anonymous	strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00755 mg/L	0.008 mg/L	94.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0795 mg/L	0.08 mg/L	99.4	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.199 mg/L	0.2 mg/L	99.4	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.786 mg/L	0.8 mg/L	98.2	70.0	130	----
<b>Dissolved Metals (QCLot: 273576)</b>										
CG2103368-009	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0785 mg/L	0.08 mg/L	98.1	70.0	130	----



COC ID: QTR\_KC\_GW\_2021-06

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job# Fording River Operations
Project Manager Paul Dore
Email Paul.Dore@teck.com
Address Suite 1000, 205 - 9th Ave S.E.
City Calgary Province AB Country Canada

Lab Name ALS Calgary
Lab Contact Lyudmyla Shvets
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16 T2G 0R3

Phone Number 403 407 1794

PO number VPO00765458

Environmental Division
Calgary
Work Order Reference
CG2103387



Telephone : +1 403 407 1800

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Table with columns: Sample ID, Sample Location, Field Matrix, Hazardous Material, Date, Time, G=Grab, C=Com, # Of Cont., ANALYSIS (TECK COAL ROUTINE, TOC/TKN/Nutrients, etc.), PRESERV. (NONE, H2SO4, HNO3)

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

\*All samples field filtered and preserved as required.

SERVICE REQUEST (rush - subject to availability)

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

Kate Peterko

Mobile #

250 946 8029

Sampler's Signature

Date/Time

2021/08/17

Handwritten circled number 19





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2103475**  
**Client** : **Teck Coal Limited**  
**Contact** : Thais Lamana  
**Address** : Fording River Operations PO BOX 100  
Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00694031  
**C-O-C number** : 8/20/2021  
**Sampler** : Hanna Whiting  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Page** : 1 of 3  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Aug-2021 08:30  
**Date Analysis Commenced** : 01-Sep-2021  
**Issue Date** : 10-Sep-2021 10:40

---

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

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**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
µg/L	micrograms per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

CG2103475-001 and -002 : Samples were analyzed passed hold time.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-SK1A_QTR_2021-07-05_N	FR_MW-SK1B_QTR_2021-07-05_N	FR_KB-1_QTR_2021-07-05_NP	FR_KB-2_QTR_2021-07-05_NP	FR_KB-3A_QTR_2021-07-05_NP
Client sampling date / time					28-Jul-2021 13:52	28-Jul-2021 13:36	10-Aug-2021 08:40	13-Aug-2021 12:15	13-Aug-2021 08:40	
Analyte	CAS Number	Method	LOR	Unit	CG2103475-001	CG2103475-002	CG2103475-003	CG2103475-004	CG2103475-005	
					Result	Result	Result	Result	Result	
<b>Speciated Metals</b>										
selenium species, unknown	----	E540	0.20	µg/L	<0.60 <sup>DLA</sup>	<0.20	<1.00 <sup>DLA</sup>	<1.00 <sup>DLA</sup>	<1.00 <sup>DLA</sup>	
selenium, hexavalent [Se VI]	----	E540	0.10	µg/L	148	8.48	152	151	211	
selenium, tetravalent [Se IV]	----	E540	0.10	µg/L	<0.30 <sup>DLA</sup>	1.19	<0.50 <sup>DLA</sup>	<0.50 <sup>DLA</sup>	0.75	
selenocyanate [SeCN], as Se	3425-46-5	E540	0.10	µg/L	<0.30 <sup>DLA</sup>	<0.10	<0.50 <sup>DLA</sup>	<0.50 <sup>DLA</sup>	<0.50 <sup>DLA</sup>	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-3B_QTR_2021-07-05_NP	----	----	----	----
Client sampling date / time					13-Aug-2021 10:10	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103475-006	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Speciated Metals</b>										
selenium species, unknown	----	E540	0.20	µg/L	<1.00 <sup>DLA</sup>	----	----	----	----	
selenium, hexavalent [Se VI]	----	E540	0.10	µg/L	173	----	----	----	----	
selenium, tetravalent [Se IV]	----	E540	0.10	µg/L	<0.50 <sup>DLA</sup>	----	----	----	----	
selenocyanate [SeCN], as Se	3425-46-5	E540	0.10	µg/L	<0.50 <sup>DLA</sup>	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103475</b>	Page	: 1 of 4
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Thais Lamana	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 21-Aug-2021 08:30
PO	: VPO00694031	Issue Date	: 10-Sep-2021 10:40
C-O-C number	: 8/20/2021		
Sampler	: Hanna Whiting		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Speciated Metals : Selenium Species (SeIV, SeVI,SeCN) in Water by HPLC-ICPMS</b>											
<b>Opaque HDPE-unpreserved</b> FR_KB-2_QTR_2021-07-05_NP	E540	13-Aug-2021	01-Sep-2021	----	----		01-Sep-2021	30 days	19 days	✓	
<b>Speciated Metals : Selenium Species (SeIV, SeVI,SeCN) in Water by HPLC-ICPMS</b>											
<b>Opaque HDPE-unpreserved</b> FR_KB-3A_QTR_2021-07-05_NP	E540	13-Aug-2021	01-Sep-2021	----	----		01-Sep-2021	30 days	19 days	✓	
<b>Speciated Metals : Selenium Species (SeIV, SeVI,SeCN) in Water by HPLC-ICPMS</b>											
<b>Opaque HDPE-unpreserved</b> FR_KB-3B_QTR_2021-07-05_NP	E540	13-Aug-2021	01-Sep-2021	----	----		01-Sep-2021	30 days	19 days	✓	
<b>Speciated Metals : Selenium Species (SeIV, SeVI,SeCN) in Water by HPLC-ICPMS</b>											
<b>Opaque HDPE-unpreserved</b> FR_KB-1_QTR_2021-07-05_NP	E540	10-Aug-2021	01-Sep-2021	----	----		01-Sep-2021	30 days	22 days	✓	
<b>Speciated Metals : Selenium Species (SeIV, SeVI,SeCN) in Water by HPLC-ICPMS</b>											
<b>Opaque HDPE-unpreserved</b> FR_MW-SK1A_QTR_2021-07-05_N	E540	28-Jul-2021	01-Sep-2021	----	----		01-Sep-2021	30 days	35 days	* EHT	
<b>Speciated Metals : Selenium Species (SeIV, SeVI,SeCN) in Water by HPLC-ICPMS</b>											
<b>Opaque HDPE-unpreserved</b> FR_MW-SK1B_QTR_2021-07-05_N	E540	28-Jul-2021	01-Sep-2021	----	----		01-Sep-2021	30 days	35 days	* EHT	

### Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Selenium Species (SeIV, SeVI, SeCN) in Water by HPLC-ICPMS	E540	281784	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Selenium Species (SeIV, SeVI, SeCN) in Water by HPLC-ICPMS	E540	281784	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Selenium Species (SeIV, SeVI, SeCN) in Water by HPLC-ICPMS	E540	281784	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Selenium Species (SeIV, SeVI, SeCN) in Water by HPLC-ICPMS	E540	281784	0	20	0.0	5.0	✖



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Selenium Species (SeIV, SeVI, SeCN) in Water by HPLC-ICPMS	E540  Vancouver - Environmental	Water	Miekeley Spect. Acta B 60 (2005) 633-641	Instrumental analysis of Speciated Selenium (Se) is by Anion Exchange HPLC-ICPMS. Species quantified are Selenite (SeIV), Selenate (VI) and Selenocyanate (SeCN). Field filtration is recommended. Reported Total Unknown Se Species is semi-quantitative in nature and consists of a sum of all the unidentified Selenium peaks observed in the chromatogram. This included SeMet, MeSe, and DMSeO unless separately requested for identification and quantification. Undetectable unknown species indicates these other species are not present in the sample.
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Selenium Species Preparation	EP540  Vancouver - Environmental	Water	Miekeley Spect. Acta B 60 (2005) 633-641	Instrumental analysis of Speciated Selenium (Se) is by Anion Exchange HPLC-ICPMS. Species quantified are Selenite (SeIV), Selenate (VI) and Selenocyanate (SeCN). Field filtration is recommended. Reported Total Unknown Se Species is semi-quantitative in nature and consists of a sum of all the unknown peaks observed in the chromatogram.

## QUALITY CONTROL REPORT

**Work Order** : **CG2103475**

**Page** : 1 of 3

**Client** : Teck Coal Limited  
**Contact** : Thais Lamana  
**Address** : Fording River Operations PO BOX 100  
                   Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00694031  
**C-O-C number** : 8/20/2021  
**Sampler** : Hanna Whiting  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Aug-2021 08:30  
**Date Analysis Commenced** : 01-Sep-2021  
**Issue Date** : 10-Sep-2021 10:40

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia





## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO = Data Quality Objective.
- LOR = Limit of Reporting (detection limit).
- RPD = Relative Percentage Difference
- # = Indicates a QC result that did not meet the ALS DQO.

## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Speciated Metals (QC Lot: 281784)</b>											
CG2103475-001	FR_MW-SK1A_QTR_2021-07-05_N	selenium species, unknown	----	E540	0.60	µg/L	<0.60	<0.60	0	Diff <2x LOR	----
		selenium, hexavalent [Se VI]	----	E540	0.30	µg/L	148	146	0.683%	20%	----
		selenium, tetravalent [Se IV]	----	E540	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		selenocyanate [SeCN], as Se	3425-46-5	E540	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Speciated Metals (QCLot: 281784)</b>						
selenium species, unknown	----	E540	0.2	µg/L	<0.20	----
selenium, hexavalent [Se VI]	----	E540	0.1	µg/L	<0.10	----
selenium, tetravalent [Se IV]	----	E540	0.1	µg/L	<0.10	----
selenocyanate [SeCN], as Se	3425-46-5	E540	0.1	µg/L	<0.10	----



### Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Speciated Metals (QCLot: 281784)</b>									
selenium, hexavalent [Se VI]	----	E540	0.1	µg/L	10 µg/L	102	80.0	120	----
selenium, tetravalent [Se IV]	----	E540	0.1	µg/L	10 µg/L	102	80.0	120	----
selenocyanate [SeCN], as Se	3425-46-5	E540	0.1	µg/L	10 µg/L	98.1	80.0	120	----

# Teck

COC ID: 8/20/2021		TURNAROUND TIME: Routine			RUSH: NONE						
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Thais Lamana			Lab Contact	Lyudmyla Shvets		Email 1:	thais.lamana@teck.com	X	X	X
Email	thais.lamana@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	scott.roughead@teck.com	X	X	X
Address	PO Box 1777			Address	2559 29 Street NE		Email 3:	david.burroughs@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equisonline.com		X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00694031		
Phone Number	1 250 425 7335			Phone Number	403 407 1794						

SAMPLE DETAILS								ANALYSIS REQUESTED			
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	SELENIUM	SPECIATION	OTHER
FR_MW-SK1A_QTR_2021-07-05_N	FR_MW-SK1A	WG	NO	2021/07/28	13:52	G	1				
FR_MW-SK1B_QTR_2021-07-05_N	FR_MW-SK1B	WG	NO	2021/07/28	13:36	G	1				
FR_KB-1_QTR_2021-07-05_NP	FR_KB-1	WG	NO	2021/08/10	8:40	G	1				
FR_KB-2_QTR_2021-07-05_NP	FR_KB-2	WG	NO	2021/08/13	12:15	G	1				
FR_KB-3A_QTR_2021-07-05_NP	FR_KB-3A	WG	NO	2021/08/13	8:40	G	1				
FR_KB-3B_QTR_2021-07-05_NP	FR_KB-3B	WG	NO	2021/08/13	10:10	G	1				

Environmental Division  
Calgary  
Work Order Reference  
**CG2103475**



Telephone : + 1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
CG 2103475	Hanna Whiting	August 20, 2021	<i>[Signature]</i>	21/08/2021

SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name	Hanna Whiting		Mobile #	250 425 5999
Sampler's Signature	<i>HANNA</i>		Date/Time	Hanna Whiting

19

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103639**  
**Client** : **Teck Coal Limited**  
**Contact** : Cameron Griffin  
**Address** : Fording River Operations PO BOX 100  
                   Elkford BC Canada V0B 1H0  
**Telephone** : 250 425 8746  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00769061  
**C-O-C number** : EC\_PC\_GW\_2021-08-26  
**Sampler** : KP  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 8  
**No. of samples analysed** : 8

**Page** : 1 of 11  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-Aug-2021 09:00  
**Date Analysis Commenced** : 27-Aug-2021  
**Issue Date** : 30-Sep-2021 11:36

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					FR_MW-EC1A_ EC-PC_WG_202 1-08-26	FR_MW-EC1B_ EC-PC_WG_202 1-08-26	FR_MW-EC2A_ EC-PC_WG_202 1-08-26	FR_MW-EC2B_ EC-PC_WG_202 1-08-26	FR_MW-EC3A_ EC-PC_WG_202 1-08-26
Client sampling date / time					26-Aug-2021 09:30	26-Aug-2021 08:20	26-Aug-2021 12:00	26-Aug-2021 10:35	26-Aug-2021 12:55
Analyte	CAS Number	Method	LOR	Unit	CG2103639-001	CG2103639-002	CG2103639-003	CG2103639-004	CG2103639-005
					Result	Result	Result	Result	Result
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	6.1	<2.0	<2.0	14.3
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	174	312	156	151	465
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	174	312	156	151	465
conductivity	----	E100	2.0	µS/cm	379	2680	637	603	3370
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	189	1800	337	328	2530
oxidation-reduction potential [ORP]	----	E125	0.10	mV	319	308	431	439	454
pH	----	E108	0.10	pH units	8.21	8.03	8.14	8.09	7.99
solids, total dissolved [TDS]	----	E162	10	mg/L	228	2520	434	417	3160
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	2.2	<1.0	<1.0	<1.0
turbidity	----	E121	0.10	NTU	0.44	0.26	0.28	<0.10	0.17
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	212	380	190	184	568
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0389	<0.0050	0.0053	<0.0050	0.0122
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.250 <sup>DLDS</sup>	<0.050	<0.050	<0.500 <sup>DLDS</sup>
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.05	11.3	0.44	0.37	10.7
fluoride	16984-48-8	E235.F	0.020	mg/L	0.505	0.108	0.159	0.168	<0.200 <sup>DLDS</sup>
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.057	0.336 <sup>TKNI</sup>	0.317 <sup>TKNI</sup>	0.370 <sup>TKNI</sup>	0.291 <sup>TKNI</sup>
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0413	27.9	9.69	9.20	41.4
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0028	0.0842	0.0390	<0.0010	<0.0100 <sup>DLDS</sup>
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0027	0.0054	0.0016	0.0021	0.0167
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0050	<0.0020	<0.0020	0.0150 <sup>RRV</sup>
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	27.9	1520	158	146	1940
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	1.79	0.78	2.24	3.54
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	1.76	0.65	1.88	3.15



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC1A_ EC-PC_WG_202 1-08-26	FR_MW-EC1B_ EC-PC_WG_202 1-08-26	FR_MW-EC2A_ EC-PC_WG_202 1-08-26	FR_MW-EC2B_ EC-PC_WG_202 1-08-26	FR_MW-EC3A_ EC-PC_WG_202 1-08-26
Client sampling date / time					26-Aug-2021 09:30	26-Aug-2021 08:20	26-Aug-2021 12:00	26-Aug-2021 10:35	26-Aug-2021 12:55	
Analyte	CAS Number	Method	LOR	Unit	CG2103639-001	CG2103639-002	CG2103639-003	CG2103639-004	CG2103639-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.14	40.2	7.12	6.73	52.9	
cation sum	----	EC101	0.10	meq/L	4.19	36.8	7.02	6.67	51.4	
ion balance (cations/anions ratio)	----	EC101	0.010	%	101	91.5	98.6	99.1	97.2	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.600	4.42	0.707	0.448	1.44	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0051	0.0097	0.0053	<0.0030	<0.0060 <sup>DLA</sup>	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	0.00069	0.00044	0.00023	0.00055	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00036	0.00026	0.00020	0.00013	0.00028	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0674	0.0410	0.0417	0.0615	0.0311	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.040 <sup>DLA</sup>	<0.020	<0.020	<0.040 <sup>DLA</sup>	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	
boron, total	7440-42-8	E420	0.010	mg/L	0.057	0.046	0.012	0.012	0.027	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	0.285	0.0244	0.0212	0.381	
calcium, total	7440-70-2	E420	0.050	mg/L	42.9	294	82.9	82.3	434	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	0.00014	0.00015	<0.00020 <sup>DLA</sup>	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.16	<0.20 <sup>DLA</sup>	<0.10	<0.10	<0.20 <sup>DLA</sup>	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>	
iron, total	7439-89-6	E420	0.010	mg/L	0.064	<0.020 <sup>DLA</sup>	<0.010	<0.010	<0.020 <sup>DLA</sup>	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0154	0.124	0.0294	0.0332	0.138	
magnesium, total	7439-95-4	E420	0.0050	mg/L	20.5	291	29.1	29.8	369	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.358	0.383	0.00168	0.00029	0.0109	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00516	0.00621	0.00616	0.00145	0.00269	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.0238	0.00130	<0.00050	0.00976	
potassium, total	7440-09-7	E420	0.050	mg/L	0.760	6.11	1.38	1.64	6.33	
selenium, total	7782-49-2	E420	0.050	µg/L	0.422	279	29.8	29.9	376	
silicon, total	7440-21-3	E420	0.10	mg/L	4.18	2.44	2.29	2.19	2.93	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>	
sodium, total	17341-25-2	E420	0.050	mg/L	8.90	16.0	5.61	1.41	16.8	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.192	0.384	0.149	0.131	0.366	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC1A_ EC-PC_WG_202 1-08-26	FR_MW-EC1B_ EC-PC_WG_202 1-08-26	FR_MW-EC2A_ EC-PC_WG_202 1-08-26	FR_MW-EC2B_ EC-PC_WG_202 1-08-26	FR_MW-EC3A_ EC-PC_WG_202 1-08-26
Client sampling date / time					26-Aug-2021 09:30	26-Aug-2021 08:20	26-Aug-2021 12:00	26-Aug-2021 10:35	26-Aug-2021 12:55	
Analyte	CAS Number	Method	LOR	Unit	CG2103639-001 Result	CG2103639-002 Result	CG2103639-003 Result	CG2103639-004 Result	CG2103639-005 Result	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	10.0	566	56.7	52.4	717	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000020	0.000048	0.000023	<0.000010	0.000051	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	<0.00060 <sup>DLA</sup>	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000894	0.0208	0.00211	0.00182	0.0330	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0060 <sup>DLA</sup>	<0.0030	<0.0030	<0.0060 <sup>DLA</sup>	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0022	0.0025	0.0012	0.0012	0.0024	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00058	0.00042	0.00021	0.00050	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00030	<0.00020 <sup>DLA</sup>	0.00012	<0.00010	<0.00020 <sup>DLA</sup>	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0685	0.0376	0.0416	0.0649	0.0297	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.040 <sup>DLA</sup>	<0.020	<0.020	<0.040 <sup>DLA</sup>	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.055	0.043	0.011	0.011	0.028	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.264	0.0251	0.0211	0.322	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	42.2	276	85.3	82.2	433	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	0.00011	<0.00020 <sup>DLA</sup>	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.16	<0.20 <sup>DLA</sup>	<0.10	<0.10	<0.20 <sup>DLA</sup>	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00040 <sup>DLA</sup>	0.00024	<0.00020	<0.00040 <sup>DLA</sup>	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.056	<0.020 <sup>DLA</sup>	<0.010	<0.010	<0.020 <sup>DLA</sup>	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0158	0.124	0.0309	0.0355	0.135	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	20.3	271	30.1	29.9	352	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.358	0.355	0.00161	0.00031	0.0110	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00520	0.00554	0.00613	0.00136	0.00253	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.0216	0.00129	<0.00050	0.00936	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.740	5.67	1.40	1.64	5.97	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.215	249	29.9	32.3	330	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.95	2.08	2.11	2.14	2.73	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC1A_ EC-PC_WG_202 1-08-26	FR_MW-EC1B_ EC-PC_WG_202 1-08-26	FR_MW-EC2A_ EC-PC_WG_202 1-08-26	FR_MW-EC2B_ EC-PC_WG_202 1-08-26	FR_MW-EC3A_ EC-PC_WG_202 1-08-26
Client sampling date / time					26-Aug-2021 09:30	26-Aug-2021 08:20	26-Aug-2021 12:00	26-Aug-2021 10:35	26-Aug-2021 12:55	
Analyte	CAS Number	Method	LOR	Unit	CG2103639-001 Result	CG2103639-002 Result	CG2103639-003 Result	CG2103639-004 Result	CG2103639-005 Result	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	8.66	14.6	5.90	1.47	15.9	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.196	0.350	0.153	0.130	0.373	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	8.22	466	47.6	46.9	685	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000016	0.000039	0.000019	<0.000010	0.000046	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	<0.00060 <sup>DLA</sup>	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000827	0.0192	0.00187	0.00174	0.0319	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0052	0.0012	<0.0010	0.0052	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC3B_ EC-PC_WG_202 1-08-26	FR_DC1_EC-PC _WG_2021-08_ NP	FR_FLD1_EC-P C_WG_2021-08 _NP	----	----
Client sampling date / time					26-Aug-2021 14:00	26-Aug-2021 09:35	26-Aug-2021 09:40	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103639-006	CG2103639-007	CG2103639-008	-----	-----	
					Result	Result	Result	----	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	15.1	<2.0	<2.0	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	461	179	<1.0	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	461	179	<1.0	----	----	
conductivity	----	E100	2.0	µS/cm	3380	385	<2.0	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	2330	199	<0.50	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	445	264	467	----	----	
pH	----	E108	0.10	pH units	7.89	8.23	5.41	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	3090	230	<10	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.5	<1.0	<1.0	----	----	
turbidity	----	E121	0.10	NTU	1.94	0.45	<0.10	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	562	218	<1.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0091	0.0350	0.0181 <sup>RRV</sup>	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.500 <sup>DLDS</sup>	<0.050	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	10.6	1.99	<0.10	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.200 <sup>DLDS</sup>	0.529	<0.020	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.403 <sup>TKNI</sup>	<0.050	<0.050	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	43.2	0.0465	<0.0050	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0100 <sup>DLDS</sup>	0.0042	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0278	0.0026	<0.0010	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0276 <sup>DLM</sup>	<0.0020	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1920	28.7	<0.30	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.62	<0.50	<0.50	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.18	<0.50	<0.50	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC3B_ EC-PC_WG_202 1-08-26	FR_DC1_EC-PC _WG_2021-08_ NP	FR_FLD1_EC-P C_WG_2021-08 _NP	----	----
Client sampling date / time					26-Aug-2021 14:00	26-Aug-2021 09:35	26-Aug-2021 09:40	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103639-006	CG2103639-007	CG2103639-008	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	52.6	4.26	<0.10	----	----	
cation sum	----	EC101	0.10	meq/L	47.3	4.38	<0.10	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	89.9	103	100 <sup>RRV</sup>	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.30	1.39	<0.010	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0358	0.0070	<0.0030	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00045	<0.00010	<0.00010	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00036	0.00039	<0.00010	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0315	0.0699	<0.00010	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.031	0.057	<0.010	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.619	<0.0050	<0.0050	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	438	44.2	<0.050	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.20 <sup>DLA</sup>	0.15	<0.10	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.058	0.067	<0.010	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.153	0.0162	<0.0010	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	368	20.8	<0.0050	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00293	0.353	<0.00010	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00216	0.00555	<0.000050	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0213	<0.00050	<0.00050	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	6.65	0.759	<0.050	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	374	0.356	<0.050	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	3.06	4.30	<0.10	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	16.7	8.88	<0.050	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.374	0.207	<0.00020	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC3B_ EC-PC_WG_202 1-08-26	FR_DC1_EC-PC _WG_2021-08_ NP	FR_FLD1_EC-P C_WG_2021-08 _NP	----	----
Client sampling date / time					26-Aug-2021 14:00	26-Aug-2021 09:35	26-Aug-2021 09:40	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103639-006 Result	CG2103639-007 Result	CG2103639-008 Result	----- ----	----- ----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	686	9.88	<0.50	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000020	0.000020	<0.000010	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00120 <sup>DLM</sup>	<0.00030	<0.00030	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.0315	0.000929	<0.000010	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0180	<0.0030	<0.0030	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0035	0.0021	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00036	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00033	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0270	0.0758	<0.00010	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.029	0.054	<0.010	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.560	<0.0050	<0.0050	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	396	44.0	<0.050	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	0.16	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	<0.00020	<0.00020	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.020 <sup>DLA</sup>	0.053	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.129	0.0156	<0.0010	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	325	21.6	<0.0050	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00034	0.358	<0.00010	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00196	0.00509	<0.000050	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0190	<0.00050	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.95	0.747	<0.050	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	349	0.242	<0.050	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.56	4.08	<0.050	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC3B_ EC-PC_WG_202 1-08-26	FR_DC1_EC-PC _WG_2021-08_ NP	FR_FLD1_EC-P C_WG_2021-08 _NP	----	----
Client sampling date / time					26-Aug-2021 14:00	26-Aug-2021 09:35	26-Aug-2021 09:40	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103639-006	CG2103639-007	CG2103639-008	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	14.8	8.61	<0.050	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.339	0.203	<0.00020	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	589	9.26	<0.50	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	0.000017	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0279	0.000810	<0.000010	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0157	<0.0010	<0.0010	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103639</b>	Page	: 1 of 29
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cameron Griffin	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 8746	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 27-Aug-2021 09:00
PO	: VPO00769061	Issue Date	: 30-Sep-2021 11:36
C-O-C number	: EC_PC_GW_2021-08-26		
Sampler	: KP		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_DC1_EC-PC_WG_2021-08_NP	E298	26-Aug-2021	01-Sep-2021	----	----		01-Sep-2021	28 days	6 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_EC-PC_WG_2021-08_NP	E298	26-Aug-2021	01-Sep-2021	----	----		01-Sep-2021	28 days	6 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E298	26-Aug-2021	01-Sep-2021	----	----		01-Sep-2021	28 days	6 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E298	26-Aug-2021	01-Sep-2021	----	----		01-Sep-2021	28 days	6 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC2A_EC-PC_WG_2021-08-26	E298	26-Aug-2021	01-Sep-2021	----	----		01-Sep-2021	28 days	6 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-08-26	E298	26-Aug-2021	01-Sep-2021	----	----		01-Sep-2021	28 days	6 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-08-26	E298	26-Aug-2021	01-Sep-2021	----	----		01-Sep-2021	28 days	6 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
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<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E298	26-Aug-2021	01-Sep-2021	----	----		01-Sep-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC1_EC-PC_WG_2021-08_NP	E235.Br-L	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_FLD1_EC-PC_WG_2021-08_NP	E235.Br-L	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E235.Br-L	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E235.Br-L	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
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<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC3A_EC-PC_WG_2021-08-26	E235.Br-L	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E235.Br-L	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_DC1_EC-PC_WG_2021-08_NP	E235.CI-L	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_FLD1_EC-PC_WG_2021-08_NP	E235.CI-L	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_MW-EC1A_EC-PC_WG_2021-08-26	E235.CI-L	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
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HDPE FR_MW-EC1B_EC-PC_WG_2021-08-26	E235.CI-L	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_MW-EC2A_EC-PC_WG_2021-08-26	E235.CI-L	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_MW-EC2B_EC-PC_WG_2021-08-26	E235.CI-L	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_MW-EC3A_EC-PC_WG_2021-08-26	E235.CI-L	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_MW-EC3B_EC-PC_WG_2021-08-26	E235.CI-L	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_DC1_EC-PC_WG_2021-08_NP	E378-U	26-Aug-2021	----	----	----		27-Aug-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_FLD1_EC-PC_WG_2021-08_NP	E378-U	26-Aug-2021	----	----	----		27-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_MW-EC1A_EC-PC_WG_2021-08-26	E378-U	26-Aug-2021	----	----	----		27-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_MW-EC1B_EC-PC_WG_2021-08-26	E378-U	26-Aug-2021	----	----	----		27-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_MW-EC2A_EC-PC_WG_2021-08-26	E378-U	26-Aug-2021	----	----	----		27-Aug-2021	3 days	1 days	✓	
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HDPE FR_MW-EC2B_EC-PC_WG_2021-08-26	E378-U	26-Aug-2021	----	----	----		27-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_MW-EC3A_EC-PC_WG_2021-08-26	E378-U	26-Aug-2021	----	----	----		27-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_MW-EC3B_EC-PC_WG_2021-08-26	E378-U	26-Aug-2021	----	----	----		27-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_DC1_EC-PC_WG_2021-08_NP	E235.F	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_FLD1_EC-PC_WG_2021-08_NP	E235.F	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E235.F	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
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<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E235.F	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC1_EC-PC_WG_2021-08_NP	E235.NO3-L	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_FLD1_EC-PC_WG_2021-08_NP	E235.NO3-L	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E235.NO3-L	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✓	



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			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E235.NO3-L	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✓	
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<b>HDPE</b> FR_MW-EC2A_EC-PC_WG_2021-08-26	E235.NO3-L	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✓	
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<b>HDPE</b> FR_MW-EC2B_EC-PC_WG_2021-08-26	E235.NO3-L	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✓	
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<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E235.NO3-L	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC1_EC-PC_WG_2021-08_NP	E235.NO2-L	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_FLD1_EC-PC_WG_2021-08_NP	E235.NO2-L	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E235.NO2-L	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E235.NO2-L	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
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HDPE FR_MW-EC2B_EC-PC_WG_2021-08-26	E235.NO2-L	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_MW-EC3A_EC-PC_WG_2021-08-26	E235.NO2-L	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_MW-EC3B_EC-PC_WG_2021-08-26	E235.NO2-L	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_DC1_EC-PC_WG_2021-08_NP	E235.SO4	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_FLD1_EC-PC_WG_2021-08_NP	E235.SO4	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_MW-EC1A_EC-PC_WG_2021-08-26	E235.SO4	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_MW-EC1B_EC-PC_WG_2021-08-26	E235.SO4	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_MW-EC2A_EC-PC_WG_2021-08-26	E235.SO4	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✔





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

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<b>HDPE</b> FR_MW-EC2B_EC-PC_WG_2021-08-26	E235.SO4	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✔
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<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E235.SO4	26-Aug-2021	----	----	----		28-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC2A_EC-PC_WG_2021-08-26	E318	26-Aug-2021	01-Sep-2021	----	----		07-Sep-2021	28 days	12 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-08-26	E318	26-Aug-2021	01-Sep-2021	----	----		07-Sep-2021	28 days	12 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-08-26	E318	26-Aug-2021	01-Sep-2021	----	----		07-Sep-2021	28 days	12 days	✔
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			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E318	26-Aug-2021	01-Sep-2021	----	----		07-Sep-2021	28 days	13 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E318	26-Aug-2021	01-Sep-2021	----	----		07-Sep-2021	28 days	13 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_EC-PC_WG_2021-08_NP	E372-U	26-Aug-2021	31-Aug-2021	----	----		01-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_EC-PC_WG_2021-08_NP	E372-U	26-Aug-2021	31-Aug-2021	----	----		01-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E372-U	26-Aug-2021	31-Aug-2021	----	----		01-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E372-U	26-Aug-2021	31-Aug-2021	----	----		01-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC2A_EC-PC_WG_2021-08-26	E372-U	26-Aug-2021	31-Aug-2021	----	----		01-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-08-26	E372-U	26-Aug-2021	31-Aug-2021	----	----		01-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-08-26	E372-U	26-Aug-2021	31-Aug-2021	----	----		01-Sep-2021	28 days	6 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E372-U	26-Aug-2021	31-Aug-2021	----	----		01-Sep-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-08-26	E421.Cr-L	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E421.Cr-L	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC1_EC-PC_WG_2021-08_NP	E421.Cr-L	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FLD1_EC-PC_WG_2021-08_NP	E421.Cr-L	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E421.Cr-L	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E421.Cr-L	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC2A_EC-PC_WG_2021-08-26	E421.Cr-L	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-08-26	E421.Cr-L	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	8 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-08-26	E421	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E421	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC1_EC-PC_WG_2021-08_NP	E421	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FLD1_EC-PC_WG_2021-08_NP	E421	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E421	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E421	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC2A_EC-PC_WG_2021-08-26	E421	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-08-26	E421	26-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	8 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_FLD1_EC-PC_WG_2021-08_NP	E358-L	26-Aug-2021	02-Sep-2021	----	----		03-Sep-2021	28 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-08-26	E358-L	26-Aug-2021	02-Sep-2021	----	----		03-Sep-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-08-26	E358-L	26-Aug-2021	02-Sep-2021	----	----		03-Sep-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E358-L	26-Aug-2021	02-Sep-2021	----	----		03-Sep-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_DC1_EC-PC_WG_2021-08_NP	E358-L	26-Aug-2021	02-Sep-2021	----	----		04-Sep-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E358-L	26-Aug-2021	02-Sep-2021	----	----		04-Sep-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E358-L	26-Aug-2021	02-Sep-2021	----	----		04-Sep-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC2A_EC-PC_WG_2021-08-26	E358-L	26-Aug-2021	02-Sep-2021	----	----		04-Sep-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_EC-PC_WG_2021-08_NP	E355-L	26-Aug-2021	02-Sep-2021	----	----		03-Sep-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-08-26	E355-L	26-Aug-2021	02-Sep-2021	----	----		03-Sep-2021	28 days	8 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-08-26	E355-L	26-Aug-2021	02-Sep-2021	----	----		03-Sep-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E355-L	26-Aug-2021	02-Sep-2021	----	----		03-Sep-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_EC-PC_WG_2021-08_NP	E355-L	26-Aug-2021	02-Sep-2021	----	----		04-Sep-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E355-L	26-Aug-2021	02-Sep-2021	----	----		04-Sep-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E355-L	26-Aug-2021	02-Sep-2021	----	----		04-Sep-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC2A_EC-PC_WG_2021-08-26	E355-L	26-Aug-2021	02-Sep-2021	----	----		04-Sep-2021	28 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_DC1_EC-PC_WG_2021-08_NP	E283	26-Aug-2021	----	----	----		02-Sep-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_FLD1_EC-PC_WG_2021-08_NP	E283	26-Aug-2021	----	----	----		02-Sep-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E283	26-Aug-2021	----	----	----		02-Sep-2021	14 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_MW-EC1B_EC-PC_WG_2021-08-26	E283	26-Aug-2021	----	----	----		02-Sep-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_MW-EC2A_EC-PC_WG_2021-08-26	E283	26-Aug-2021	----	----	----		02-Sep-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_MW-EC2B_EC-PC_WG_2021-08-26	E283	26-Aug-2021	----	----	----		02-Sep-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_MW-EC3A_EC-PC_WG_2021-08-26	E283	26-Aug-2021	----	----	----		02-Sep-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_MW-EC3B_EC-PC_WG_2021-08-26	E283	26-Aug-2021	----	----	----		02-Sep-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_DC1_EC-PC_WG_2021-08_NP	E290	26-Aug-2021	----	----	----		03-Sep-2021	14 days	8 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_FLD1_EC-PC_WG_2021-08_NP	E290	26-Aug-2021	----	----	----		03-Sep-2021	14 days	8 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW-EC1A_EC-PC_WG_2021-08-26	E290	26-Aug-2021	----	----	----		03-Sep-2021	14 days	8 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW-EC1B_EC-PC_WG_2021-08-26	E290	26-Aug-2021	----	----	----		03-Sep-2021	14 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW-EC2A_EC-PC_WG_2021-08-26	E290	26-Aug-2021	----	----	----		03-Sep-2021	14 days	8 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW-EC2B_EC-PC_WG_2021-08-26	E290	26-Aug-2021	----	----	----		03-Sep-2021	14 days	8 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW-EC3A_EC-PC_WG_2021-08-26	E290	26-Aug-2021	----	----	----		03-Sep-2021	14 days	8 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW-EC3B_EC-PC_WG_2021-08-26	E290	26-Aug-2021	----	----	----		03-Sep-2021	14 days	8 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_DC1_EC-PC_WG_2021-08_NP	E100	26-Aug-2021	----	----	----		03-Sep-2021	28 days	8 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_FLD1_EC-PC_WG_2021-08_NP	E100	26-Aug-2021	----	----	----		03-Sep-2021	28 days	8 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-EC1A_EC-PC_WG_2021-08-26	E100	26-Aug-2021	----	----	----		03-Sep-2021	28 days	8 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-EC1B_EC-PC_WG_2021-08-26	E100	26-Aug-2021	----	----	----		03-Sep-2021	28 days	8 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-EC2A_EC-PC_WG_2021-08-26	E100	26-Aug-2021	----	----	----		03-Sep-2021	28 days	8 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-EC2B_EC-PC_WG_2021-08-26	E100	26-Aug-2021	----	----	----		03-Sep-2021	28 days	8 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-EC3A_EC-PC_WG_2021-08-26	E100	26-Aug-2021	----	----	----		03-Sep-2021	28 days	8 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-EC3B_EC-PC_WG_2021-08-26	E100	26-Aug-2021	----	----	----		03-Sep-2021	28 days	8 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-EC3B_EC-PC_WG_2021-08-26	E125	26-Aug-2021	----	----	----		03-Sep-2021	0.34 hrs	186 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-EC3A_EC-PC_WG_2021-08-26	E125	26-Aug-2021	----	----	----		03-Sep-2021	0.34 hrs	187 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-EC2A_EC-PC_WG_2021-08-26	E125	26-Aug-2021	----	----	----		03-Sep-2021	0.34 hrs	188 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-EC2B_EC-PC_WG_2021-08-26	E125	26-Aug-2021	----	----	----		03-Sep-2021	0.34 hrs	189 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_DC1_EC-PC_WG_2021-08_NP	E125	26-Aug-2021	----	----	----		03-Sep-2021	0.34 hrs	190 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_FLD1_EC-PC_WG_2021-08_NP	E125	26-Aug-2021	----	----	----		03-Sep-2021	0.34 hrs	190 hrs		* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E125	26-Aug-2021	----	----	----		03-Sep-2021	0.34 hrs	190 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E125	26-Aug-2021	----	----	----		03-Sep-2021	0.34 hrs	191 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E108	26-Aug-2021	----	----	----		03-Sep-2021	0.25 hrs	189 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> FR_MW-EC3A_EC-PC_WG_2021-08-26	E108	26-Aug-2021	----	----	----		03-Sep-2021	0.25 hrs	190 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> FR_MW-EC2A_EC-PC_WG_2021-08-26	E108	26-Aug-2021	----	----	----		03-Sep-2021	0.25 hrs	191 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> FR_MW-EC2B_EC-PC_WG_2021-08-26	E108	26-Aug-2021	----	----	----		03-Sep-2021	0.25 hrs	192 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> FR_DC1_EC-PC_WG_2021-08_NP	E108	26-Aug-2021	----	----	----		03-Sep-2021	0.25 hrs	193 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> FR_FLD1_EC-PC_WG_2021-08_NP	E108	26-Aug-2021	----	----	----		03-Sep-2021	0.25 hrs	193 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E108	26-Aug-2021	----	----	----		03-Sep-2021	0.25 hrs	193 hrs	*	EHTR-FM





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW-EC1B_EC-PC_WG_2021-08-26	E108	26-Aug-2021	----	----	----		03-Sep-2021	0.25 hrs	195 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_DC1_EC-PC_WG_2021-08_NP	E162	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_FLD1_EC-PC_WG_2021-08_NP	E162	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_MW-EC1A_EC-PC_WG_2021-08-26	E162	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_MW-EC1B_EC-PC_WG_2021-08-26	E162	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_MW-EC2A_EC-PC_WG_2021-08-26	E162	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_MW-EC2B_EC-PC_WG_2021-08-26	E162	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_MW-EC3A_EC-PC_WG_2021-08-26	E162	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_MW-EC3B_EC-PC_WG_2021-08-26	E162	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_DC1_EC-PC_WG_2021-08_NP	E160-L	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_FLD1_EC-PC_WG_2021-08_NP	E160-L	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E160-L	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E160-L	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_MW-EC2A_EC-PC_WG_2021-08-26	E160-L	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_MW-EC2B_EC-PC_WG_2021-08-26	E160-L	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_MW-EC3A_EC-PC_WG_2021-08-26	E160-L	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E160-L	26-Aug-2021	----	----	----		01-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E121	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E121	26-Aug-2021	----	----	----		28-Aug-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_DC1_EC-PC_WG_2021-08_NP	E121	26-Aug-2021	----	----	----		29-Aug-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_FLD1_EC-PC_WG_2021-08_NP	E121	26-Aug-2021	----	----	----		29-Aug-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW-EC2A_EC-PC_WG_2021-08-26	E121	26-Aug-2021	----	----	----		29-Aug-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW-EC2B_EC-PC_WG_2021-08-26	E121	26-Aug-2021	----	----	----		29-Aug-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW-EC3A_EC-PC_WG_2021-08-26	E121	26-Aug-2021	----	----	----		29-Aug-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E121	26-Aug-2021	----	----	----		29-Aug-2021	3 days	3 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC2A_EC-PC_WG_2021-08-26	E420.Cr-L	26-Aug-2021	----	----	----		01-Sep-2021	180 days	6 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-08-26	E420.Cr-L	26-Aug-2021	----	----	----		01-Sep-2021	180 days	6 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E420.Cr-L	26-Aug-2021	----	----	----		01-Sep-2021	180 days	6 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_DC1_EC-PC_WG_2021-08_NP	E420.Cr-L	26-Aug-2021	----	----	----		01-Sep-2021	180 days	7 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_FLD1_EC-PC_WG_2021-08_NP	E420.Cr-L	26-Aug-2021	----	----	----		01-Sep-2021	180 days	7 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E420.Cr-L	26-Aug-2021	----	----	----		01-Sep-2021	180 days	7 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E420.Cr-L	26-Aug-2021	----	----	----		01-Sep-2021	180 days	7 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-08-26	E420.Cr-L	26-Aug-2021	----	----	----		01-Sep-2021	180 days	7 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_MW-EC2A_EC-PC_WG_2021-08-26	E420	26-Aug-2021	----	----	----		01-Sep-2021	180 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-08-26	E420	26-Aug-2021	----	----	----		01-Sep-2021	180 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-08-26	E420	26-Aug-2021	----	----	----		01-Sep-2021	180 days	6 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_DC1_EC-PC_WG_2021-08_NP	E420	26-Aug-2021	----	----	----		01-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_FLD1_EC-PC_WG_2021-08_NP	E420	26-Aug-2021	----	----	----		01-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC1A_EC-PC_WG_2021-08-26	E420	26-Aug-2021	----	----	----		01-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC1B_EC-PC_WG_2021-08-26	E420	26-Aug-2021	----	----	----		01-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-08-26	E420	26-Aug-2021	----	----	----		01-Sep-2021	180 days	7 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	282774	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	283770	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	281581	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	278659	2	33	6.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	278660	2	33	6.0	5.0	✓
Conductivity in Water	E100	283769	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	281442	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	281443	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	282893	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	278098	2	32	6.2	5.0	✓
Fluoride in Water by IC	E235.F	278663	2	33	6.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	278661	2	33	6.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	278662	2	33	6.0	5.0	✓
ORP by Electrode	E125	281969	1	20	5.0	5.0	✓
pH by Meter	E108	283768	2	32	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	278658	2	33	6.0	5.0	✓
TDS by Gravimetry	E162	281413	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	281346	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	282285	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	281345	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	282895	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	280313	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	278627	2	33	6.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	282774	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	283770	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	281581	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	278659	2	33	6.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	278660	2	33	6.0	5.0	✓
Conductivity in Water	E100	283769	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	281442	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	281443	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	282893	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	278098	2	32	6.2	5.0	✓
Fluoride in Water by IC	E235.F	278663	2	33	6.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	278661	2	33	6.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	278662	2	33	6.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	281969	1	20	5.0	5.0	✓
pH by Meter	E108	283768	2	32	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	278658	2	33	6.0	5.0	✓
TDS by Gravimetry	E162	281413	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	281346	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	282285	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	281345	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	282895	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	280313	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	281407	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	278627	2	33	6.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	282774	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	283770	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	281581	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	278659	2	33	6.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	278660	2	33	6.0	5.0	✓
Conductivity in Water	E100	283769	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	281442	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	281443	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	282893	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	278098	2	32	6.2	5.0	✓
Fluoride in Water by IC	E235.F	278663	2	33	6.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	278661	2	33	6.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	278662	2	33	6.0	5.0	✓
Sulfate in Water by IC	E235.SO4	278658	2	33	6.0	5.0	✓
TDS by Gravimetry	E162	281413	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	281346	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	282285	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	281345	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	282895	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	280313	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	281407	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	278627	2	33	6.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	281581	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	278659	2	33	6.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	278660	2	33	6.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	281442	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	281443	1	20	5.0	5.0	✓





Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	282893	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	278098	2	32	6.2	5.0	✓
Fluoride in Water by IC	E235.F	278663	2	33	6.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	278661	2	33	6.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	278662	2	33	6.0	5.0	✓
Sulfate in Water by IC	E235.SO4	278658	2	33	6.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	281346	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	282285	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	281345	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	282895	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	280313	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2103639**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Cameron Griffin  
**Address** : Fording River Operations PO BOX 100  
                   Elkford BC Canada V0B 1H0  
**Telephone** : 250 425 8746  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00769061  
**C-O-C number** : EC\_PC\_GW\_2021-08-26  
**Sampler** : KP  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 8  
**No. of samples analysed** : 8

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-Aug-2021 09:00  
**Date Analysis Commenced** : 27-Aug-2021  
**Issue Date** : 30-Sep-2021 11:36

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
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Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 18  
Work Order : CG2103639  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 278627)</b>											
CG2103609-011	Anonymous	turbidity	----	E121	0.10	NTU	1.88	1.83	3.02%	15%	----
<b>Physical Tests (QC Lot: 279035)</b>											
CG2103638-002	Anonymous	turbidity	----	E121	0.10	NTU	13.7	14.8	7.58%	15%	----
<b>Physical Tests (QC Lot: 281413)</b>											
CG2103637-005	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 281969)</b>											
CG2103637-005	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	460	471	2.41%	15%	----
<b>Physical Tests (QC Lot: 282774)</b>											
CG2103638-002	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 283768)</b>											
CG2103635-001	Anonymous	pH	----	E108	0.10	pH units	7.68	7.70	0.260%	4%	----
<b>Physical Tests (QC Lot: 283769)</b>											
CG2103637-001	Anonymous	conductivity	----	E100	2.0	µS/cm	506	502	0.794%	10%	----
<b>Physical Tests (QC Lot: 283770)</b>											
CG2103637-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	225	231	2.55%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	14.4	16.4	13.0%	20%	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	239	247	3.21%	20%	----
<b>Physical Tests (QC Lot: 283771)</b>											
CG2103639-008	FR_FLD1_EC-PC_WG_20 21-08_NP	pH	----	E108	0.10	pH units	5.41	5.40	0.185%	4%	----
<b>Anions and Nutrients (QC Lot: 278098)</b>											
CG2103632-009	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 278099)</b>											
CG2103639-007	FR_DC1_EC-PC_WG_202 1-08_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0026	0.0023	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 278658)</b>											
CG2103630-012	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 278659)</b>											
CG2103630-012	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 278660)</b>											
CG2103630-012	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 278661)</b>											
CG2103630-012	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 278662)</b>											
CG2103630-012	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 278663)</b>											
CG2103630-012	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 278664)</b>											
CG2103639-008	FR_FLD1_EC-PC_WG_20 21-08_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 278665)</b>											
CG2103639-008	FR_FLD1_EC-PC_WG_20 21-08_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 278666)</b>											
CG2103639-008	FR_FLD1_EC-PC_WG_20 21-08_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 278667)</b>											
CG2103639-008	FR_FLD1_EC-PC_WG_20 21-08_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 278668)</b>											
CG2103639-008	FR_FLD1_EC-PC_WG_20 21-08_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 278669)</b>											
CG2103639-008	FR_FLD1_EC-PC_WG_20 21-08_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 280313)</b>											
CG2103637-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0065	0.0084	0.0019	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 281581)</b>											
CG2103617-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0152	0.0131	0.0021	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 281582)</b>											
CG2103639-002	FR_MW-EC1B_EC-PC_W G_2021-08-26	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 282285)</b>											
CG2103639-001	FR_MW-EC1A_EC-PC_W G_2021-08-26	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.057	0.061	0.005	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 282893)</b>											
CG2103637-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	5.22	5.17	0.876%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 282895)</b>											
CG2103637-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	5.52	5.55	0.677%	20%	----
<b>Total Metals (QC Lot: 281345)</b>											
CG2103637-002	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0080	0.0082	0.0001	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 281345) - continued</b>											
CG2103637-002	Anonymous	barium, total	7440-39-3	E420	0.00010	mg/L	0.00056	0.00065	0.00009	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	0.053	0.054	0.0008	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000064	0.000062	0.000001	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	0.0130	0.0136	0.0005	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00025	0.00024	0.00002	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	0.17	0.17	0.003	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	0.073	0.065	0.008	Diff <2x LOR	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.00026	0.00026	0.000003	Diff <2x LOR	----
CG2103637-002	Anonymous	antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	<0.0050 µg/L	<0.000050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 281346)</b>											
CG2103637-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 281442)</b>											
CG2103630-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00017	0.00015	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 281443)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 281443) - continued</b>											
CG2103630-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0035	0.0037	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00012	0.00014	0.00002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0612	0.0628	2.44%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.013	0.0009	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0470 µg/L	0.0000523	0.000052	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	105	114	8.48%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.11 µg/L	0.00012	0.000008	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00027	0.00028	0.000010	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0293	0.0322	9.14%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	40.5	40.8	0.864%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00844	0.00860	1.81%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000403	0.000457	0.000053	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00211	0.00212	0.000010	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.56	1.61	3.22%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	46.6 µg/L	0.0490	4.88%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.21	2.36	6.32%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.12	1.17	3.73%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.112	0.123	8.87%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	62.0	65.6	5.54%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00294	0.00326	10.5%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0026	0.0026	0.00006	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 278627)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 279035)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 281407)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 281413)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 282774)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 283769)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 283770)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 278098)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 278099)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 278658)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 278659)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 278660)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 278661)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 278662)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 278663)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 278664)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 278664) - continued</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 278665)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 278666)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 278667)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 278668)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 278669)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 280313)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 281581)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 281582)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 282285)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 282893)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 282895)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 281345)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 281345) - continued</b>						
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 281346)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 281442)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 281443)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 281443) - continued</b>						
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 278627)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.7	85.0	115	---
<b>Physical Tests (QCLot: 279035)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.3	85.0	115	---
<b>Physical Tests (QCLot: 281407)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.5	85.0	115	---
<b>Physical Tests (QCLot: 281413)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 281969)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Physical Tests (QCLot: 282774)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 283768)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 283769)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	95.6	90.0	110	---
<b>Physical Tests (QCLot: 283770)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	90.8	85.0	115	---
<b>Physical Tests (QCLot: 283771)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Anions and Nutrients (QCLot: 278098)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 278099)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 278658)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 278659)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	---
<b>Anions and Nutrients (QCLot: 278660)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 278661)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 278662)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		
						Low	High		
<b>Anions and Nutrients (QCLot: 278662) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 278663)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.6	90.0	110	----
<b>Anions and Nutrients (QCLot: 278664)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.6	90.0	110	----
<b>Anions and Nutrients (QCLot: 278665)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	97.7	90.0	110	----
<b>Anions and Nutrients (QCLot: 278666)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 278667)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.3	90.0	110	----
<b>Anions and Nutrients (QCLot: 278668)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 278669)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.3	90.0	110	----
<b>Anions and Nutrients (QCLot: 280313)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.3	80.0	120	----
<b>Anions and Nutrients (QCLot: 281581)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	88.2	85.0	115	----
<b>Anions and Nutrients (QCLot: 281582)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	95.6	85.0	115	----
<b>Anions and Nutrients (QCLot: 282285)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	101	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 282893)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 282895)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	117	80.0	120	----
<b>Total Metals (QCLot: 281345)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.0	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	97.4	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	100	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 281345) - continued</b>									
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.8	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.3	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	111	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.3	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.1	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	108	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	110	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	97.1	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	99.1	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.8	80.0	120	----
<b>Total Metals (QCLot: 281346)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 281442)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.5	80.0	120	----
<b>Dissolved Metals (QCLot: 281443)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.8	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.1	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 281443) - continued</b>									
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	94.1	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.1	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.4	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.5	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.9	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.4	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.2	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.5	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.0	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.0	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.4	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.4	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.9	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 278098)</b>										
CG2103632-010	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0572 mg/L	0.05 mg/L	114	70.0	130	----
<b>Anions and Nutrients (QCLot: 278099)</b>										
CG2103639-008	FR_FLD1_EC-PC_WG_202 1-08_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0609 mg/L	0.05 mg/L	122	70.0	130	----
<b>Anions and Nutrients (QCLot: 278658)</b>										
CG2103630-012	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 278659)</b>										
CG2103630-012	Anonymous	bromide	24959-67-9	E235.Br-L	0.541 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 278660)</b>										
CG2103630-012	Anonymous	chloride	16887-00-6	E235.Cl-L	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 278661)</b>										
CG2103630-012	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.74 mg/L	2.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 278662)</b>										
CG2103630-012	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.540 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 278663)</b>										
CG2103630-012	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 278664)</b>										
CG2103639-008	FR_FLD1_EC-PC_WG_202 1-08_NP	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 278665)</b>										
CG2103639-008	FR_FLD1_EC-PC_WG_202 1-08_NP	sulfate (as SO4)	14808-79-8	E235.SO4	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 278666)</b>										
CG2103639-008	FR_FLD1_EC-PC_WG_202 1-08_NP	bromide	24959-67-9	E235.Br-L	0.532 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 278667)</b>										
CG2103639-008	FR_FLD1_EC-PC_WG_202 1-08_NP	chloride	16887-00-6	E235.Cl-L	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 278668)</b>										
CG2103639-008	FR_FLD1_EC-PC_WG_202 1-08_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.58 mg/L	2.5 mg/L	103	75.0	125	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 278669)</b>										
CG2103639-008	FR_FLD1_EC-PC_WG_2021-08_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.513 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 280313)</b>										
CG2103637-005	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0577 mg/L	0.0676 mg/L	85.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 281581)</b>										
CG2103620-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0889 mg/L	0.1 mg/L	88.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 281582)</b>										
CG2103639-008	FR_FLD1_EC-PC_WG_2021-08_NP	ammonia, total (as N)	7664-41-7	E298	0.112 mg/L	0.1 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 282285)</b>										
CG2103639-002	FR_MW-EC1B_EC-PC_WG_2021-08-26	Kjeldahl nitrogen, total [TKN]	----	E318	2.73 mg/L	2.5 mg/L	109	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 282893)</b>										
CG2103637-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.2 mg/L	23.9 mg/L	97.1	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 282895)</b>										
CG2103637-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.8 mg/L	23.9 mg/L	104	70.0	130	----
<b>Total Metals (QCLot: 281345)</b>										
CG2103637-003	Anonymous	aluminum, total	7429-90-5	E420	0.187 mg/L	0.2 mg/L	93.3	70.0	130	----
		antimony, total	7440-36-0	E420	0.0215 mg/L	0.02 mg/L	107	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0371 mg/L	0.04 mg/L	92.7	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00966 mg/L	0.01 mg/L	96.6	70.0	130	----
		boron, total	7440-42-8	E420	0.098 mg/L	0.1 mg/L	97.7	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00392 mg/L	0.004 mg/L	97.9	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		copper, total	7440-50-8	E420	0.0182 mg/L	0.02 mg/L	91.3	70.0	130	----
		iron, total	7439-89-6	E420	1.87 mg/L	2 mg/L	93.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0998 mg/L	0.1 mg/L	99.8	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0215 mg/L	0.02 mg/L	107	70.0	130	----
		nickel, total	7440-02-0	E420	0.0365 mg/L	0.04 mg/L	91.2	70.0	130	----
		potassium, total	7440-09-7	E420	3.78 mg/L	4 mg/L	94.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 281345) - continued</b>										
CG2103637-003	Anonymous	selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.00 mg/L	10 mg/L	90.0	70.0	130	----
		silver, total	7440-22-4	E420	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00389 mg/L	0.004 mg/L	97.3	70.0	130	----
		tin, total	7440-31-5	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, total	7440-32-6	E420	0.0399 mg/L	0.04 mg/L	99.9	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.360 mg/L	0.4 mg/L	90.1	70.0	130	----
<b>Total Metals (QCLot: 281346)</b>										
CG2103637-003	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0400 mg/L	0.04 mg/L	100.0	70.0	130	----
<b>Dissolved Metals (QCLot: 281442)</b>										
CG2103630-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 281443)</b>										
CG2103630-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.208 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0224 mg/L	0.02 mg/L	112	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00942 mg/L	0.01 mg/L	94.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.95 mg/L	2 mg/L	97.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0231 mg/L	0.02 mg/L	115	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0384 mg/L	0.04 mg/L	96.1	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.96 mg/L	4 mg/L	99.1	70.0	130	----



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 281443) - continued</b>										
CG2103630-002	Anonymous	selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.85 mg/L	10 mg/L	88.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00415 mg/L	0.004 mg/L	104	70.0	130	----
		sodium, dissolved	17341-25-2	E421	2.02 mg/L	2 mg/L	101	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.392 mg/L	0.4 mg/L	97.9	70.0	130	----



COC ID: EC\_PC\_GW\_2021-08-26 TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cameron Griffin			Lab Contact	Lyudmyla Shvets			Email 1:	Cameron.griffin@teck.com	X	X	X
Email				Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Scott.Roughhead@teck.com	X	X	X
Address	Shared Services Bag 2000 421 Pine Avenue			Address	2559 29 Street NE			Email 3:	David.Burroughs@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equisonline.com	X	X	X
	V0B 2G0	Country	CA	Postal Code	T1Y 7B5	Country	Canada	Email 5:	kwezel@bacengineering.ca	X	X	X
				Phone Number	403 407 1794			PO number	VPO00769061			

Environmental Division  
Calgary  
Work Order Reference  
**CG2103639**



Telephone: +1 403 407 1800

**SAMPLE DETAILS** **ANALYSIS REQUESTED**

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	#.Of Cont.	ANALYSIS REQUESTED						
								TECK COAL ROUTINE LCE	TECK COAL DOC	TECK COAL TOC/TKN/Nutrients	TECKCOAL-MET-T- VA	TECKCOAL-MET-D- VA		
FR_MW-EC1A_EC-PC_WG_2021-08-26	FR_MW-EC1A	WG	N	2021/08/26	9:30	G	5	1	1	1	1	1		
FR_MW-EC1B_EC-PC_WG_2021-08-26	FR_MW-EC1B	WG	N	2021/08/26	8:20	G	5	1	1	1	1	1		
FR_MW-EC2A_EC-PC_WG_2021-08-26	FR_MW-EC2A	WG	N	2021/08/26	12:00	G	5	1	1	1	1	1		
FR_MW-EC2B_EC-PC_WG_2021-08-26	FR_MW-EC2B	WG	N	2021/08/26	16:35	G	5	1	1	1	1	1		
FR_MW-EC3A_EC-PC_WG_2021-08-26	FR_MW-EC3A	WG	N	2021/08/26	12:55	G	5	1	1	1	1	1		
FR_MW-EC3B_EC-PC_WG_2021-08-26	FR_MW-EC3B	WG	N	2021/08/26	14:00	G	5	1	1	1	1	1		
<del>FR_MW-EC4A_EC-PC_WG_2021-08-26</del>	<del>FR_MW-EC4A</del>	<del>WG</del>	<del>N</del>	<del>2021/08/26</del>	<del>16:00</del>	<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>		
<del>FR_MW-EC4B_EC-PC_WG_2021-08-26</del>	<del>FR_MW-EC4B</del>	<del>WG</del>	<del>N</del>	<del>2021/08/26</del>	<del>16:00</del>	<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>		
FR_DC1_EC-PC_WG_2021-08-NP	FR_DC1	WG	N	2021/08/26	9:35	G	5	1	1	1	1	1		
FR_ELD1_EC-PC_WG_2021-08-NP	FR_ELD1	WG	N	2021/08/26	9:40	G	5	1	1	1	1	1		
<del>FR_ELD2_EC-PC_WG_2021-08-NP</del>	<del>FR_ELD2</del>	<del>WG</del>	<del>N</del>	<del>2021/08/26</del>	<del>16:00</del>	<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS  
 \*All samples field filtered and preserved as required.  
 \*\*Please note Sample ID changes - different from bottle sets

DATE/TIME: Aug 27 9:00  
 ACCREDITED BY/AFFILIATION: GT  
 DATE/TIME: 9:00

SERVICE REQUEST (rush - subject to availability)

Regular (default)  Priority (2-3 business days) - 50% surcharge  
 Emergency (1 Business Day) - 100% surcharge  
 For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name: Kate Peterson  
 Sampler's Signature: *Kate Peterson*  
 Mobile #: 250-944-5029  
 Date/Time: Aug 26, 21

90c

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103670**  
**Client** : **Teck Coal Limited**  
**Contact** : Cameron Griffin  
**Address** : Fording River Operations PO BOX 100  
                   Elkford BC Canada V0B 1H0  
**Telephone** : 250 425 8746  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00769061  
**C-O-C number** : EC\_PC\_GW\_2021-08-27  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 28-Aug-2021 09:00  
**Date Analysis Commenced** : 30-Aug-2021  
**Issue Date** : 30-Sep-2021 11:42

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### ***Signatories***

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID		FR_MW-EC4A_ EC-PC_WG_202 1-08-27	FR_MW-EC4B_ EC-PC_WG_202 1-08-27	FR_TRP1_EC-P C_WG_2021-08 -27_NP	----	----
(Matrix: Water)					Client sampling date / time		27-Aug-2021 12:10	27-Aug-2021 10:55	27-Aug-2021 16:00	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103670-001	CG2103670-002	CG2103670-003	-----	-----		
					Result	Result	Result	---	---		
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	4.6	<2.0	----	----		
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	294	430	<1.0	----	----		
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----		
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----		
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	294	430	<1.0	----	----		
conductivity	----	E100	2.0	µS/cm	606	2590	<2.0	----	----		
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	44.0	1820	<0.50	----	----		
oxidation-reduction potential [ORP]	----	E125	0.10	mV	242	250	441	----	----		
pH	----	E108	0.10	pH units	8.35	8.18	4.12	----	----		
solids, total dissolved [TDS]	----	E162	10	mg/L	380	2390	<10	----	----		
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	12.0	<1.0	<1.0	----	----		
turbidity	----	E121	0.10	NTU	31.0	0.24	<0.10	----	----		
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	358	525	<1.0	----	----		
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----		
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----		
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0638	0.0249	<0.0050	----	----		
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.250 <sup>DLDS</sup>	<0.050	----	----		
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	5.26	5.24	<0.10	----	----		
fluoride	16984-48-8	E235.F	0.020	mg/L	2.03	0.124	<0.020	----	----		
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.170	0.314	<0.050	----	----		
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	1.63 <sup>HTD</sup>	<0.0050	----	----		
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0208 <sup>HTD</sup>	<0.0010	----	----		
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0203	0.0296 <sup>RRV</sup>	<0.0010	----	----		
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0545	0.0085 <sup>RRV</sup>	<0.0020	----	----		
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	6.75	1400	<0.30	----	----		
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	12.2	2.77	----	----	----		
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	13.1	2.72	<0.50	----	----		



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC4A_ EC-PC_WG_202 1-08-27	FR_MW-EC4B_ EC-PC_WG_202 1-08-27	FR_TRP1_EC-P C_WG_2021-08 -27_NP	----	----
Client sampling date / time					27-Aug-2021 12:10	27-Aug-2021 10:55	27-Aug-2021 16:00	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103670-001	CG2103670-002	CG2103670-003	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.27	38.0	<0.10	----	----	
cation sum	----	EC101	0.10	meq/L	6.81	36.8	<0.10	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	109	96.8	100	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.13	1.60	<0.010	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.559	0.0061	<0.0030	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00271	0.00046	<0.00010	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00127	0.00031	<0.00010	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.237	0.0388	<0.00010	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	0.047	<0.040 <sup>DLA</sup>	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.347	0.044	<0.010	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0320	0.407	<0.0050	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	11.1	310	<0.050	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00088	<0.00020 <sup>DLA</sup>	<0.00010	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.14	0.66	<0.10	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00054	<0.00100 <sup>DLA</sup>	<0.00050	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.503	0.023	<0.010	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000183	<0.000100 <sup>DLA</sup>	<0.000050	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.154	0.0612	<0.0010	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	5.01	288	<0.0050	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0749	1.13	<0.00010	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00592	0.00419	<0.000050	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00071	0.00929	<0.00050	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.14	5.45	<0.050	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	0.187	119	<0.050	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	4.14	3.76	<0.10	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	134	8.12	<0.050	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0926	0.369	<0.00020	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC4A_ EC-PC_WG_202 1-08-27	FR_MW-EC4B_ EC-PC_WG_202 1-08-27	FR_TRP1_EC-P C_WG_2021-08 -27_NP	----	----
Client sampling date / time					27-Aug-2021 12:10	27-Aug-2021 10:55	27-Aug-2021 16:00	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103670-001 Result	CG2103670-002 Result	CG2103670-003 Result	----- ----	----- ----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	3.05	508	<0.50	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00101	<0.00020 <sup>DLA</sup>	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00408	<0.00060 <sup>DLA</sup>	<0.00030	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000800	0.0208	<0.000010	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00249	<0.00100 <sup>DLA</sup>	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0040	0.0074	<0.0030	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0095	<0.0020 <sup>DLA</sup>	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00208	0.00044	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00112	<0.00020 <sup>DLA</sup>	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.217	0.0362	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.040 <sup>DLA</sup>	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.326	0.041	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.381	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	9.77	291	<0.050	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.62	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00040 <sup>DLA</sup>	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.030	<0.020 <sup>DLA</sup>	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.144	0.0592	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.76	265	<0.0050	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0620	1.07	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00512	0.00394	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00863	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.91	5.10	<0.050	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.090	121	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.13	3.48	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC4A_ EC-PC_WG_202 1-08-27	FR_MW-EC4B_ EC-PC_WG_202 1-08-27	FR_TRP1_EC-P C_WG_2021-08 -27_NP	----	----
Client sampling date / time					27-Aug-2021 12:10	27-Aug-2021 10:55	27-Aug-2021 16:00	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103670-001 Result	CG2103670-002 Result	CG2103670-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	135	7.48	<0.050	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0840	0.353	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.30	496	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00050	<0.00020 <sup>DLA</sup>	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00060 <sup>DLA</sup>	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000640	0.0206	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0069	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Laboratory	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL REPORT

**Work Order** : **CG2103670**

**Page** : 1 of 21

**Client** : Teck Coal Limited  
**Contact** : Cameron Griffin  
**Address** : Fording River Operations PO BOX 100  
                   Elkford BC Canada V0B 1H0  
**Telephone** : 250 425 8746  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00769061  
**C-O-C number** : EC\_PC\_GW\_2021-08-27  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 28-Aug-2021 09:00  
**Date Analysis Commenced** : 30-Aug-2021  
**Issue Date** : 30-Sep-2021 11:42

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 21  
Work Order : CG2103670  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 279539)</b>											
CG2103658-001	Anonymous	turbidity	----	E121	0.10	NTU	0.83	0.77	0.06	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 279540)</b>											
CG2103670-002	FR_MW-EC4B_EC-PC_W G_2021-08-27	turbidity	----	E121	0.10	NTU	0.24	0.22	0.02	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 279741)</b>											
CG2103663-001	Anonymous	turbidity	----	E121	0.10	NTU	154	155	0.388%	15%	----
<b>Physical Tests (QC Lot: 282452)</b>											
CG2103661-002	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 283585)</b>											
CG2103664-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	255	252	0.868%	15%	----
<b>Physical Tests (QC Lot: 283779)</b>											
CG2103664-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	8.5	8.2	0.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 284521)</b>											
CG2103664-002	Anonymous	conductivity	----	E100	2.0	µS/cm	919	927	0.867%	10%	----
<b>Physical Tests (QC Lot: 284522)</b>											
CG2103664-002	Anonymous	pH	----	E108	0.10	pH units	7.91	7.88	0.380%	4%	----
<b>Physical Tests (QC Lot: 284523)</b>											
CG2103664-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	198	201	1.45%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	198	201	1.45%	20%	----
<b>Anions and Nutrients (QC Lot: 279419)</b>											
CG2103670-001	FR_MW-EC4A_EC-PC_W G_2021-08-27	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	6.75	6.64	1.56%	20%	----
<b>Anions and Nutrients (QC Lot: 279420)</b>											
CG2103670-001	FR_MW-EC4A_EC-PC_W G_2021-08-27	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 279421)</b>											
CG2103670-001	FR_MW-EC4A_EC-PC_W G_2021-08-27	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	5.26	5.25	0.264%	20%	----
<b>Anions and Nutrients (QC Lot: 279422)</b>											
CG2103670-001	FR_MW-EC4A_EC-PC_W G_2021-08-27	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 279423)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 279423) - continued</b>											
CG2103670-001	FR_MW-EC4A_EC-PC_W G_2021-08-27	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 279424)</b>											
CG2103670-001	FR_MW-EC4A_EC-PC_W G_2021-08-27	fluoride	16984-48-8	E235.F	0.020	mg/L	2.03	2.06	1.60%	20%	----
<b>Anions and Nutrients (QC Lot: 279652)</b>											
CG2103662-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 281649)</b>											
CG2103664-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 283821)</b>											
CG2103664-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.132	0.126	0.006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 286071)</b>											
CG2103661-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0330	0.0327	0.0003	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 284118)</b>											
CG2103665-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	12.0	13.2	9.56%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 284120)</b>											
CG2103665-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	12.8	12.7	1.40%	20%	----
<b>Total Metals (QC Lot: 282400)</b>											
CG2103663-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 282401)</b>											
CG2103663-002	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0076	0.0058	0.0018	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00160	0.00158	1.24%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00040	0.00040	0.000005	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.139	0.135	2.87%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.043	0.043	0.0001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0986 µg/L	0.000102	2.92%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	219	220	0.560%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.21 µg/L	0.00024	0.00003	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.043	0.043	0.0002	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.153	0.155	1.62%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	167	166	0.154%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00776	0.00767	1.15%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 282401) - continued</b>											
CG2103663-002	Anonymous	molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00875	0.00874	0.0657%	20%	----
		nickel, total	7440-02-0	E420	0.000050	mg/L	0.0288	0.0289	0.131%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	6.36	6.18	2.88%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	235 µg/L	0.237	0.674%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.47	2.51	1.41%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	8.03	8.19	1.89%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.934	0.929	0.486%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	308	310	0.491%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000038	0.000037	0.0000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00987	0.00990	0.288%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0075	0.0077	0.0001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 279613)</b>											
CG2103622-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0023	0.0015	0.0008	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00123	0.00120	3.07%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00018	0.00016	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0790	0.0796	0.653%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	0.021	0.0008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.123 µg/L	0.000128	3.78%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	52.2	49.8	4.69%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.26 µg/L	0.00025	0.000006	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00373	0.00358	3.96%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0415	0.0398	4.07%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	30.5	29.6	3.02%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00658	0.00651	1.09%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00442	0.00426	0.00016	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.78	2.70	3.05%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 279613) - continued</b>											
CG2103622-001	Anonymous	selenium, dissolved	7782-49-2	E421	0.050	mg/L	127 µg/L	0.126	0.456%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	0.708	0.676	4.50%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.09	2.03	2.86%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0865	0.0849	1.86%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	49.2	48.6	1.26%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	0.000012	0.000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00157	0.00151	3.87%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0082	0.0078	0.0004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 284306)</b>											
CG2103663-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 284307)</b>											
CG2103663-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0032	0.0035	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00177	0.00171	3.13%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00023	0.00023	0.000008	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0893	0.0906	1.43%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.048	0.046	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0176 µg/L	0.0000156	0.0000020	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	216	210	3.10%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.18 µg/L	0.00018	0.000003	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00023	0.00024	0.00001	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.171	0.162	5.16%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	151	151	0.399%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00197	0.00203	2.84%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00871	0.00841	3.42%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0290	0.0290	0.192%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	7.54	7.33	2.83%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	254 µg/L	0.253	0.250%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 284307) - continued</b>											
CG2103663-001	Anonymous	silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.02	2.01	0.445%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	10.2	10.2	0.568%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.23	1.19	3.14%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	313	306	2.12%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000055	0.000051	0.000004	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0106	0.0100	5.75%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0096	0.0098	0.0002	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 279539)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 279540)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 279741)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 282446)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 282452)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 283779)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 284521)</b>						
conductivity	---	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 284523)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 279419)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 279420)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 279421)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 279422)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 279423)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 279424)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 279652)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 281649)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 281649) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 283821)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 286071)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 284118)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 284120)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 282400)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 282401)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 282401) - continued</b>						
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Dissolved Metals (QCLot: 279613)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 279613) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 284306)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 284307)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----



Page : 12 of 21  
Work Order : CG2103670  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 284307) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	LCS	Low	High		
<b>Physical Tests (QCLot: 279539)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	---
<b>Physical Tests (QCLot: 279540)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	97.5	85.0	115	---
<b>Physical Tests (QCLot: 279741)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	97.7	85.0	115	---
<b>Physical Tests (QCLot: 282446)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	95.0	85.0	115	---
<b>Physical Tests (QCLot: 282452)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.6	85.0	115	---
<b>Physical Tests (QCLot: 283585)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Physical Tests (QCLot: 283779)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 284521)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	---
<b>Physical Tests (QCLot: 284522)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 284523)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	92.6	85.0	115	---
<b>Anions and Nutrients (QCLot: 279419)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 279420)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 279421)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 279422)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 279423)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 279424)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 279652)</b>									



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 279652) - continued</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	98.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 281649)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	92.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 283821)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	91.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 286071)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 284118)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.6	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 284120)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	99.2	80.0	120	----
<b>Total Metals (QCLot: 282400)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
<b>Total Metals (QCLot: 282401)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.6	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.8	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	93.9	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.3	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.5	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	100.0	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.8	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	100.0	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.5	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.6	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	102	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 282401) - continued</b>									
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.0	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.6	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.5	80.0	120	----
<b>Dissolved Metals (QCLot: 279613)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.5	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	93.5	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	93.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	92.9	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	95.5	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	93.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	93.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	89.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	92.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	96.7	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	91.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	92.8	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.0	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	94.1	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	93.5	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	106	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	95.9	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 279613) - continued</b>									
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.9	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	91.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	94.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	92.0	80.0	120	----
<b>Dissolved Metals (QCLot: 284306)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
<b>Dissolved Metals (QCLot: 284307)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	106	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	118	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	114	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	110	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	109	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	107	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	113	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	107	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	103	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	107	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	113	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	110	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	110	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	110	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	106	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	105	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	115	80.0	120	----

Page : 17 of 21  
 Work Order : CG2103670  
 Client : Teck Coal Limited  
 Project : FORDING RIVER OPERATIONS



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 284307) - continued</b>									
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	104	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 279652)</b>										
CG2103662-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0546 mg/L	0.05 mg/L	109	70.0	130	----
<b>Anions and Nutrients (QCLot: 281649)</b>										
CG2103664-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0509 mg/L	0.0676 mg/L	75.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 283821)</b>										
CG2103664-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.66 mg/L	2.5 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 286071)</b>										
CG2103661-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 284118)</b>										
CG2103665-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	26.0 mg/L	23.9 mg/L	109	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 284120)</b>										
CG2103665-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.9 mg/L	23.9 mg/L	95.9	70.0	130	----
<b>Total Metals (QCLot: 282400)</b>										
CG2103663-003	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
<b>Total Metals (QCLot: 282401)</b>										
CG2103663-003	Anonymous	aluminum, total	7429-90-5	E420	0.197 mg/L	0.2 mg/L	98.3	70.0	130	----
		antimony, total	7440-36-0	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00888 mg/L	0.01 mg/L	88.8	70.0	130	----
		boron, total	7440-42-8	E420	0.097 mg/L	0.1 mg/L	97.4	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00395 mg/L	0.004 mg/L	98.7	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0184 mg/L	0.02 mg/L	92.2	70.0	130	----
		iron, total	7439-89-6	E420	1.87 mg/L	2 mg/L	93.5	70.0	130	----
		lead, total	7439-92-1	E420	0.0181 mg/L	0.02 mg/L	90.4	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 282401) - continued</b>										
CG2103663-003	Anonymous	manganese, total	7439-96-5	E420	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, total	7440-02-0	E420	0.0360 mg/L	0.04 mg/L	90.0	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.52 mg/L	10 mg/L	95.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00383 mg/L	0.004 mg/L	95.8	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00364 mg/L	0.004 mg/L	91.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, total	7440-32-6	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, total	7440-66-6	E420	0.371 mg/L	0.4 mg/L	92.7	70.0	130	----
<b>Dissolved Metals (QCLot: 279613)</b>										
CG2103622-002	Anonymous	aluminum, dissolved	7429-90-5	E421	1.81 mg/L	2 mg/L	90.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.196 mg/L	0.2 mg/L	98.1	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.191 mg/L	0.2 mg/L	95.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.198 mg/L	0.2 mg/L	98.8	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.363 mg/L	0.4 mg/L	90.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0944 mg/L	0.1 mg/L	94.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.950 mg/L	1 mg/L	95.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.194 mg/L	0.2 mg/L	96.9	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.195 mg/L	0.2 mg/L	97.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	18.8 mg/L	20 mg/L	93.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.194 mg/L	0.2 mg/L	96.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.949 mg/L	1 mg/L	94.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.194 mg/L	0.2 mg/L	97.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.200 mg/L	0.2 mg/L	100	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.373 mg/L	0.4 mg/L	93.2	70.0	130	----
		potassium, dissolved	7440-09-7	E421	36.1 mg/L	40 mg/L	90.3	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 279613) - continued</b>										
CG2103622-002	Anonymous	selenium, dissolved	7782-49-2	E421	0.374 mg/L	0.4 mg/L	93.4	70.0	130	----
		silicon, dissolved	7440-21-3	E421	91.9 mg/L	100 mg/L	91.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	20.0 mg/L	20 mg/L	99.8	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.214 mg/L	0.2 mg/L	107	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	174 mg/L	200 mg/L	87.1	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0377 mg/L	0.04 mg/L	94.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.194 mg/L	0.2 mg/L	96.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.375 mg/L	0.4 mg/L	93.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.972 mg/L	1 mg/L	97.2	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.93 mg/L	4 mg/L	98.3	70.0	130	----
<b>Dissolved Metals (QCLot: 284306)</b>										
CG2103663-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 284307)</b>										
CG2103663-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.209 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0244 mg/L	0.02 mg/L	122	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0221 mg/L	0.02 mg/L	111	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0105 mg/L	0.01 mg/L	105	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00427 mg/L	0.004 mg/L	107	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.10 mg/L	2 mg/L	105	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0220 mg/L	0.02 mg/L	110	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0248 mg/L	0.02 mg/L	124	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0368 mg/L	0.04 mg/L	92.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	10.1 mg/L	10 mg/L	101	70.0	130	----

Page : 21 of 21  
 Work Order : CG2103670  
 Client : Teck Coal Limited  
 Project : FORDING RIVER OPERATIONS



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 284307) - continued</b>										
CG2103663-002	Anonymous	silver, dissolved	7440-22-4	E421	0.00439 mg/L	0.004 mg/L	110	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00452 mg/L	0.004 mg/L	113	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0229 mg/L	0.02 mg/L	114	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0433 mg/L	0.04 mg/L	108	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.109 mg/L	0.1 mg/L	109	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.388 mg/L	0.4 mg/L	97.0	70.0	130	----

COC ID: **EC\_PC\_GW\_2021 08-27** TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cameron Griffin			Lab Contact	Lyudmyla Shvets			Email 1:	Cameron.griffin@teck.com	X	X	X
Email				Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Scott.Roughhead@teck.com	X	X	X
Address	Shared Services Bag 2000			Address	2559 29 Street NE			Email 3:	David.Burroughs@teck.com	X	X	X
	421 Pine Avenue							Email 4:	teckcoal@ecuisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:	kwiezel@bcengineering.ca	X	X	X
Postal Code	V0B 2G0	Country	CA	Postal Code	T1Y 7B5	Country	Canada	Email 6:		X	X	X
Phone Number	250 425 8137			Phone Number	403 407 1794			PO number	VPO00769061			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Cont p	# Of Cont.	ANALYSIS REQUESTED					
								TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN/Nutrients	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA	
<del>FR_MW-EC1A_EC-PC_WG_2021</del>	<del>FR_MW-EC1A</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_MW-EC1B_EC-PC_WG_2021</del>	<del>FR_MW-EC1B</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_MW-EC2A_EC-PC_WG_2021</del>	<del>FR_MW-EC2A</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_MW-EC2B_EC-PC_WG_2021</del>	<del>FR_MW-EC2B</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_MW-EC3A_EC-PC_WG_2021</del>	<del>FR_MW-EC3A</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_MW-EC3B_EC-PC_WG_2021</del>	<del>FR_MW-EC3B</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
FR_MW-EC4A_EC-PC_WG_2021-08-27	FR_MW-EC4A	WG	N	2021/08/27	12:10	G	5	1	1	1	1	1	1
FR_MW-EC4B_EC-PC_WG_2021-08-27	FR_MW-EC4B	WG	N	2021/08/27	10:55	G	5	1	1	1	1	1	1
<del>FR_BCI_EC-PC_WG_2021-08-NP</del>	<del>FR_BCI</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_FLD1_EC-PC_WG_2021-08-NP</del>	<del>FR_FLD1</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
FR_TRP1_EC-PC_WG_2021-08-NP-08-27	FR_TRP1	WG	N	2021/08/27	14:00	G	3	1	1	1	1	1	1

Environmental Division  
Calgary  
Work Order Reference  
**CG2103670**



Telephone : +1 403 407 1600

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	DATE/TIME	ACCEPTED BY/ AFFILIATION	DATE/TIME
*All samples field filtered and preserved as required. **Please note Sample ID changes - different from bottle sets		<i>[Signature]</i>	28/08 9:00
SERVICE REQUEST (rush - subject to availability)			
Regular (default) <input checked="" type="checkbox"/>			
Priority (2-3 business days) - 50% surcharge <input type="checkbox"/>			
Emergency (1 Business Day) - 100% surcharge <input type="checkbox"/>			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			
Sampler's Name		Mobile #	
Sampler's Signature		Date/Time	

*[Handwritten mark]*

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2104135**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
                   ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00769061  
**C-O-C number** : 9/15/2021  
**Sampler** : ARIC KEANE  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 8  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 16-Sep-2021 10:30  
**Date Analysis Commenced** : 17-Sep-2021  
**Issue Date** : 07-Oct-2021 09:44

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

Sample	Client Id	Comment
CG2104135-003	FR_FR3_MON_2021-09-06_N P	Sample was analyzed passed hold time for Turbidity, TDS, and TSS.

## Qualifiers

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
IB:INT	Ion Balance Reviewed: Imbalance is due to interference or non-measured component.
RRV	Reported result verified by repeat analysis.



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*TKNI* *TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

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## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					FR_POTWELLS _QTR_2021-07- 05_N	FR_GH_WELL4 _QTR_2021-07- 05_N	FR_FR3_MON_2 021-09-06_NP	FR_MW-1B_QT R_2021-07-05_ N	----
Client sampling date / time					15-Sep-2021 10:50	15-Sep-2021 11:45	14-Sep-2021 12:19	15-Sep-2021 13:43	----
Analyte	CAS Number	Method	LOR	Unit	CG2104135-001	CG2104135-002	CG2104135-003	CG2104135-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	7.5	<2.0	<2.0	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	141	298	208	169	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	3.4	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	141	298	208	173	----
conductivity	----	E100	2.0	µS/cm	446	1180	875	724	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	225	628	486	383	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	463	463	479	436	----
pH	----	E108	0.10	pH units	8.30	8.13	8.26	8.30	----
solids, total dissolved [TDS]	----	E162	10	mg/L	256	821	604	482	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	1.0	<1.0	----
turbidity	----	E121	0.10	NTU	<0.10	0.95	0.39	0.57	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	172	364	254	207	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	2.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0123	0.121 <sup>TKNI</sup>	0.102 <sup>TKNI</sup>	0.0125	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.22	3.59	1.38	0.71	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.224	0.125	0.196	0.170	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.244	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	0.150 <sup>TKNI</sup>	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.06	45.0	14.9	14.8	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.561	0.0346	<0.0010	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0022	<0.0010	<0.0010	0.0030	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0039	<0.0020	0.0099	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	97.6	408	256	187	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	1.40	1.06	<0.50	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	1.51	0.94	0.73	----





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_POTWELLS_QTR_2021-07-05_N	FR_GH_WELL4_QTR_2021-07-05_N	FR_FR3_MON_2021-09-06_NP	FR_MW-1B_QTR_2021-07-05_N	----
Client sampling date / time					15-Sep-2021 10:50	15-Sep-2021 11:45	14-Sep-2021 12:19	15-Sep-2021 13:43	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104135-001	CG2104135-002	CG2104135-003	CG2104135-004	-----	
					Result	Result	Result	Result	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.01	17.8	10.6	8.44	----	
cation sum	----	EC101	0.10	meq/L	4.55	12.7	9.88	7.75	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	90.8	71.3 <sup>IB.INT. RRV</sup>	93.2	91.8	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.81	16.7	3.52	4.26	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	----	----	0.0033	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	----	----	0.00036	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	----	----	0.00018	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	----	----	0.0684	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	----	----	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	----	----	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	----	----	0.018	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	----	----	0.0275	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	----	----	115	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	----	----	0.00013	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	----	----	0.55	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	----	----	<0.00050	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	----	----	0.051	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	----	----	<0.000050	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	----	----	0.0567	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	----	----	51.2	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	----	----	0.0227	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	----	----	<0.00050	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	----	----	0.00204	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	----	----	0.00794	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	----	----	2.43	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	----	----	39.0	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	----	----	2.09	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	----	----	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	----	----	2.33	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_POTWELLS_QTR_2021-07-05_N	FR_GH_WELL4_QTR_2021-07-05_N	FR_FR3_MON_2021-09-06_NP	FR_MW-1B_QTR_2021-07-05_N	----
Client sampling date / time					15-Sep-2021 10:50	15-Sep-2021 11:45	14-Sep-2021 12:19	15-Sep-2021 13:43	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104135-001	CG2104135-002	CG2104135-003	CG2104135-004	-----	
					Result	Result	Result	Result	----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	----	----	0.198	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	----	----	84.2	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	----	----	0.000012	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	----	----	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	----	----	<0.00030	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	----	----	0.00362	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	----	----	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	----	----	<0.0030	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0114	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0.00032	0.00018	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0.00012	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0606	0.0642	0.0731	0.125	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.011	0.015	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0117	0.0427	0.0237	0.0150	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	56.4	145	104	94.6	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	0.00010	<0.00010	0.00011	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	0.55	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00133	0.00134	0.00026	0.00103	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.022	0.016	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0070	0.0337	0.0555	0.0340	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	20.5	64.6	54.9	35.6	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00018	0.00362	0.0200	0.00011	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000808	0.000311	0.00177	0.00118	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0.00748	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.694	1.43	2.43	1.40	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_POTWELLS_QTR_2021-07-05_N	FR_GH_WELL4_QTR_2021-07-05_N	FR_FR3_MON_2021-09-06_NP	FR_MW-1B_QTR_2021-07-05_N	----
Client sampling date / time					15-Sep-2021 10:50	15-Sep-2021 11:45	14-Sep-2021 12:19	15-Sep-2021 13:43	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104135-001	CG2104135-002	CG2104135-003	CG2104135-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	12.5	117	44.4	47.8	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.62	2.53	2.04	2.20	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.648	3.05	2.41	1.58	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.106	0.182	0.176	0.158	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	30.5	93.0	83.2	63.5	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0.000011	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	0.00039	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000875	0.00356	0.00308	0.00205	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0033	0.0307	0.0012	0.0010	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104135</b>	Page	: 1 of 19
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 16-Sep-2021 10:30
PO	: VPO00769061	Issue Date	: 07-Oct-2021 09:44
C-O-C number	: 9/15/2021		
Sampler	: ARIC KEANE		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GH_WELL4_QTR_2021-07-05_N	E298	15-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	13 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-1B_QTR_2021-07-05_N	E298	15-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	13 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_POTWELLS_QTR_2021-07-05_N	E298	15-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	13 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FR3_MON_2021-09-06_NP	E298	14-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	14 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-07-05_N	E235.Br-L	15-Sep-2021	----	----	----		17-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-1B_QTR_2021-07-05_N	E235.Br-L	15-Sep-2021	----	----	----		17-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_POTWELLS_QTR_2021-07-05_N	E235.Br-L	15-Sep-2021	----	----	----		17-Sep-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_FR3_MON_2021-09-06_NP	E235.Br-L	14-Sep-2021	----	----	----		17-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_GH_WELL4_QTR_2021-07-05_N	E235.Cl-L	15-Sep-2021	----	----	----		17-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_MW-1B_QTR_2021-07-05_N	E235.Cl-L	15-Sep-2021	----	----	----		17-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_POTWELLS_QTR_2021-07-05_N	E235.Cl-L	15-Sep-2021	----	----	----		17-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_FR3_MON_2021-09-06_NP	E235.Cl-L	14-Sep-2021	----	----	----		17-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_GH_WELL4_QTR_2021-07-05_N	E378-U	15-Sep-2021	----	----	----		17-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_MW-1B_QTR_2021-07-05_N	E378-U	15-Sep-2021	----	----	----		17-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_POTWELLS_QTR_2021-07-05_N	E378-U	15-Sep-2021	----	----	----		17-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_FR3_MON_2021-09-06_NP	E378-U	14-Sep-2021	----	----	----		17-Sep-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-07-05_N	E235.F	15-Sep-2021	----	----	----		17-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_MW-1B_QTR_2021-07-05_N	E235.F	15-Sep-2021	----	----	----		17-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_POTWELLS_QTR_2021-07-05_N	E235.F	15-Sep-2021	----	----	----		17-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_FR3_MON_2021-09-06_NP	E235.F	14-Sep-2021	----	----	----		17-Sep-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-07-05_N	E235.NO3-L	15-Sep-2021	----	----	----		17-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-1B_QTR_2021-07-05_N	E235.NO3-L	15-Sep-2021	----	----	----		17-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_POTWELLS_QTR_2021-07-05_N	E235.NO3-L	15-Sep-2021	----	----	----		17-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_FR3_MON_2021-09-06_NP	E235.NO3-L	14-Sep-2021	----	----	----		17-Sep-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-07-05_N	E235.NO2-L	15-Sep-2021	----	----	----		17-Sep-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-1B_QTR_2021-07-05_N	E235.NO2-L	15-Sep-2021	----	----	----		17-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_POTWELLS_QTR_2021-07-05_N	E235.NO2-L	15-Sep-2021	----	----	----		17-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_FR3_MON_2021-09-06_NP	E235.NO2-L	14-Sep-2021	----	----	----		17-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-07-05_N	E235.SO4	15-Sep-2021	----	----	----		17-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW-1B_QTR_2021-07-05_N	E235.SO4	15-Sep-2021	----	----	----		17-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_POTWELLS_QTR_2021-07-05_N	E235.SO4	15-Sep-2021	----	----	----		17-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_FR3_MON_2021-09-06_NP	E235.SO4	14-Sep-2021	----	----	----		17-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GH_WELL4_QTR_2021-07-05_N	E318	15-Sep-2021	27-Sep-2021	----	----		27-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-1B_QTR_2021-07-05_N	E318	15-Sep-2021	27-Sep-2021	----	----		27-Sep-2021	28 days	12 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_POTWELLS_QTR_2021-07-05_N	E318	15-Sep-2021	27-Sep-2021	----	----		27-Sep-2021	28 days	12 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FR3_MON_2021-09-06_NP	E318	14-Sep-2021	27-Sep-2021	----	----		27-Sep-2021	28 days	13 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GH_WELL4_QTR_2021-07-05_N	E372-U	15-Sep-2021	18-Sep-2021	----	----		18-Sep-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-1B_QTR_2021-07-05_N	E372-U	15-Sep-2021	18-Sep-2021	----	----		18-Sep-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_POTWELLS_QTR_2021-07-05_N	E372-U	15-Sep-2021	18-Sep-2021	----	----		18-Sep-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FR3_MON_2021-09-06_NP	E372-U	14-Sep-2021	18-Sep-2021	----	----		18-Sep-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_GH_WELL4_QTR_2021-07-05_N	E421.Cr-L	15-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-1B_QTR_2021-07-05_N	E421.Cr-L	15-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_POTWELLS_QTR_2021-07-05_N	E421.Cr-L	15-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	180 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FR3_MON_2021-09-06_NP	E421.Cr-L	14-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_GH_WELL4_QTR_2021-07-05_N	E509	15-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_MW-1B_QTR_2021-07-05_N	E509	15-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_POTWELLS_QTR_2021-07-05_N	E509	15-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_FR3_MON_2021-09-06_NP	E509	14-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	9 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_GH_WELL4_QTR_2021-07-05_N	E421	15-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-1B_QTR_2021-07-05_N	E421	15-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_POTWELLS_QTR_2021-07-05_N	E421	15-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FR3_MON_2021-09-06_NP	E421	14-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_GH_WELL4_QTR_2021-07-05_N	E358-L	15-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-1B_QTR_2021-07-05_N	E358-L	15-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_POTWELLS_QTR_2021-07-05_N	E358-L	15-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_FR3_MON_2021-09-06_NP	E358-L	14-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	14 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GH_WELL4_QTR_2021-07-05_N	E355-L	15-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-1B_QTR_2021-07-05_N	E355-L	15-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_POTWELLS_QTR_2021-07-05_N	E355-L	15-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FR3_MON_2021-09-06_NP	E355-L	14-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	14 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-07-05_N	E283	15-Sep-2021	----	----	----		26-Sep-2021	14 days	11 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_MW-1B_QTR_2021-07-05_N	E283	15-Sep-2021	----	----	----		26-Sep-2021	14 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_POTWELLS_QTR_2021-07-05_N	E283	15-Sep-2021	----	----	----		26-Sep-2021	14 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_FR3_MON_2021-09-06_NP	E283	14-Sep-2021	----	----	----		26-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_GH_WELL4_QTR_2021-07-05_N	E290	15-Sep-2021	----	----	----		26-Sep-2021	14 days	11 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW-1B_QTR_2021-07-05_N	E290	15-Sep-2021	----	----	----		26-Sep-2021	14 days	11 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_POTWELLS_QTR_2021-07-05_N	E290	15-Sep-2021	----	----	----		26-Sep-2021	14 days	11 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_FR3_MON_2021-09-06_NP	E290	14-Sep-2021	----	----	----		26-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_GH_WELL4_QTR_2021-07-05_N	E100	15-Sep-2021	----	----	----		26-Sep-2021	28 days	11 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-1B_QTR_2021-07-05_N	E100	15-Sep-2021	----	----	----		26-Sep-2021	28 days	11 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_POTWELLS_QTR_2021-07-05_N	E100	15-Sep-2021	----	----	----		26-Sep-2021	28 days	11 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_FR3_MON_2021-09-06_NP	E100	14-Sep-2021	----	----	----		26-Sep-2021	28 days	12 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-1B_QTR_2021-07-05_N	E125	15-Sep-2021	----	----	----		24-Sep-2021	0.34 hrs	220 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_GH_WELL4_QTR_2021-07-05_N	E125	15-Sep-2021	----	----	----		24-Sep-2021	0.34 hrs	222 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_POTWELLS_QTR_2021-07-05_N	E125	15-Sep-2021	----	----	----		24-Sep-2021	0.34 hrs	223 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_FR3_MON_2021-09-06_NP	E125	14-Sep-2021	----	----	----		24-Sep-2021	0.34 hrs	245 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW-1B_QTR_2021-07-05_N	E108	15-Sep-2021	----	----	----		26-Sep-2021	0.25 hrs	262 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_GH_WELL4_QTR_2021-07-05_N	E108	15-Sep-2021	----	----	----		26-Sep-2021	0.25 hrs	264 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_POTWELLS_QTR_2021-07-05_N	E108	15-Sep-2021	----	----	----		26-Sep-2021	0.25 hrs	265 hrs		* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : pH by Meter</b>										
HDPE FR_FR3_MON_2021-09-06_NP	E108	14-Sep-2021	----	----	----		26-Sep-2021	0.25 hrs	288 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_GH_WELL4_QTR_2021-07-05_N	E162	15-Sep-2021	----	----	----		22-Sep-2021	7 days	7 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_MW-1B_QTR_2021-07-05_N	E162	15-Sep-2021	----	----	----		22-Sep-2021	7 days	7 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_POTWELLS_QTR_2021-07-05_N	E162	15-Sep-2021	----	----	----		22-Sep-2021	7 days	7 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_FR3_MON_2021-09-06_NP	E162	14-Sep-2021	----	----	----		22-Sep-2021	7 days	8 days	* EHT
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] FR_GH_WELL4_QTR_2021-07-05_N	E160-L	15-Sep-2021	----	----	----		22-Sep-2021	7 days	7 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] FR_MW-1B_QTR_2021-07-05_N	E160-L	15-Sep-2021	----	----	----		22-Sep-2021	7 days	7 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] FR_POTWELLS_QTR_2021-07-05_N	E160-L	15-Sep-2021	----	----	----		22-Sep-2021	7 days	7 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] FR_FR3_MON_2021-09-06_NP	E160-L	14-Sep-2021	----	----	----		22-Sep-2021	7 days	8 days	* EHT



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation			Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_GH_WELL4_QTR_2021-07-05_N	E121	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_MW-1B_QTR_2021-07-05_N	E121	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_POTWELLS_QTR_2021-07-05_N	E121	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_FR3_MON_2021-09-06_NP	E121	14-Sep-2021	----	----	----		18-Sep-2021	3 days	4 days	* EHT
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_FR3_MON_2021-09-06_NP	E420.Cr-L	14-Sep-2021	----	----	----		21-Sep-2021	180 days	7 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> FR_FR3_MON_2021-09-06_NP	E508-L	14-Sep-2021	----	----	----		23-Sep-2021	28 days	9 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_FR3_MON_2021-09-06_NP	E420	14-Sep-2021	----	----	----		21-Sep-2021	180 days	7 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 EHT: Exceeded ALS recommended hold time prior to analysis.  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	303170	2	39	5.1	5.0	✓
Alkalinity Species by Titration	E290	303163	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	304441	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	294942	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	294943	1	19	5.2	5.0	✓
Conductivity in Water	E100	303161	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	298542	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300041	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	298543	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303746	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	294997	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	294946	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	294944	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	294945	1	19	5.2	5.0	✓
ORP by Electrode	E125	300484	2	39	5.1	5.0	✓
pH by Meter	E108	303162	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	294941	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	298975	2	39	5.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	297687	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	304007	1	14	7.1	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	300714	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	297688	2	19	10.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303747	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	294820	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	295905	1	18	5.5	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	303170	2	39	5.1	5.0	✓
Alkalinity Species by Titration	E290	303163	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	304441	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	294942	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	294943	1	19	5.2	5.0	✓
Conductivity in Water	E100	303161	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	298542	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300041	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	298543	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303746	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	294997	1	19	5.2	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	294946	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	294944	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	294945	1	19	5.2	5.0	✓
ORP by Electrode	E125	300484	2	39	5.1	5.0	✓
pH by Meter	E108	303162	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	294941	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	298975	2	39	5.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	297687	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	304007	1	14	7.1	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	300714	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	297688	2	19	10.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303747	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	294820	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	298274	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	295905	1	18	5.5	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	303170	2	39	5.1	5.0	✓
Alkalinity Species by Titration	E290	303163	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	304441	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	294942	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	294943	1	19	5.2	5.0	✓
Conductivity in Water	E100	303161	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	298542	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300041	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	298543	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303746	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	294997	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	294946	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	294944	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	294945	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	294941	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	298975	2	39	5.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	297687	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	304007	1	14	7.1	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	300714	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	297688	2	19	10.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303747	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	294820	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	298274	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	295905	1	18	5.5	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	304441	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	294942	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	294943	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	298542	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300041	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	298543	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303746	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	294997	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	294946	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	294944	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	294945	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	294941	1	19	5.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	297687	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	304007	1	14	7.1	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	300714	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	297688	2	19	10.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303747	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	294820	1	19	5.2	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

Page : 19 of 19  
Work Order : CG2104135  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2104135**

**Page** : 1 of 19

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00769061  
**C-O-C number** : 9/15/2021  
**Sampler** : ARIC KEANE  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 16-Sep-2021 10:30  
**Date Analysis Commenced** : 17-Sep-2021  
**Issue Date** : 07-Oct-2021 09:44

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Saron Kim

Analyst

Metals, Burnaby, British Columbia



Page : 3 of 19  
Work Order : CG2104135  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 295905)</b>											
CG2104134-004	Anonymous	turbidity	----	E121	0.10	NTU	1.81	1.91	5.70%	15%	----
<b>Physical Tests (QC Lot: 298975)</b>											
CG2104130-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1520	1570	2.98%	20%	----
<b>Physical Tests (QC Lot: 298976)</b>											
CG2104135-003	FR_FR3_MON_2021-09-06_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	604	613	1.40%	20%	----
<b>Physical Tests (QC Lot: 300484)</b>											
CG2104130-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	466	464	0.430%	15%	----
<b>Physical Tests (QC Lot: 300485)</b>											
CG2104135-003	FR_FR3_MON_2021-09-06_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	479	481	0.542%	15%	----
<b>Physical Tests (QC Lot: 303161)</b>											
CG2104134-006	Anonymous	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 303162)</b>											
CG2104134-006	Anonymous	pH	----	E108	0.10	pH units	5.34	5.15	3.62%	4%	----
<b>Physical Tests (QC Lot: 303163)</b>											
CG2104134-006	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 303170)</b>											
CG2104130-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	3.6	3.1	0.5	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 303171)</b>											
CG2104135-003	FR_FR3_MON_2021-09-06_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 294820)</b>											
CG2104131-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0033	0.0033	0.00002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 294941)</b>											
CG2104134-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	904	903	0.102%	20%	----
<b>Anions and Nutrients (QC Lot: 294942)</b>											
CG2104134-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 294943)</b>											
CG2104134-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.92	1.67	0.26	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 294944)</b>											
CG2104134-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	5.59	5.58	0.143%	20%	----
<b>Anions and Nutrients (QC Lot: 294945)</b>											
CG2104134-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0452	0.0443	0.0009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 294946)</b>											
CG2104134-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.140	0.145	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 294997)</b>											
CG2104134-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 304007)</b>											
CG2104131-005	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.142	0.137	0.005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 304441)</b>											
CG2104125-014	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.198	0.209	5.50%	20%	----
<b>Anions and Nutrients (QC Lot: 304442)</b>											
CG2104135-004	FR_MW-1B_QTR_2021-07-05_N	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0125	0.0128	0.0003	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 303746)</b>											
CG2104135-001	FR_POTWELLS_QTR_2021-07-05_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 303747)</b>											
CG2104135-001	FR_POTWELLS_QTR_2021-07-05_N	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 297687)</b>											
CG2104134-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00014	0.00004	Diff <2x LOR	----
<b>Total Metals (QC Lot: 297688)</b>											
CG2104134-001	Anonymous	copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0104	0.0106	1.36%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0434	0.0434	0.142%	20%	----
CG2104134-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0299	0.0274	0.0025	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00030	0.00029	0.00001	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00025	0.00022	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0265	0.0258	2.84%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.100	0.097	0.002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.423 µg/L	0.000432	2.02%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	231	225	2.40%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	1.16 µg/L	0.00115	1.02%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.080	0.078	0.001	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 297688) - continued</b>											
CG2104134-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0494	0.0482	2.38%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	123	122	0.329%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000744	0.000713	4.19%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	3.56	3.55	0.335%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	25.8 µg/L	0.0258	0.191%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.99	1.99	0.0646%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	38.9	39.1	0.469%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.931	0.911	2.23%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	282	282	0.0771%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000049	0.000049	0.0000003	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00137	0.00098	0.00039	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00719	0.00708	1.52%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0361	0.0357	1.23%	20%	----
<b>Total Metals (QC Lot: 300714)</b>											
CG2104134-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	0.00052 µg/L	0.52	0.002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 298542)</b>											
CG2104134-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 298543)</b>											
CG2104134-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00029	0.00028	0.000009	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	0.00014	0.000002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0259	0.0265	2.34%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.098	0.096	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.357 µg/L	0.000358	0.274%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	216	216	0.118%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	1.09 µg/L	0.00110	1.19%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00032	0.00034	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.010	0.011	0.0007	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 298543) - continued</b>											
CG2104134-001	Anonymous	lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0506	0.0494	2.40%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	128	125	1.94%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00754	0.00768	1.75%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000739	0.000756	2.25%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0374	0.0373	0.0726%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.43	3.50	2.09%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	30.2 µg/L	0.0285	6.07%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.84	1.80	1.96%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	39.5	38.8	1.71%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.940	0.921	2.02%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	280	274	1.93%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000045	0.000047	0.000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00717	0.00702	2.06%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0318	0.0316	0.456%	20%	----
<b>Dissolved Metals (QC Lot: 300041)</b>											
CG2104134-006	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 295905)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 298274)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 298975)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 298976)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 303161)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 303163)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	1.2	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 303170)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 303171)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 294820)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 294941)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 294942)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 294943)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 294944)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 294945)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 294946)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 294997)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 294997) - continued</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 304007)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 304441)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 304442)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 303746)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 303747)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 297687)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	MBRR
<b>Total Metals (QCLot: 297688)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	MBRR
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	MBRR
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	MBRR
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 297688) - continued</b>						
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 300714)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 298542)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 298543)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 298543) - continued</b>						
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 300041)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

**Qualifiers**

Qualifier	Description
MBRR	Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 295905)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 298274)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	95.4	85.0	115	---
<b>Physical Tests (QCLot: 298975)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	97.2	85.0	115	---
<b>Physical Tests (QCLot: 298976)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	97.2	85.0	115	---
<b>Physical Tests (QCLot: 300484)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Physical Tests (QCLot: 300485)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Physical Tests (QCLot: 303161)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.6	90.0	110	---
<b>Physical Tests (QCLot: 303162)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 303163)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 303170)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 303171)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 294820)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	92.6	80.0	120	---
<b>Anions and Nutrients (QCLot: 294941)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 294942)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 294943)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 294944)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 294945)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 294945) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	105	90.0	110	----
<b>Anions and Nutrients (QCLot: 294946)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	105	90.0	110	----
<b>Anions and Nutrients (QCLot: 294997)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	97.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 304007)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 304441)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.8	85.0	115	----
<b>Anions and Nutrients (QCLot: 304442)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 303746)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	94.0	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 303747)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	99.8	80.0	120	----
<b>Total Metals (QCLot: 297687)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
<b>Total Metals (QCLot: 297688)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	96.9	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.3	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	98.7	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	90.9	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	94.2	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.9	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.7	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.7	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.0	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.0	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	97.2	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 297688) - continued</b>									
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.9	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	93.5	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.5	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	95.2	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	95.5	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	101	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	93.3	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	95.2	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.2	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	94.2	80.0	120	----
<b>Total Metals (QCLot: 300714)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 298542)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	95.5	80.0	120	----
<b>Dissolved Metals (QCLot: 298543)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.9	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.2	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	96.6	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	94.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.4	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 298543) - continued</b>									
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.7	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.8	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.9	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.5	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.5	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.6	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.0	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.0	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 294820)</b>										
CG2104131-005	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0624 mg/L	0.0676 mg/L	92.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 294941)</b>										
CG2104134-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 294942)</b>										
CG2104134-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.594 mg/L	0.5 mg/L	119	75.0	125	----
<b>Anions and Nutrients (QCLot: 294943)</b>										
CG2104134-006	Anonymous	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 294944)</b>										
CG2104134-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.66 mg/L	2.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 294945)</b>										
CG2104134-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.532 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 294946)</b>										
CG2104134-006	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 294997)</b>										
CG2104134-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0570 mg/L	0.05 mg/L	114	70.0	130	----
<b>Anions and Nutrients (QCLot: 304007)</b>										
CG2104131-006	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.45 mg/L	2.5 mg/L	97.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 304441)</b>										
CG2104125-015	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 304442)</b>										
CG2104188-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.118 mg/L	0.1 mg/L	118	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 303746)</b>										
CG2104135-001	FR_POTWELLS_QTR_2021-07-05_N	carbon, dissolved organic [DOC]	----	E358-L	24.0 mg/L	23.9 mg/L	100	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 303747)</b>										
CG2104135-001	FR_POTWELLS_QTR_2021-07-05_N	carbon, total organic [TOC]	----	E355-L	24.4 mg/L	23.9 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 297687)</b>										
CG2104134-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0442 mg/L	0.04 mg/L	110	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 297688)</b>										
CG2104134-002	Anonymous	copper, total	7440-50-8	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		manganese, total	7439-96-5	E420	0.0225 mg/L	0.02 mg/L	112	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
CG2104134-002	Anonymous	aluminum, total	7429-90-5	E420	0.188 mg/L	0.2 mg/L	94.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0358 mg/L	0.04 mg/L	89.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00882 mg/L	0.01 mg/L	88.2	70.0	130	----
		boron, total	7440-42-8	E420	0.086 mg/L	0.1 mg/L	86.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00356 mg/L	0.004 mg/L	88.9	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0178 mg/L	0.02 mg/L	88.8	70.0	130	----
		iron, total	7439-89-6	E420	1.82 mg/L	2 mg/L	91.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0174 mg/L	0.02 mg/L	86.9	70.0	130	----
		lithium, total	7439-93-2	E420	0.0884 mg/L	0.1 mg/L	88.4	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		potassium, total	7440-09-7	E420	3.54 mg/L	4 mg/L	88.6	70.0	130	----
		selenium, total	7782-49-2	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		silicon, total	7440-21-3	E420	9.28 mg/L	10 mg/L	92.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00358 mg/L	0.004 mg/L	89.5	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00349 mg/L	0.004 mg/L	87.2	70.0	130	----
		tin, total	7440-31-5	E420	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		titanium, total	7440-32-6	E420	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0978 mg/L	0.1 mg/L	97.8	70.0	130	----
		zinc, total	7440-66-6	E420	0.358 mg/L	0.4 mg/L	89.6	70.0	130	----
<b>Total Metals (QCLot: 300714)</b>										
CG2104134-002	Anonymous	mercury, total	7439-97-6	E508-L	5.11 ng/L	5 ng/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 298542)</b>										
CG2104134-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
<b>Dissolved Metals (QCLot: 298543)</b>										





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 298543) - continued</b>										
CG2104134-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.188 mg/L	0.2 mg/L	93.9	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0372 mg/L	0.04 mg/L	93.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00825 mg/L	0.01 mg/L	82.5	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	93.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00364 mg/L	0.004 mg/L	91.1	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0177 mg/L	0.02 mg/L	88.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0175 mg/L	0.02 mg/L	87.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.84 mg/L	2 mg/L	92.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0178 mg/L	0.02 mg/L	89.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0970 mg/L	0.1 mg/L	97.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.33 mg/L	4 mg/L	83.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0376 mg/L	0.04 mg/L	94.0	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.65 mg/L	10 mg/L	86.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00361 mg/L	0.004 mg/L	90.3	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00364 mg/L	0.004 mg/L	90.9	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0186 mg/L	0.02 mg/L	93.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0378 mg/L	0.04 mg/L	94.4	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0971 mg/L	0.1 mg/L	97.1	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.359 mg/L	0.4 mg/L	89.8	70.0	130	----
<b>Dissolved Metals (QCLot: 300041)</b>										
CG2104134-007	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000962 mg/L	0.0001 mg/L	96.2	70.0	130	----





COC ID: 9/15/2021		TURNAROUND TIME:				RUSH:						
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>				<b>OTHER INFO</b>				
Facility Name / Job# Fording River Operation				Lab Name ALS Calgary		Report Format / Distribution				Excel	PDF	EDD
Project Manager Scott Roughead				Lab Contact Lyudmyla Shvets		Email 1: david.burroughs@teck.com				X	X	X
Email scott.roughead@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com		Email 2: britt.anderson@teck.com				X	X	X
Address				Address 2559 29 Street NE		Email 3: scott.roughead@teck.com				X	X	X
City Elkford				City Calgary		Email 4: teckcoal@equisonline.com						X
Province BC				Province AB		Email 5: cameron.griff@teck.com				X	X	X
Postal Code				Postal Code T1Y 7B5		Email 6: ewietel@bgcengineering.ca				X	X	X
Country Canada				Country Canada		Phone Number 403 407 1794				PO number VPO00769061		
Phone Number 1-250-433-6976				Phone Number 403 407 1794								

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Filterid	F	N	F	N	F	N	N	N						
									H2SO4	H2SO4	HCL	NONE	HNO3	HNO3	NONE	Sodium Bisulfate						
									ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-YA	HG-T-U-CVAF-YA	TECKCOAL-MET-D-YA	TECKCOAL-MET/HG-T-CL	TECKCOAL-ROUTINE-YA	EPH	TSS Turbidity	ALS_Package-BOD	ALS_Package-Colour	ALS_Package-PAH		
FR_POTWELLS_QTR_2021-07-05_N	FR_POTWELLS	WG	NO	9/15/2021	10:50	G	5		1	1	1		1		1							
FR_GH_WELL4_QTR_2021-07-05_N	FR_GH_WELL4	WG	NO	9/15/2021	11:45	G	5		1	1	1		1		1							
FR_FR3_MON_2021-09-06_NP	FR_FR3	WS	NO	9/14/2021	12:19	G	7		1	1	1	1	1	1	1							
FR_MW-1B_QTR_2021-07-05_N	FR_MW-1B	WG	NO	9/15/2021	13:43	G	5		1	1	1		1		1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Aric Keane	September 15, 2021	<i>DK</i>	9/16 (99)

SERVICE REQUEST (rush - subject to availability)					
Regular (default)	X	Sampler's Name	Aric Keane	Mobile #	250-427-1062
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time	September 15, 2021
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

Environmental Division  
Calgary

Work Order Reference  
**CG2104135**



Telephone : +1 403 407 1800



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2104203**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 9/17/2021  
**Sampler** : Cruz Canlas  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 8  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 18-Sep-2021 09:00  
**Date Analysis Commenced** : 19-Sep-2021  
**Issue Date** : 19-Oct-2021 14:44

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

Samples Received with temperature >10 Degrees C. Samples were received at 12C.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
RRV	Reported result verified by repeat analysis.



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*TKNI* *TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

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## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC3_MON_2021-09-06_N	FR_SP1_MON_2021-09-06_N	FR_BENSPIT1_70M_WG_2021-09-17_N	----	----
Client sampling date / time					17-Sep-2021 10:45	17-Sep-2021 10:45	17-Sep-2021 11:00	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104203-001	CG2104203-002	CG2104203-003	-----	-----	
					Result	Result	Result	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	5.8	4.9	2.6	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	379	380	274	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	379	380	274	----	----	
conductivity	----	E100	2.0	µS/cm	1040	1040	481	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	621	591	268	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	421	449	456	----	----	
pH	----	E108	0.10	pH units	8.27	8.28	8.20	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	672	695	280	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	29.5	----	----	
turbidity	----	E121	0.10	NTU	0.22	0.38	63.9	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	463	463	334	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0307	0.0249	2.46	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.76	0.66	0.22	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.264	0.267	0.625	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.294 <sup>TKNI</sup>	0.412 <sup>TKNI</sup>	2.48	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	5.76	5.75	0.0329	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0124	0.0072	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0.0126	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	232	235	<0.30	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.18 <sup>DTC,RRV</sup>	1.47	1.33	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.76 <sup>DTC,RRV</sup>	1.50	1.31	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC3_MON_2021-09-06_N	FR_SP1_MON_2021-09-06_N	FR_BENSPIT1_70M_WG_2021-09-17_N	----	----
Client sampling date / time					17-Sep-2021 10:45	17-Sep-2021 10:45	17-Sep-2021 11:00	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104203-001	CG2104203-002	CG2104203-003	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	12.8	12.9	5.52	----	----	
cation sum	----	EC101	0.10	meq/L	12.6	12.0	5.82	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	98.4	93.0	105	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.787	3.61	2.64	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0.0236	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00018	0.00018	<0.00010	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0221	0.0227	3.12	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.016	0.017	0.023	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0928	0.106	<0.0050	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	129	129	63.8	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00018	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	<0.10	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	7.21	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0.000079	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0478	0.0475	0.148	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	70.1	72.3	27.3	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00041	0.00047	0.0772	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000459	0.000477	<0.000050	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00177	0.00181	<0.00050	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	3.37	3.43	7.51	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	24.0	23.7	<0.050	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.01	2.06	1.90	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	1.42	1.44	0.478	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC3_MON_2021-09-06_N	FR_SP1_MON_2021-09-06_N	FR_BENSPIT1_70M_WG_2021-09-17_N	----	----
Client sampling date / time					17-Sep-2021 10:45	17-Sep-2021 10:45	17-Sep-2021 11:00	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104203-001	CG2104203-002	CG2104203-003	-----	-----	
					Result	Result	Result	----	----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.162	0.163	0.275	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	80.0	80.5	<0.50	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000013	0.000014	<0.000010	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00422	0.00412	0.000018	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0.0113	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0011	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00016	0.00016	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0227	0.0222	2.89	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.016	0.016	0.023	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.103	0.0980	<0.0050	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	128	123	63.0	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	2.09	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0468	0.0468	0.149	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	73.2	69.0	26.9	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00040	0.00041	0.0545	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000435	0.000446	0.000110 <sup>DTMF</sup>	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00175	0.00175	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.51	3.43	7.60	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC3_MON_2021-09-06_N	FR_SP1_MON_2021-09-06_N	FR_BENSPIT1_70M_WG_2021-09-17_N	----	----
Client sampling date / time					17-Sep-2021 10:45	17-Sep-2021 10:45	17-Sep-2021 11:00	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104203-001	CG2104203-002	CG2104203-003	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	27.4	27.7	<0.050	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.03	1.95	1.64	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.50	1.44	0.461	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.155	0.149	0.245	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	80.5	78.2	<0.50	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000017	0.000015	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00382	0.00375	<0.000010	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0021	0.0024	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104203</b>	Page	: 1 of 17
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 18-Sep-2021 09:00
PO	: VPO00741392	Issue Date	: 19-Oct-2021 14:44
C-O-C number	: 9/17/2021		
Sampler	: Cruz Canlas		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E298	17-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC3_MON_2021-09-06_N	E298	17-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_SP1_MON_2021-09-06_N	E298	17-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E235.Br-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC3_MON_2021-09-06_N	E235.Br-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_SP1_MON_2021-09-06_N	E235.Br-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E235.Cl-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_DC3_MON_2021-09-06_N	E235.Cl-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_SP1_MON_2021-09-06_N	E235.Cl-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_BENSPIT1_70M_WG_2021-09-17_N	E378-U	17-Sep-2021	----	----	----		20-Sep-2021	3 days	3 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_DC3_MON_2021-09-06_N	E378-U	17-Sep-2021	----	----	----		20-Sep-2021	3 days	3 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_SP1_MON_2021-09-06_N	E378-U	17-Sep-2021	----	----	----		20-Sep-2021	3 days	3 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_BENSPIT1_70M_WG_2021-09-17_N	E235.F	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_DC3_MON_2021-09-06_N	E235.F	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_SP1_MON_2021-09-06_N	E235.F	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_BENSPIT1_70M_WG_2021-09-17_N	E235.NO3-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC3_MON_2021-09-06_N	E235.NO3-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_SP1_MON_2021-09-06_N	E235.NO3-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E235.NO2-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC3_MON_2021-09-06_N	E235.NO2-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_SP1_MON_2021-09-06_N	E235.NO2-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E235.SO4	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_DC3_MON_2021-09-06_N	E235.SO4	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_SP1_MON_2021-09-06_N	E235.SO4	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E318	17-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	11 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC3_MON_2021-09-06_N	E318	17-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_SP1_MON_2021-09-06_N	E318	17-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E372-U	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC3_MON_2021-09-06_N	E372-U	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_SP1_MON_2021-09-06_N	E372-U	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E421.Cr-L	17-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC3_MON_2021-09-06_N	E421.Cr-L	17-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_SP1_MON_2021-09-06_N	E421.Cr-L	17-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E509	17-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	7 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_DC3_MON_2021-09-06_N	E509	17-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_SP1_MON_2021-09-06_N	E509	17-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E421	17-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC3_MON_2021-09-06_N	E421	17-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_SP1_MON_2021-09-06_N	E421	17-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E358-L	17-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	13 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_DC3_MON_2021-09-06_N	E358-L	17-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	13 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_SP1_MON_2021-09-06_N	E358-L	17-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	13 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E355-L	17-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	13 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC3_MON_2021-09-06_N	E355-L	17-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	13 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_SP1_MON_2021-09-06_N	E355-L	17-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	13 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E283	17-Sep-2021	----	----	----		29-Sep-2021	14 days	12 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_DC3_MON_2021-09-06_N	E283	17-Sep-2021	----	----	----		29-Sep-2021	14 days	12 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_SP1_MON_2021-09-06_N	E283	17-Sep-2021	----	----	----		29-Sep-2021	14 days	12 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E290	17-Sep-2021	----	----	----		28-Sep-2021	14 days	11 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_DC3_MON_2021-09-06_N	E290	17-Sep-2021	----	----	----		28-Sep-2021	14 days	11 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_SP1_MON_2021-09-06_N	E290	17-Sep-2021	----	----	----		28-Sep-2021	14 days	11 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E100	17-Sep-2021	----	----	----		28-Sep-2021	28 days	11 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_DC3_MON_2021-09-06_N	E100	17-Sep-2021	----	----	----		28-Sep-2021	28 days	11 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_SP1_MON_2021-09-06_N	E100	17-Sep-2021	----	----	----		28-Sep-2021	28 days	11 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_BENSPIT1_70M_WG_2021-09-17_N	E125	17-Sep-2021	----	----	----		27-Sep-2021	0.25 hrs	242 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_DC3_MON_2021-09-06_N	E125	17-Sep-2021	----	----	----		27-Sep-2021	0.25 hrs	242 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_SP1_MON_2021-09-06_N	E125	17-Sep-2021	----	----	----		27-Sep-2021	0.25 hrs	242 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_BENSPIT1_70M_WG_2021-09-17_N	E108	17-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	265 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_DC3_MON_2021-09-06_N	E108	17-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	265 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_SP1_MON_2021-09-06_N	E108	17-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	265 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_BENSPIT1_70M_WG_2021-09-17_N	E162	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days		✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_DC3_MON_2021-09-06_N	E162	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_SP1_MON_2021-09-06_N	E162	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E160-L	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_DC3_MON_2021-09-06_N	E160-L	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_SP1_MON_2021-09-06_N	E160-L	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E121	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_DC3_MON_2021-09-06_N	E121	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_SP1_MON_2021-09-06_N	E121	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E420.Cr-L	17-Sep-2021	----	----	----		23-Sep-2021	180 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_DC3_MON_2021-09-06_N	E420.Cr-L	17-Sep-2021	----	----	----		23-Sep-2021	180 days	6 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_SP1_MON_2021-09-06_N	E420.Cr-L	17-Sep-2021	----	----	----		23-Sep-2021	180 days	6 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E508-L	17-Sep-2021	----	----	----		26-Sep-2021	28 days	9 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> FR_DC3_MON_2021-09-06_N	E508-L	17-Sep-2021	----	----	----		26-Sep-2021	28 days	9 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> FR_SP1_MON_2021-09-06_N	E508-L	17-Sep-2021	----	----	----		26-Sep-2021	28 days	9 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_BENSPIT1_70M_WG_2021-09-17_N	E420	17-Sep-2021	----	----	----		23-Sep-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_DC3_MON_2021-09-06_N	E420	17-Sep-2021	----	----	----		23-Sep-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_SP1_MON_2021-09-06_N	E420	17-Sep-2021	----	----	----		23-Sep-2021	180 days	6 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	306147	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304819	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	305806	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296660	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296661	1	17	5.8	5.0	✓
Conductivity in Water	E100	304817	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300105	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301260	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300106	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303950	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	297210	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	296664	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296662	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296663	1	17	5.8	5.0	✓
ORP by Electrode	E125	303222	1	16	6.2	5.0	✓
pH by Meter	E108	304818	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	296659	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	301371	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300570	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303387	1	13	7.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303055	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300569	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303957	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299080	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	296755	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	306147	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304819	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	305806	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296660	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296661	1	17	5.8	5.0	✓
Conductivity in Water	E100	304817	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300105	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301260	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300106	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303950	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	297210	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	296664	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296662	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296663	1	17	5.8	5.0	✓
ORP by Electrode	E125	303222	1	16	6.2	5.0	✓
pH by Meter	E108	304818	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	296659	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	301371	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300570	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303387	1	13	7.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303055	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300569	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303957	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299080	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	301366	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	296755	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	306147	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304819	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	305806	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296660	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296661	1	17	5.8	5.0	✓
Conductivity in Water	E100	304817	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300105	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301260	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300106	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303950	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	297210	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	296664	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296662	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296663	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	296659	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	301371	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300570	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303387	1	13	7.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303055	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300569	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303957	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299080	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	301366	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	296755	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	305806	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296660	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296661	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300105	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301260	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300106	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303950	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	297210	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	296664	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296662	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296663	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	296659	1	17	5.8	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300570	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303387	1	13	7.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303055	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300569	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303957	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299080	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

Page : 17 of 17  
Work Order : CG2104203  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2104203**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 9/17/2021  
**Sampler** : Cruz Canlas  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 18-Sep-2021 09:00  
**Date Analysis Commenced** : 19-Sep-2021  
**Issue Date** : 19-Oct-2021 14:44

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
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Sara Niroomand		Inorganics, Calgary, Alberta
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Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 18  
Work Order : CG2104203  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 296755)</b>											
CG2104188-018	Anonymous	turbidity	----	E121	0.10	NTU	0.85	0.82	0.03	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 301371)</b>											
CG2104188-018	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1690	1610	4.58%	20%	----
<b>Physical Tests (QC Lot: 303222)</b>											
CG2104202-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	462	465	0.690%	15%	----
<b>Physical Tests (QC Lot: 304817)</b>											
CG2104202-002	Anonymous	conductivity	----	E100	2.0	µS/cm	1520	1520	0.329%	10%	----
<b>Physical Tests (QC Lot: 304818)</b>											
CG2104202-002	Anonymous	pH	----	E108	0.10	pH units	8.14	8.15	0.123%	4%	----
<b>Physical Tests (QC Lot: 304819)</b>											
CG2104202-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	354	354	0.113%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	354	354	0.113%	20%	----
<b>Physical Tests (QC Lot: 306147)</b>											
CG2104202-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	5.4	6.1	0.7	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296659)</b>											
CG2104203-001	FR_DC3_MON_2021-09-06_N	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	232	232	0.192%	20%	----
<b>Anions and Nutrients (QC Lot: 296660)</b>											
CG2104203-001	FR_DC3_MON_2021-09-06_N	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296661)</b>											
CG2104203-001	FR_DC3_MON_2021-09-06_N	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	0.76	0.70	0.06	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296662)</b>											
CG2104203-001	FR_DC3_MON_2021-09-06_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	5.76	5.76	0.0659%	20%	----
<b>Anions and Nutrients (QC Lot: 296663)</b>											
CG2104203-001	FR_DC3_MON_2021-09-06_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0124	0.0116	0.0008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296664)</b>											
CG2104203-001	FR_DC3_MON_2021-09-06_N	fluoride	16984-48-8	E235.F	0.100	mg/L	0.264	0.269	0.005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 297210)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 297210) - continued</b>											
CG2104203-001	FR_DC3_MON_2021-09-06_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 299080)</b>											
CG2104202-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 303387)</b>											
VA21B8189-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 305806)</b>											
CG2104200-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.125	mg/L	2.80	2.81	0.535%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 303950)</b>											
CG2104202-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.92	0.79	0.13	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 303957)</b>											
CG2104202-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.63	0.64	0.006	Diff <2x LOR	----
<b>Total Metals (QC Lot: 300569)</b>											
CG2104186-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0096	0.0043	0.0053	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0296	0.0298	0.955%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0231 µg/L	0.0000161	0.0000070	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	65.0	66.1	1.68%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.010	0.010	0.0001	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0091	0.0093	0.0002	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	26.1	26.4	1.14%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00412	0.00419	1.74%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000979	0.000974	0.498%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00089	0.00088	0.00002	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.814	0.831	2.11%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	19.9 µg/L	0.0202	1.38%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.57	1.59	0.837%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	0.644	0.655	1.69%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 300569) - continued</b>											
CG2104186-001	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	0.126	0.128	1.50%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	44.1	44.8	1.44%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00131	0.00132	0.989%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 300570)</b>											
CG2104186-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00014	0.00015	0.00001	Diff <2x LOR	----
<b>Total Metals (QC Lot: 303055)</b>											
CG2104202-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 300105)</b>											
CG2104202-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	0.00012	0.000006	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 300106)</b>											
CG2104202-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0013	0.0011	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0152	0.0152	0.550%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0129 µg/L	0.0000110	0.0000019	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	43.9	44.2	0.799%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0021	0.0021	0.00002	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	12.4	12.6	1.38%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00102	0.000970	5.22%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.266	0.273	0.007	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	1.32 µg/L	0.00134	1.93%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 300106) - continued</b>											
CG2104202-001	Anonymous	silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.57	1.56	0.623%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.478	0.482	0.004	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.123	0.120	2.51%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	17.8	18.1	1.97%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00149	0.00147	1.75%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0034	0.0038	0.0004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 301260)</b>											
CG2104161-008	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 296755)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 301366)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 301371)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 304817)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 304819)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	1.1	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 306147)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 296659)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 296660)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 296661)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 296662)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 296663)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 296664)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 297210)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 299080)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 303387)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 305806)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 305806) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 303950)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 303957)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 300569)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 300569) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 300570)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 303055)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 300105)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 300106)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Page : 10 of 18  
Work Order : CG2104203  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 300106) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 301260)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 296755)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	97.0	85.0	115	----
<b>Physical Tests (QCLot: 301366)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.2	85.0	115	----
<b>Physical Tests (QCLot: 301371)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.8	85.0	115	----
<b>Physical Tests (QCLot: 303222)</b>									
oxidation-reduction potential [ORP]	---	E125	----	mV	220 mV	101	95.4	104	----
<b>Physical Tests (QCLot: 304817)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	----
<b>Physical Tests (QCLot: 304818)</b>									
pH	---	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 304819)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	98.9	85.0	115	----
<b>Physical Tests (QCLot: 306147)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	108	85.0	115	----
<b>Anions and Nutrients (QCLot: 296659)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 296660)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	108	85.0	115	----
<b>Anions and Nutrients (QCLot: 296661)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 296662)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	105	90.0	110	----
<b>Anions and Nutrients (QCLot: 296663)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	105	90.0	110	----
<b>Anions and Nutrients (QCLot: 296664)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 297210)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	104	80.0	120	----
<b>Anions and Nutrients (QCLot: 299080)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	96.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 303387)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 303387) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 305806)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 303950)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	98.9	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 303957)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Total Metals (QCLot: 300569)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	107	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	114	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	114	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	93.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	111	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	106	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	111	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	111	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	106	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	89.9	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	112	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	105	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 300569) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	114	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 300570)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
<b>Total Metals (QCLot: 303055)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	89.6	80.0	120	----
<b>Dissolved Metals (QCLot: 300105)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
<b>Dissolved Metals (QCLot: 300106)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.0	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.5	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	106	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.2	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.2	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	104	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 300106) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.0	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.1	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.0	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	92.8	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 296659)</b>										
CG2104203-002	FR_SP1_MON_2021-09-06_N	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 296660)</b>										
CG2104203-002	FR_SP1_MON_2021-09-06_N	bromide	24959-67-9	E235.Br-L	0.500 mg/L	0.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 296661)</b>										
CG2104203-002	FR_SP1_MON_2021-09-06_N	chloride	16887-00-6	E235.Cl-L	98.8 mg/L	100 mg/L	98.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 296662)</b>										
CG2104203-002	FR_SP1_MON_2021-09-06_N	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 296663)</b>										
CG2104203-002	FR_SP1_MON_2021-09-06_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.504 mg/L	0.5 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 296664)</b>										
CG2104203-002	FR_SP1_MON_2021-09-06_N	fluoride	16984-48-8	E235.F	0.954 mg/L	1 mg/L	95.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 297210)</b>										
CG2104203-002	FR_SP1_MON_2021-09-06_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0553 mg/L	0.05 mg/L	111	70.0	130	----
<b>Anions and Nutrients (QCLot: 299080)</b>										
CG2104202-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0561 mg/L	0.0676 mg/L	83.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 303387)</b>										
VA21B8189-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.84 mg/L	2.5 mg/L	114	70.0	130	----
<b>Anions and Nutrients (QCLot: 305806)</b>										
CG2104202-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.116 mg/L	0.1 mg/L	116	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 303950)</b>										
CG2104202-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.0 mg/L	23.9 mg/L	96.3	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 303957)</b>										
CG2104202-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.3 mg/L	23.9 mg/L	97.5	70.0	130	----
<b>Total Metals (QCLot: 300569)</b>										
CG2104186-002	Anonymous	aluminum, total	7429-90-5	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 300569) - continued</b>										
CG2104186-002	Anonymous	antimony, total	7440-36-0	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00951 mg/L	0.01 mg/L	95.1	70.0	130	----
		boron, total	7440-42-8	E420	0.091 mg/L	0.1 mg/L	90.7	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00382 mg/L	0.004 mg/L	95.5	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		iron, total	7439-89-6	E420	1.87 mg/L	2 mg/L	93.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0937 mg/L	0.1 mg/L	93.7	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, total	7440-02-0	E420	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		potassium, total	7440-09-7	E420	3.76 mg/L	4 mg/L	94.0	70.0	130	----
		selenium, total	7782-49-2	E420	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, total	7440-21-3	E420	9.30 mg/L	10 mg/L	93.0	70.0	130	----
		silver, total	7440-22-4	E420	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00387 mg/L	0.004 mg/L	96.7	70.0	130	----
		tin, total	7440-31-5	E420	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		titanium, total	7440-32-6	E420	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		uranium, total	7440-61-1	E420	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0994 mg/L	0.1 mg/L	99.4	70.0	130	----
		zinc, total	7440-66-6	E420	0.379 mg/L	0.4 mg/L	94.7	70.0	130	----
<b>Total Metals (QCLot: 300570)</b>										
CG2104186-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0382 mg/L	0.04 mg/L	95.6	70.0	130	----
<b>Total Metals (QCLot: 303055)</b>										
CG2104202-002	Anonymous	mercury, total	7439-97-6	E508-L	4.36 ng/L	5 ng/L	87.1	70.0	130	----
<b>Dissolved Metals (QCLot: 300105)</b>										
CG2104202-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 300106)</b>										
CG2104202-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.199 mg/L	0.2 mg/L	99.5	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0366 mg/L	0.04 mg/L	91.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00831 mg/L	0.01 mg/L	83.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	93.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0183 mg/L	0.02 mg/L	91.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0178 mg/L	0.02 mg/L	89.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.88 mg/L	2 mg/L	94.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0177 mg/L	0.02 mg/L	88.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0345 mg/L	0.04 mg/L	86.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.71 mg/L	10 mg/L	97.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00370 mg/L	0.004 mg/L	92.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00354 mg/L	0.004 mg/L	88.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0373 mg/L	0.04 mg/L	93.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0996 mg/L	0.1 mg/L	99.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.355 mg/L	0.4 mg/L	88.6	70.0	130	----
<b>Dissolved Metals (QCLot: 301260)</b>										
CG2104161-009	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000943 mg/L	0.0001 mg/L	94.3	70.0	130	----



COC ID: 9/17/2021		TURNAROUND TIME:				RUSH:					
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>				<b>OTHER INFO</b>			
Facility Name / Job# Fording River Operation		Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD			
Project Manager Scott Roughead		Lab Contact Lyudmyla Shvets		Email 1: britt.anderson@teck.com		X	X	X			
Email scott.roughead@teck.com		Email Lyudmyla.Shvets@ALSGlobal.com		Email 2: scott.roughead@teck.com		X	X	X			
Address		Address 2559 29 Street NE		Email 3: david.burroughs@teck.com		X	X	X			
City Elkford		Province BC	City Calgary	Province AB	Email 4: teckcoal@equisonline.com						
Postal Code		Country Canada	Postal Code T1Y 7B5	Country Canada	PO number		VPO00741392				
Phone Number 1-250-433-6976		Phone Number 403 407 1794									

SAMPLE DETAILS								ANALYSIS REQUESTED																			
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	F	N	F	N	F	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	PAH/EPH	VOCs/BTEX/VPH	BOD	TSS / TURBIDITY	Total Phenols	Glycol Screen	COD	Total Sulphide	Microcystin				
FR_DC3_MON_2021-09-06_N	FR_DC3	WS	NO	17-Sep-21	10:45	G	7	1	1	1	1	1	1	1													
FR_SP1_MON_2021-09-06_N	FR_SP1	WS	NO	17-Sep-21	10:45	G	7	1	1	1	1	1	1	1													
FR_BENSPITI_70M_WG_2021-09-17_N	FR_BENSPITI	WS	NO	17-Sep-21	11:00	G	7	1	1	1	1	1	1	1													

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b> Cruz Canlas	<b>DATE/TIME</b> September 17, 2021	<b>ACCEPTED BY/AFFILIATION</b> <i>[Signature]</i>	<b>DATE/TIME</b> 18/09/21
-------------------------------------------------	---------------------------------------------------	----------------------------------------	------------------------------------------------------	------------------------------

<b>SERVICE REQUEST (rush - subject to availability)</b>			
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Cruz Canlas	Mobile #	250 433 6166
Sampler's Signature	<i>[Signature]</i>	Date/Time	September 17, 2021

129

Environmental Division  
Calgary  
Work Order Reference  
**CG2104203**



Telephone : +1 403 407 1800





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.





## Analytical Results

Sub-Matrix: Water  
 (Matrix: Water)

Client sample ID

					FR_MW-EC2B_ EC-PC_WG_202 1-09-22	FR_MW-EC3A_ EC-PC_WG_202 1-09-22	FR_MW-EC3B_ EC-PC_WG_202 1-09-22	FR_MW-EC4A_ EC-PC_WG_202 1-09-22	FR_MW-EC4B_ EC-PC_WG_202 1-09-22
Client sampling date / time					22-Sep-2021 08:07	22-Sep-2021 09:23	22-Sep-2021 10:15	22-Sep-2021 12:10	22-Sep-2021 13:22
Analyte	CAS Number	Method	LOR	Unit	CG2104350-001	CG2104350-002	CG2104350-003	CG2104350-004	CG2104350-005
					Result	Result	Result	Result	Result
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	3.8	25.5	26.0	<2.0	15.2
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	181	535	522	313	481
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	220	652	637	382	587
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	21.0	<1.0
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	12.6	<1.0
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	181	535	522	334	481
conductivity	----	E100	2.0	µS/cm	794	3620	3580	623	2650
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	410	2540	2560	38.3	1820
oxidation-reduction potential [ORP]	----	E125	0.10	mV	449	453	439	443	418
pH	----	E108	0.10	pH units	8.25	8.09	8.07	8.66	8.23
solids, total dissolved [TDS]	----	E162	10	mg/L	558	3500	3710	402	2590
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	3.0	3.3	12.2	1.8
turbidity	----	E121	0.10	NTU	0.14	0.20	0.39	36.6	0.37
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0080	<0.0050	0.105	0.0270
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.050	<0.250 <sup>DLDS</sup>
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.61	11.5	11.8	4.88	5.72
fluoride	16984-48-8	E235.F	0.020	mg/L	0.160	0.104	0.120	2.14	0.140
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.201 <sup>TKNI</sup>	0.176 <sup>TKNI</sup>	0.409 <sup>TKNI</sup>	0.250	0.251
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	15.9	40.6	44.7	0.0076	2.10
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0163	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0050 <sup>DLDS</sup>
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0017	0.0150	0.0265	0.0379	0.0073
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0165	0.0246 <sup>DLM</sup>	0.0668	0.0070
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	209	2020	2020	3.99	1480
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.74	1.85	1.75	2.31	3.42
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.83	1.75	1.64	2.84	3.14



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC2B_ EC-PC_WG_202 1-09-22	FR_MW-EC3A_ EC-PC_WG_202 1-09-22	FR_MW-EC3B_ EC-PC_WG_202 1-09-22	FR_MW-EC4A_ EC-PC_WG_202 1-09-22	FR_MW-EC4B_ EC-PC_WG_202 1-09-22
Client sampling date / time					22-Sep-2021 08:07	22-Sep-2021 09:23	22-Sep-2021 10:15	22-Sep-2021 12:10	22-Sep-2021 13:22	
Analyte	CAS Number	Method	LOR	Unit	CG2104350-001	CG2104350-002	CG2104350-003	CG2104350-004	CG2104350-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.13	56.0	56.0	7.01	40.7	
cation sum	----	EC101	0.10	meq/L	8.31	51.6	52.0	7.00	36.9	
ion balance (cations/anions ratio)	----	EC101	0.010	%	91.0	92.1	92.8	99.8	90.7	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.70	4.09	3.70	0.071	4.90	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0060 <sup>DLA</sup>	0.0070	0.270	0.0165	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00022	0.00048	0.00038	0.00106	0.00040	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	0.00024	0.00127	0.00020	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0834	0.0281	0.0285	0.218	0.0331	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	0.022	<0.040 <sup>DLA</sup>	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	0.024	0.026	0.347	0.040	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0270	0.353	0.594	0.0216	0.432	
calcium, total	7440-70-2	E420	0.050	mg/L	99.4	403	396	9.37	280	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	0.00048	<0.00020 <sup>DLA</sup>	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	0.33	<0.20 <sup>DLA</sup>	<0.10	0.65	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	<0.00050	<0.00100 <sup>DLA</sup>	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	0.361	0.037	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	0.000116	<0.000100 <sup>DLA</sup>	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0354	0.117	0.130	0.142	0.0538	
magnesium, total	7439-95-4	E420	0.0050	mg/L	36.8	346	348	4.16	265	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00012	0.0261	0.00065	0.0797	1.11	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00117	0.00230	0.00201	0.00636	0.00367	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00902	0.0198	<0.00050	0.00849	
potassium, total	7440-09-7	E420	0.050	mg/L	1.66	5.89	6.12	1.83	4.62	
selenium, total	7782-49-2	E420	0.050	µg/L	43.7	329	357	<0.050	116	
silicon, total	7440-21-3	E420	0.10	mg/L	2.04	2.81	2.66	3.64	3.39	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	
sodium, total	17341-25-2	E420	0.050	mg/L	1.51	15.0	14.9	131	7.71	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.161	0.357	0.352	0.0824	0.344	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC2B_ EC-PC_WG_202 1-09-22	FR_MW-EC3A_ EC-PC_WG_202 1-09-22	FR_MW-EC3B_ EC-PC_WG_202 1-09-22	FR_MW-EC4A_ EC-PC_WG_202 1-09-22	FR_MW-EC4B_ EC-PC_WG_202 1-09-22
Client sampling date / time					22-Sep-2021 08:07	22-Sep-2021 09:23	22-Sep-2021 10:15	22-Sep-2021 12:10	22-Sep-2021 13:22	
Analyte	CAS Number	Method	LOR	Unit	CG2104350-001 Result	CG2104350-002 Result	CG2104350-003 Result	CG2104350-004 Result	CG2104350-005 Result	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	69.7	673	672	1.39	501	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	0.000056	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	0.00022	<0.00020 <sup>DLA</sup>	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	0.00432	<0.00060 <sup>DLA</sup>	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00213	0.0307	0.0288	0.000670	0.0211	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	0.00137	<0.00100 <sup>DLA</sup>	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	0.0070	0.0155	<0.0030	0.0066	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0026	0.0034	0.0155	0.0048	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00021	0.00047	0.00036	0.00093	0.00037	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	0.00021	0.00127	<0.00020 <sup>DLA</sup>	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0871	0.0292	0.0297	0.198	0.0361	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	<0.020	<0.040 <sup>DLA</sup>	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.025	0.027	0.355	0.038	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0305	0.385	0.621	<0.0050	0.436	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	98.6	411	408	8.47	275	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00011	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.29	<0.20 <sup>DLA</sup>	<0.10	0.67	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00040 <sup>DLA</sup>	<0.00040 <sup>DLA</sup>	<0.00020	0.00041	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	0.034	<0.020 <sup>DLA</sup>	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0366	0.122	0.133	0.150	0.0557	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	39.8	367	375	4.17	276	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00011	0.0270	0.00033	0.0750	1.14	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00115	0.00219	0.00197	0.00618	0.00375	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00950	0.0202	<0.00050	0.00827	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.79	6.43	6.74	1.87	5.05	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	49.1	355	382	<0.050	118	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.17	2.90	2.85	3.40	3.55	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-EC2B_ EC-PC_WG_202 1-09-22	FR_MW-EC3A_ EC-PC_WG_202 1-09-22	FR_MW-EC3B_ EC-PC_WG_202 1-09-22	FR_MW-EC4A_ EC-PC_WG_202 1-09-22	FR_MW-EC4B_ EC-PC_WG_202 1-09-22
Client sampling date / time					22-Sep-2021 08:07	22-Sep-2021 09:23	22-Sep-2021 10:15	22-Sep-2021 12:10	22-Sep-2021 13:22	
Analyte	CAS Number	Method	LOR	Unit	CG2104350-001 Result	CG2104350-002 Result	CG2104350-003 Result	CG2104350-004 Result	CG2104350-005 Result	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.67	16.2	15.8	142	7.90	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.157	0.346	0.334	0.0767	0.341	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	74.2	706	692	1.92	504	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000056	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	0.00013	<0.00020 <sup>DLA</sup>	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	0.00030	<0.00060 <sup>DLA</sup>	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00214	0.0293	0.0284	0.000663	0.0202	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	<0.00050	<0.00100 <sup>DLA</sup>	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0059	0.0175	<0.0010	0.0080	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104350</b>	Page	: 1 of 22
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cameron Griffin	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 8746	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 23-Sep-2021 08:50
PO	: VPO00769061	Issue Date	: 26-Oct-2021 14:42
C-O-C number	: EC_PC_GW_2021-09-22		
Sampler	: Connor Zinck		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	CG2104350-001	FR_MW-EC2B_EC-PC_WG_2021-09-22	Kjeldahl nitrogen, total [TKN]	----	E318	0.185 % TKND	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).
Total Metals	Anonymous	Anonymous	titanium, total	7440-32-6	E420	0.00072 % DUP-H	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

**Result Qualifiers**

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E298	22-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E298	22-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E298	22-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E298	22-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E298	22-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	7 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E235.Br-L	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E235.Br-L	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E235.Br-L	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E235.Br-L	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E235.Br-L	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E235.Cl-L	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E235.Cl-L	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E235.Cl-L	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E235.Cl-L	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E235.Cl-L	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E378-U	22-Sep-2021	----	----	----		23-Sep-2021	3 days	1 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E378-U	22-Sep-2021	----	----	----		23-Sep-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E378-U	22-Sep-2021	----	----	----		23-Sep-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E378-U	22-Sep-2021	----	----	----		23-Sep-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E378-U	22-Sep-2021	----	----	----		23-Sep-2021	3 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E235.F	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E235.F	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E235.F	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E235.F	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E235.F	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E235.NO3-L	22-Sep-2021	----	----	----		24-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E235.NO3-L	22-Sep-2021	----	----	----		24-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E235.NO3-L	22-Sep-2021	----	----	----		24-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E235.NO3-L	22-Sep-2021	----	----	----		24-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E235.NO3-L	22-Sep-2021	----	----	----		24-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E235.NO2-L	22-Sep-2021	----	----	----		24-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E235.NO2-L	22-Sep-2021	----	----	----		24-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E235.NO2-L	22-Sep-2021	----	----	----		24-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E235.NO2-L	22-Sep-2021	----	----	----		24-Sep-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E235.NO2-L	22-Sep-2021	----	----	----		24-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E235.SO4	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E235.SO4	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E235.SO4	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E235.SO4	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E235.SO4	22-Sep-2021	----	----	----		24-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E318	22-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E318	22-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E318	22-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E318	22-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E318	22-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E372-U	22-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E372-U	22-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E372-U	22-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E372-U	22-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E372-U	22-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E421.Cr-L	22-Sep-2021	29-Sep-2021	----	----		30-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E421.Cr-L	22-Sep-2021	29-Sep-2021	----	----		30-Sep-2021	180 days	8 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E421.Cr-L	22-Sep-2021	29-Sep-2021	----	----		30-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E421.Cr-L	22-Sep-2021	29-Sep-2021	----	----		30-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E421.Cr-L	22-Sep-2021	29-Sep-2021	----	----		30-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E421	22-Sep-2021	29-Sep-2021	----	----		30-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E421	22-Sep-2021	29-Sep-2021	----	----		30-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E421	22-Sep-2021	29-Sep-2021	----	----		30-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E421	22-Sep-2021	29-Sep-2021	----	----		30-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E421	22-Sep-2021	29-Sep-2021	----	----		30-Sep-2021	180 days	8 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E358-L	22-Sep-2021	30-Sep-2021	----	----		30-Sep-2021	28 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E358-L	22-Sep-2021	30-Sep-2021	----	----		30-Sep-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E358-L	22-Sep-2021	30-Sep-2021	----	----		30-Sep-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E358-L	22-Sep-2021	30-Sep-2021	----	----		30-Sep-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E358-L	22-Sep-2021	30-Sep-2021	----	----		01-Oct-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E355-L	22-Sep-2021	30-Sep-2021	----	----		30-Sep-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E355-L	22-Sep-2021	30-Sep-2021	----	----		30-Sep-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E355-L	22-Sep-2021	30-Sep-2021	----	----		30-Sep-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E355-L	22-Sep-2021	30-Sep-2021	----	----		30-Sep-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E355-L	22-Sep-2021	30-Sep-2021	----	----		01-Oct-2021	28 days	9 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_MW-EC2B_EC-PC_WG_2021-09-22	E283	22-Sep-2021	----	----	----		30-Sep-2021	14 days	8 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_MW-EC3A_EC-PC_WG_2021-09-22	E283	22-Sep-2021	----	----	----		30-Sep-2021	14 days	8 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_MW-EC3B_EC-PC_WG_2021-09-22	E283	22-Sep-2021	----	----	----		30-Sep-2021	14 days	8 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_MW-EC4A_EC-PC_WG_2021-09-22	E283	22-Sep-2021	----	----	----		30-Sep-2021	14 days	8 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_MW-EC4B_EC-PC_WG_2021-09-22	E283	22-Sep-2021	----	----	----		30-Sep-2021	14 days	8 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW-EC2B_EC-PC_WG_2021-09-22	E290	22-Sep-2021	----	----	----		29-Sep-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW-EC3A_EC-PC_WG_2021-09-22	E290	22-Sep-2021	----	----	----		29-Sep-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW-EC3B_EC-PC_WG_2021-09-22	E290	22-Sep-2021	----	----	----		29-Sep-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW-EC4A_EC-PC_WG_2021-09-22	E290	22-Sep-2021	----	----	----		29-Sep-2021	14 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW-EC4B_EC-PC_WG_2021-09-22	E290	22-Sep-2021	----	----	----		29-Sep-2021	14 days	7 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-EC2B_EC-PC_WG_2021-09-22	E100	22-Sep-2021	----	----	----		29-Sep-2021	28 days	7 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-EC3A_EC-PC_WG_2021-09-22	E100	22-Sep-2021	----	----	----		29-Sep-2021	28 days	7 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-EC3B_EC-PC_WG_2021-09-22	E100	22-Sep-2021	----	----	----		29-Sep-2021	28 days	7 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-EC4A_EC-PC_WG_2021-09-22	E100	22-Sep-2021	----	----	----		29-Sep-2021	28 days	7 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-EC4B_EC-PC_WG_2021-09-22	E100	22-Sep-2021	----	----	----		29-Sep-2021	28 days	7 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-EC4B_EC-PC_WG_2021-09-22	E125	22-Sep-2021	----	----	----		30-Sep-2021	0.25 hrs	191 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-EC4A_EC-PC_WG_2021-09-22	E125	22-Sep-2021	----	----	----		30-Sep-2021	0.25 hrs	193 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-EC3A_EC-PC_WG_2021-09-22	E125	22-Sep-2021	----	----	----		30-Sep-2021	0.25 hrs	195 hrs	* EHTR-FM	





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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-EC3B_EC-PC_WG_2021-09-22	E125	22-Sep-2021	----	----	----		30-Sep-2021	0.25 hrs	195 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-EC2B_EC-PC_WG_2021-09-22	E125	22-Sep-2021	----	----	----		30-Sep-2021	0.25 hrs	197 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW-EC4B_EC-PC_WG_2021-09-22	E108	22-Sep-2021	----	----	----		29-Sep-2021	0.25 hrs	165 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW-EC4A_EC-PC_WG_2021-09-22	E108	22-Sep-2021	----	----	----		29-Sep-2021	0.25 hrs	167 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW-EC3B_EC-PC_WG_2021-09-22	E108	22-Sep-2021	----	----	----		29-Sep-2021	0.25 hrs	168 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW-EC3A_EC-PC_WG_2021-09-22	E108	22-Sep-2021	----	----	----		29-Sep-2021	0.25 hrs	169 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW-EC2B_EC-PC_WG_2021-09-22	E108	22-Sep-2021	----	----	----		29-Sep-2021	0.25 hrs	171 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_MW-EC2B_EC-PC_WG_2021-09-22	E162	22-Sep-2021	----	----	----		28-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_MW-EC3A_EC-PC_WG_2021-09-22	E162	22-Sep-2021	----	----	----		28-Sep-2021	7 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_MW-EC3B_EC-PC_WG_2021-09-22	E162	22-Sep-2021	----	----	----		28-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_MW-EC4A_EC-PC_WG_2021-09-22	E162	22-Sep-2021	----	----	----		28-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_MW-EC4B_EC-PC_WG_2021-09-22	E162	22-Sep-2021	----	----	----		28-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_MW-EC2B_EC-PC_WG_2021-09-22	E160-L	22-Sep-2021	----	----	----		28-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_MW-EC3A_EC-PC_WG_2021-09-22	E160-L	22-Sep-2021	----	----	----		28-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_MW-EC3B_EC-PC_WG_2021-09-22	E160-L	22-Sep-2021	----	----	----		28-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_MW-EC4A_EC-PC_WG_2021-09-22	E160-L	22-Sep-2021	----	----	----		28-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE FR_MW-EC4B_EC-PC_WG_2021-09-22	E160-L	22-Sep-2021	----	----	----		28-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE FR_MW-EC2B_EC-PC_WG_2021-09-22	E121	22-Sep-2021	----	----	----		24-Sep-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E121	22-Sep-2021	----	----	----		24-Sep-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E121	22-Sep-2021	----	----	----		24-Sep-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E121	22-Sep-2021	----	----	----		24-Sep-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E121	22-Sep-2021	----	----	----		25-Sep-2021	3 days	3 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E420.Cr-L	22-Sep-2021	----	----	----		27-Sep-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E420.Cr-L	22-Sep-2021	----	----	----		27-Sep-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E420.Cr-L	22-Sep-2021	----	----	----		27-Sep-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E420.Cr-L	22-Sep-2021	----	----	----		27-Sep-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E420.Cr-L	22-Sep-2021	----	----	----		27-Sep-2021	180 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC3A_EC-PC_WG_2021-09-22	E420	22-Sep-2021	----	----	----		27-Sep-2021	180 days	5 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC3B_EC-PC_WG_2021-09-22	E420	22-Sep-2021	----	----	----		27-Sep-2021	180 days	5 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC4A_EC-PC_WG_2021-09-22	E420	22-Sep-2021	----	----	----		27-Sep-2021	180 days	5 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC4B_EC-PC_WG_2021-09-22	E420	22-Sep-2021	----	----	----		27-Sep-2021	180 days	5 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_MW-EC2B_EC-PC_WG_2021-09-22	E420	22-Sep-2021	----	----	----		27-Sep-2021	180 days	6 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	306996	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	305892	2	40	5.0	5.0	✔
Ammonia by Fluorescence	E298	306445	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	301349	1	13	7.6	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	301350	1	13	7.6	5.0	✔
Conductivity in Water	E100	305891	1	40	2.5	5.0	✖
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	305471	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	305470	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	307305	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	300832	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	301347	2	23	8.7	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	301351	1	14	7.1	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	301352	1	13	7.6	5.0	✔
ORP by Electrode	E125	307393	1	20	5.0	5.0	✔
pH by Meter	E108	305893	0	20	0.0	5.0	✖
Sulfate in Water by IC	E235.SO4	301346	2	23	8.7	5.0	✔
TDS by Gravimetry	E162	303725	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302479	1	7	14.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303741	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	302478	2	20	10.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	307318	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	304405	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	301506	3	41	7.3	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	306996	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	305892	2	40	5.0	5.0	✔
Ammonia by Fluorescence	E298	306445	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	301349	1	13	7.6	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	301350	1	13	7.6	5.0	✔
Conductivity in Water	E100	305891	2	40	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	305471	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	305470	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	307305	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	300832	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	301347	2	23	8.7	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	301351	1	14	7.1	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	301352	1	13	7.6	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	307393	1	20	5.0	5.0	✓
pH by Meter	E108	305893	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	301346	2	23	8.7	5.0	✓
TDS by Gravimetry	E162	303725	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302479	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303741	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	302478	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	307318	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	304405	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	303719	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	301506	3	41	7.3	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	306996	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	305892	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	306445	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	301349	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	301350	1	13	7.6	5.0	✓
Conductivity in Water	E100	305891	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	305471	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	305470	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	307305	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	300832	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	301347	2	23	8.7	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	301351	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	301352	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	301346	2	23	8.7	5.0	✓
TDS by Gravimetry	E162	303725	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302479	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303741	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	302478	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	307318	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	304405	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	303719	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	301506	3	41	7.3	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	306445	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	301349	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	301350	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	305471	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	305470	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	307305	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	300832	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	301347	2	23	8.7	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	301351	0	14	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	301352	1	13	7.6	5.0	✔
Sulfate in Water by IC	E235.SO4	301346	2	23	8.7	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302479	1	7	14.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303741	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	302478	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	307318	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	304405	1	20	5.0	5.0	✔





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2104350**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Cameron Griffin  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : 250 425 8746  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00769061  
**C-O-C number** : EC\_PC\_GW\_2021-09-22  
**Sampler** : Connor Zinck  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Sep-2021 08:50  
**Date Analysis Commenced** : 23-Sep-2021  
**Issue Date** : 26-Oct-2021 14:41

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 17  
Work Order : CG2104350  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 301506)</b>											
CG2104339-019	Anonymous	turbidity	----	E121	0.10	NTU	10.2	9.96	2.58%	15%	----
<b>Physical Tests (QC Lot: 301619)</b>											
CG2104349-007	Anonymous	turbidity	----	E121	0.10	NTU	2.46	2.79	12.8%	15%	----
<b>Physical Tests (QC Lot: 302468)</b>											
CG2104339-001	Anonymous	turbidity	----	E121	0.10	NTU	1.50	1.52	1.59%	15%	----
<b>Physical Tests (QC Lot: 303725)</b>											
CG2104339-028	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2280	2320	1.48%	20%	----
<b>Physical Tests (QC Lot: 305891)</b>											
CG2104295-001	Anonymous	conductivity	----	E100	2.0	µS/cm	796	799	0.376%	10%	----
<b>Physical Tests (QC Lot: 305892)</b>											
CG2104295-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	436	437	0.206%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	7.8	7.6	0.2	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	444	445	0.157%	20%	----
<b>Physical Tests (QC Lot: 305895)</b>											
CG2104350-005	FR_MW-EC4B_EC-PC_W G_2021-09-22	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	481	493	2.50%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	481	493	2.50%	20%	----
<b>Physical Tests (QC Lot: 306996)</b>											
CG2104295-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	5.3	4.9	0.4	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 307393)</b>											
CG2104295-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	471	472	0.148%	15%	----
<b>Anions and Nutrients (QC Lot: 300832)</b>											
CG2104340-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 301346)</b>											
CG2104337-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	28.8	28.9	0.404%	20%	----
<b>Anions and Nutrients (QC Lot: 301347)</b>											
CG2104337-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.108	0.108	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 301349)</b>											
CG2104345-001	Anonymous	bromide	24959-67-9	E235.Br-L	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 301350)</b>											
CG2104345-001	Anonymous	chloride	16887-00-6	E235.Cl-L	2.00	mg/L	15.3	14.9	0.39	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 301351)</b>											
CG2104345-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.100	mg/L	275	270	1.71%	20%	----
<b>Anions and Nutrients (QC Lot: 301352)</b>											
CG2104345-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 301353)</b>											
CG2104350-003	FR_MW-EC3B_EC-PC_W G_2021-09-22	fluoride	16984-48-8	E235.F	0.100	mg/L	0.120	0.116	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 301354)</b>											
CG2104350-003	FR_MW-EC3B_EC-PC_W G_2021-09-22	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	2020	1970	2.66%	20%	----
<b>Anions and Nutrients (QC Lot: 303741)</b>											
CG2104350-001	FR_MW-EC2B_EC-PC_W G_2021-09-22	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.201	# 0.386	0.185	Diff <2x LOR	TKND
<b>Anions and Nutrients (QC Lot: 304405)</b>											
CG2104343-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0086	0.0072	0.0013	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 306445)</b>											
CG2104295-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0115	0.0126	0.0011	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 307305)</b>											
CG2104350-001	FR_MW-EC2B_EC-PC_W G_2021-09-22	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.74	0.79	0.04	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 307318)</b>											
CG2104350-001	FR_MW-EC2B_EC-PC_W G_2021-09-22	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.83	0.90	0.07	Diff <2x LOR	----
<b>Total Metals (QC Lot: 302478)</b>											
CG2104309-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.149	0.141	5.66%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.075	0.075	0.0002	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00323	# 0.00251	0.00072	Diff <2x LOR	DUP-H
CG2104309-001	Anonymous	antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00013	0.00015	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0306	0.0314	2.39%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0292 µg/L	0.0000305	0.0000013	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	87.5	89.4	2.10%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.17 µg/L	0.00018	0.000003	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00127	0.00135	0.00008	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 302478) - continued</b>											
CG2104309-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000082	0.000082	0.0000006	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0163	0.0159	2.23%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	31.9	32.8	2.59%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00577	0.00580	0.524%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00136	0.00142	3.87%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.995	0.995	0.0485%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	10.4 µg/L	0.0106	2.45%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.35	3.31	1.07%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	3.56	3.56	0.0475%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.592	0.608	2.60%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	55.4	56.5	2.04%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00012	0.00013	0.000001	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00153	0.00148	3.48%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 302479)</b>											
CG2104309-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00040	0.00029	0.00011	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 305470)</b>											
CG2104281-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0013	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00019	0.00019	0.000004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00042	0.00042	0.000003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0550	0.0554	0.634%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	0.014	0.0004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0219 µg/L	0.0000224	0.0000005	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	250	243	2.72%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.71 µg/L	0.00072	0.00001	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.127	0.127	0.541%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0282	0.0276	2.13%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 305470) - continued</b>											
CG2104281-008	Anonymous	magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	151	153	0.968%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0443	0.0448	1.15%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00158	0.00156	1.63%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00302	0.00305	0.00003	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.28	3.28	0.133%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	144 µg/L	0.143	1.00%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.85	3.71	3.87%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.91	3.94	0.740%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.252	0.256	1.68%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	294	288	2.03%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00890	0.00871	2.18%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0020	0.0021	0.00010	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 305471)</b>											
CG2104281-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00010	0.00011	0.000007	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 301506)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 301619)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 302468)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 303719)</b>						
solids, total suspended [TSS]	---	E160-L	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 303725)</b>						
solids, total dissolved [TDS]	---	E162	10	mg/L	<10	---
<b>Physical Tests (QCLot: 305891)</b>						
conductivity	---	E100	1	µS/cm	1.0	---
<b>Physical Tests (QCLot: 305892)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, carbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, hydroxide (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 305894)</b>						
conductivity	---	E100	1	µS/cm	1.1	---
<b>Physical Tests (QCLot: 305895)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, carbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, hydroxide (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 306996)</b>						
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	<2.0	---
<b>Anions and Nutrients (QCLot: 300832)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 301346)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 301347)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 301349)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 301350)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 301351)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 301352)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 301353)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 301354)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 303741)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 304405)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 306445)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 307305)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 307318)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 302478)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 302478) - continued</b>						
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 302479)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 305470)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 305470) - continued</b>						
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 305471)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 301506)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.0	85.0	115	---
<b>Physical Tests (QCLot: 301619)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.5	85.0	115	---
<b>Physical Tests (QCLot: 302468)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.8	85.0	115	---
<b>Physical Tests (QCLot: 303719)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	98.6	85.0	115	---
<b>Physical Tests (QCLot: 303725)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 305891)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	---
<b>Physical Tests (QCLot: 305892)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	96.6	85.0	115	---
<b>Physical Tests (QCLot: 305893)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 305894)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	104	90.0	110	---
<b>Physical Tests (QCLot: 305895)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	99.6	85.0	115	---
<b>Physical Tests (QCLot: 306996)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 307393)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 300832)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	107	80.0	120	---
<b>Anions and Nutrients (QCLot: 301346)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 301347)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 301349)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 301350)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 301350) - continued</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 301351)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 301352)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 301353)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.0	90.0	110	----
<b>Anions and Nutrients (QCLot: 301354)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 303741)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 304405)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	93.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 306445)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 307305)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 307318)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	107	80.0	120	----
<b>Total Metals (QCLot: 302478)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	92.2	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	93.0	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	89.1	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	83.5	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	92.7	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	90.3	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.0	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	92.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	93.2	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	86.1	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	91.3	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 302478) - continued</b>									
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	93.5	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	94.3	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	96.7	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	96.6	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	95.4	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.9	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	84.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	94.0	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	90.9	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	95.6	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	94.9	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	92.1	80.0	120	----
<b>Total Metals (QCLot: 302479)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	93.5	80.0	120	----
<b>Dissolved Metals (QCLot: 305470)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.9	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.9	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	93.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.0	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	92.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 305470) - continued</b>									
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	105	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.6	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	95.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.9	80.0	120	----
<b>Dissolved Metals (QCLot: 305471)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----





## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 300832)</b>										
CG2104345-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0534 mg/L	0.05 mg/L	107	70.0	130	----
<b>Anions and Nutrients (QCLot: 301346)</b>										
CG2104337-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	99.0 mg/L	100 mg/L	99.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 301347)</b>										
CG2104337-004	Anonymous	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 301349)</b>										
CG2104349-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.533 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 301350)</b>										
CG2104349-005	Anonymous	chloride	16887-00-6	E235.Cl-L	100 mg/L	100 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 301352)</b>										
CG2104349-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.508 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 301353)</b>										
CG2104350-004	FR_MW-EC4A_EC-PC_WG_2021-09-22	fluoride	16984-48-8	E235.F	ND mg/L	1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 301354)</b>										
CG2104350-004	FR_MW-EC4A_EC-PC_WG_2021-09-22	sulfate (as SO4)	14808-79-8	E235.SO4	99.0 mg/L	100 mg/L	99.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 303741)</b>										
CG2104350-002	FR_MW-EC3A_EC-PC_WG_2021-09-22	Kjeldahl nitrogen, total [TKN]	----	E318	3.01 mg/L	2.5 mg/L	120	70.0	130	----
<b>Anions and Nutrients (QCLot: 304405)</b>										
CG2104348-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0610 mg/L	0.0676 mg/L	90.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 306445)</b>										
CG2104299-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 307305)</b>										
CG2104350-001	FR_MW-EC2B_EC-PC_WG_2021-09-22	carbon, dissolved organic [DOC]	----	E358-L	23.0 mg/L	23.9 mg/L	96.2	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 307318)</b>										
CG2104350-001	FR_MW-EC2B_EC-PC_WG_2021-09-22	carbon, total organic [TOC]	----	E355-L	23.8 mg/L	23.9 mg/L	99.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 302478)</b>										
CG2104350-001	FR_MW-EC2B_EC-PC_WG _2021-09-22	aluminum, total	7429-90-5	E420	0.183 mg/L	0.2 mg/L	91.4	70.0	130	----
		antimony, total	7440-36-0	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0186 mg/L	0.02 mg/L	93.3	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0349 mg/L	0.04 mg/L	87.2	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00902 mg/L	0.01 mg/L	90.2	70.0	130	----
		boron, total	7440-42-8	E420	0.087 mg/L	0.1 mg/L	86.8	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00375 mg/L	0.004 mg/L	93.7	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		copper, total	7440-50-8	E420	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		iron, total	7439-89-6	E420	1.85 mg/L	2 mg/L	92.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0184 mg/L	0.02 mg/L	91.9	70.0	130	----
		lithium, total	7439-93-2	E420	0.0885 mg/L	0.1 mg/L	88.5	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0180 mg/L	0.02 mg/L	90.2	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		nickel, total	7440-02-0	E420	0.0358 mg/L	0.04 mg/L	89.5	70.0	130	----
		potassium, total	7440-09-7	E420	3.88 mg/L	4 mg/L	97.1	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	8.87 mg/L	10 mg/L	88.7	70.0	130	----
		silver, total	7440-22-4	E420	0.00389 mg/L	0.004 mg/L	97.2	70.0	130	----
		sodium, total	17341-25-2	E420	1.89 mg/L	2 mg/L	94.7	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----		
thallium, total	7440-28-0	E420	0.00370 mg/L	0.004 mg/L	92.6	70.0	130	----		
tin, total	7440-31-5	E420	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----		
titanium, total	7440-32-6	E420	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----		
uranium, total	7440-61-1	E420	0.00374 mg/L	0.004 mg/L	93.5	70.0	130	----		
vanadium, total	7440-62-2	E420	0.0960 mg/L	0.1 mg/L	96.0	70.0	130	----		
zinc, total	7440-66-6	E420	0.357 mg/L	0.4 mg/L	89.3	70.0	130	----		
<b>Total Metals (QCLot: 302479)</b>										
CG2104350-001	FR_MW-EC2B_EC-PC_WG _2021-09-22	chromium, total	7440-47-3	E420.Cr-L	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
<b>Dissolved Metals (QCLot: 305470)</b>										
CG2104281-009	Anonymous	aluminum, dissolved	7429-90-5	E421	0.405 mg/L	0.4 mg/L	101	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 305470) - continued</b>										
CG2104281-009	Anonymous	antimony, dissolved	7440-36-0	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0735 mg/L	0.08 mg/L	91.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0181 mg/L	0.02 mg/L	90.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.180 mg/L	0.2 mg/L	90.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00796 mg/L	0.008 mg/L	99.5	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.85 mg/L	4 mg/L	96.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.183 mg/L	0.2 mg/L	91.4	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0736 mg/L	0.08 mg/L	92.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	8.13 mg/L	8 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0872 mg/L	0.08 mg/L	109	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.9 mg/L	20 mg/L	94.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00757 mg/L	0.008 mg/L	94.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00755 mg/L	0.008 mg/L	94.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0830 mg/L	0.08 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.209 mg/L	0.2 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.767 mg/L	0.8 mg/L	95.9	70.0	130	----
<b>Dissolved Metals (QCLot: 305471)</b>										
CG2104281-009	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0806 mg/L	0.08 mg/L	101	70.0	130	----

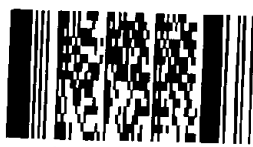


COC ID: **EC\_PC\_GW\_2021-09-22** TURN AROUND TIME: \_\_\_\_\_ RUSH: \_\_\_\_\_

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cameron Griffin			Lab Contact	Lyudmyla Shvets			Email 1:	Cameron.griffin@teck.com	X	X	X
Email				Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Scott.Roughhead@teck.com	X	X	X
Address	Shared Services Bag-2000			Address	2559 29 Street NE			Email 3:	David.Burroughs@teck.com	X	X	X
	421 Pine Avenue							Email 4:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:	kwezel@bccengineering.ca	X	X	X
Postal Code	V0B 2G0		Country	CA	Postal Code	T1Y 7B5	Country	Canada	Email 6:	X	X	X
Phone Number	250 425 8137			Phone Number	403 407 1794			PO number	VPO00769061			

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None			
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE -CL	TECK COAL DOC	TECK COAL TOC/TKN/Nutrients	TECKCOAL-MET-T VA	TECKCOAL-MET-D VA			
<del>FR_MW-EC1A_EC-PC_WG_2021-09-22</del>	<del>FR_MW-EC1A</del>	<del>WG</del>	<del>N</del>	<del>2021/09/22</del>	<del>8:07</del>	<del>G</del>	<del>5</del>	1	1	1	1	1			
<del>FR_MW-EC2A_EC-PC_WG_2021-09-22</del>	<del>FR_MW-EC2A</del>	<del>WG</del>	<del>N</del>	<del>2021/09/22</del>	<del>9:23</del>	<del>G</del>	<del>5</del>	1	1	1	1	1			
<del>FR_MW-EC3A_EC-PC_WG_2021-09-22</del>	<del>FR_MW-EC3A</del>	<del>WG</del>	<del>N</del>	<del>2021/09/22</del>	<del>10:15</del>	<del>G</del>	<del>5</del>	1	1	1	1	1			
FR_MW-EC2B_EC-PC_WG_2021-09-22	FR_MW-EC2B	WG	N	2021/09/22	8:07	G	5	1	1	1	1	1			
FR_MW-EC3A_EC-PC_WG_2021-09-22	FR_MW-EC3A	WG	N	2021/09/22	9:23	G	5	1	1	1	1	1			
FR_MW-EC3B_EC-PC_WG_2021-09-22	FR_MW-EC3B	WG	N	2021/09/22	10:15	G	5	1	1	1	1	1			
FR_MW-EC4A_EC-PC_WG_2021-09-22	FR_MW-EC4A	WG	N	2021/09/22	12:10	G	5	1	1	1	1	1			
FR_MW-EC4B_EC-PC_WG_2021-09-22	FR_MW-EC4B	WG	N	2021/09/22	13:22	G	5	1	1	1	1	1			
<del>FR_MW-EC1B_EC-PC_WG_2021-09-22</del>	<del>FR_MW-EC1B</del>	<del>WG</del>	<del>N</del>	<del>2021/09/22</del>	<del>14:00</del>	<del>G</del>	<del>5</del>	1	1	1	1	1			
<del>FR_MW-EC2B_EC-PC_WG_2021-09-22</del>	<del>FR_MW-EC2B</del>	<del>WG</del>	<del>N</del>	<del>2021/09/22</del>	<del>15:00</del>	<del>G</del>	<del>5</del>	1	1	1	1	1			
<del>FR_MW-EC3B_EC-PC_WG_2021-09-22</del>	<del>FR_MW-EC3B</del>	<del>WG</del>	<del>N</del>	<del>2021/09/22</del>	<del>16:00</del>	<del>G</del>	<del>5</del>	1	1	1	1	1			
<del>FR_MW-EC4B_EC-PC_WG_2021-09-22</del>	<del>FR_MW-EC4B</del>	<del>WG</del>	<del>N</del>	<del>2021/09/22</del>	<del>17:00</del>	<del>G</del>	<del>5</del>	1	1	1	1	1			
<del>FR_TRP1_EC-PC_WG_2021-09-22</del>	<del>FR_TRP1</del>	<del>WG</del>	<del>N</del>	<del>2021/09/22</del>	<del>18:00</del>	<del>G</del>	<del>5</del>	1	1	1	1	1			

Environmental Division  
Calgary  
Work Order Reference  
**CG2104350**



Telephone : +1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
*All samples field filtered and preserved as required. **Please note Sample ID changes - different from bottle sets			
		<i>A</i>	9/23/2021 8:50

SERVICE REQUEST (rush - subject to availability)

Regular (default)  Priority (2-3 business days) - 50% surcharge  
Emergency (1 Business Day) - 100% surcharge  
For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name: **Connor Zirk** Mobile #: \_\_\_\_\_  
Sampler's Signature: \_\_\_\_\_ Date/Time: **09/22/2021** *9*

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2104540**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 9/29/2021  
**Sampler** : cruz canlas  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 30-Sep-2021 09:00  
**Date Analysis Commenced** : 30-Sep-2021  
**Issue Date** : 07-Oct-2021 17:30

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Aaron Yu	Laboratory Analyst	Inorganics, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_TT43_QTR_	----	----	----	----
(Matrix: Water)						2021-07-05_N				
					Client sampling date / time	29-Sep-2021 10:02	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2104540-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	30.1	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	404	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	493	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	404	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	1660	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1030	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	478	----	----	----	----	----
pH	----	E108	0.10	pH units	7.77	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	1340	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	10.6	----	----	----	----	----
turbidity	----	E121	0.10	NTU	7.46	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0130	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.23	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.175	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKN</sup>	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	54.2	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0828	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	458	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.61	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.68	----	----	----	----	----
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_TT43_QTR_	----	----	----	----
(Matrix: Water)						2021-07-05_N				
					Client sampling date / time	29-Sep-2021	----	----	----	----
						10:02				
Analyte	CAS Number	Method	LOR	Unit	CG2104540-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	21.5	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	21.0	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	97.7	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	1.18	----	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0010	----	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00051	----	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0724	----	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.029	----	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0554	----	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	238	----	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00210	----	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000060	----	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.143	----	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	106	----	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00020	----	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00156	----	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00134	----	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.58	----	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	219	----	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.05	----	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.25	----	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.238	----	----	----	----	----





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_TT43_QTR_ 2021-07-05_N	----	----	----	----
Client sampling date / time					29-Sep-2021 10:02	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104540-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	153	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00916	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0048	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104540</b>	Page	: 1 of 10
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 30-Sep-2021 09:00
PO	: VPO00741392	Issue Date	: 07-Oct-2021 17:30
C-O-C number	: 9/29/2021		
Sampler	: cruz canlas		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_TT43_QTR_2021-07-05_N	E298	29-Sep-2021	01-Oct-2021	----	----		01-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_TT43_QTR_2021-07-05_N	E235.Br-L	29-Sep-2021	----	----	----		01-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_TT43_QTR_2021-07-05_N	E235.Cl-L	29-Sep-2021	----	----	----		01-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> FR_TT43_QTR_2021-07-05_N	E378-U	29-Sep-2021	----	----	----		01-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> FR_TT43_QTR_2021-07-05_N	E235.F	29-Sep-2021	----	----	----		01-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_TT43_QTR_2021-07-05_N	E235.NO3-L	29-Sep-2021	----	----	----		01-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_TT43_QTR_2021-07-05_N	E235.NO2-L	29-Sep-2021	----	----	----		01-Oct-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Container / Client Sample ID(s)				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_TT43_QTR_2021-07-05_N	E235.SO4	29-Sep-2021	----	----	----		01-Oct-2021	28 days	2 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_TT43_QTR_2021-07-05_N	E318	29-Sep-2021	05-Oct-2021	----	----		06-Oct-2021	28 days	7 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_TT43_QTR_2021-07-05_N	E372-U	29-Sep-2021	02-Oct-2021	----	----		02-Oct-2021	28 days	3 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> FR_TT43_QTR_2021-07-05_N	E421.Cr-L	29-Sep-2021	05-Oct-2021	----	----		05-Oct-2021	180 days	6 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> FR_TT43_QTR_2021-07-05_N	E509	29-Sep-2021	05-Oct-2021	----	----		05-Oct-2021	28 days	6 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> FR_TT43_QTR_2021-07-05_N	E421	29-Sep-2021	05-Oct-2021	----	----		05-Oct-2021	180 days	6 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> FR_TT43_QTR_2021-07-05_N	E358-L	29-Sep-2021	30-Sep-2021	----	----		01-Oct-2021	28 days	2 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_TT43_QTR_2021-07-05_N	E355-L	29-Sep-2021	30-Sep-2021	----	----		01-Oct-2021	28 days	2 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> FR_TT43_QTR_2021-07-05_N	E283	29-Sep-2021	----	----	----		01-Oct-2021	14 days	2 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_TT43_QTR_2021-07-05_N	E290	29-Sep-2021	----	----	----		03-Oct-2021	14 days	4 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_TT43_QTR_2021-07-05_N	E100	29-Sep-2021	----	----	----		03-Oct-2021	28 days	4 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_TT43_QTR_2021-07-05_N	E125	29-Sep-2021	----	----	----		04-Oct-2021	0.34 hrs	121 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_TT43_QTR_2021-07-05_N	E108	29-Sep-2021	----	----	----		03-Oct-2021	0.25 hrs	97 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_TT43_QTR_2021-07-05_N	E162	29-Sep-2021	----	----	----		01-Oct-2021	7 days	2 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE FR_TT43_QTR_2021-07-05_N	E160-L	29-Sep-2021	----	----	----		01-Oct-2021	7 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE FR_TT43_QTR_2021-07-05_N	E121	29-Sep-2021	----	----	----		01-Oct-2021	3 days	2 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	308293	1	13	7.6	5.0	✔
Alkalinity Species by Titration	E290	309715	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	308328	1	12	8.3	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	307968	1	15	6.6	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	307964	1	15	6.6	5.0	✔
Conductivity in Water	E100	309716	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	311019	1	16	6.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	310823	1	18	5.5	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	311020	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	307648	1	17	5.8	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	307681	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	307959	1	16	6.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	307965	1	16	6.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	307966	1	15	6.6	5.0	✔
ORP by Electrode	E125	310208	1	19	5.2	5.0	✔
pH by Meter	E108	309714	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	307963	1	7	14.2	5.0	✔
TDS by Gravimetry	E162	308020	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	311112	0	7	0.0	5.0	✖
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	307659	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	307983	1	9	11.1	5.0	✔
Turbidity by Nephelometry	E121	308651	1	13	7.6	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	308293	1	13	7.6	5.0	✔
Alkalinity Species by Titration	E290	309715	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	308328	1	12	8.3	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	307968	1	15	6.6	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	307964	1	15	6.6	5.0	✔
Conductivity in Water	E100	309716	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	311019	1	16	6.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	310823	1	18	5.5	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	311020	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	307648	1	17	5.8	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	307681	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	307959	1	16	6.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	307965	1	16	6.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	307966	1	15	6.6	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	310208	1	19	5.2	5.0	✓
pH by Meter	E108	309714	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	307963	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	308020	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	311112	1	7	14.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	307659	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	307983	1	9	11.1	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	308014	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	308651	1	13	7.6	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	308293	1	13	7.6	5.0	✓
Alkalinity Species by Titration	E290	309715	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	308328	1	12	8.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	307968	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	307964	1	15	6.6	5.0	✓
Conductivity in Water	E100	309716	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	311019	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	310823	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	311020	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	307648	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	307681	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	307959	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	307965	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	307966	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	307963	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	308020	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	311112	1	7	14.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	307659	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	307983	1	9	11.1	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	308014	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	308651	1	13	7.6	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	308328	1	12	8.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	307968	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	307964	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	311019	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	310823	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	311020	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	307648	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	307681	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	307959	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	307965	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	307966	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	307963	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	311112	1	7	14.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	307659	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	307983	1	9	11.1	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2104540**

**Page** : 1 of 13

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 9/29/2021  
**Sampler** : cruz canlas  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 30-Sep-2021 09:00  
**Date Analysis Commenced** : 30-Sep-2021  
**Issue Date** : 07-Oct-2021 17:30

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Aaron Yu	Laboratory Analyst	Inorganics, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
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Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 13  
Work Order : CG2104540  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 308020)</b>											
CG2104527-030	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1640	1580	3.72%	20%	----
<b>Physical Tests (QC Lot: 308293)</b>											
CG2104493-005	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	20.0	19.7	0.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 308651)</b>											
CG2104540-001	FR_TT43_QTR_2021-07-05_N	turbidity	----	E121	0.10	NTU	7.46	7.28	2.41%	15%	----
<b>Physical Tests (QC Lot: 309714)</b>											
CG2104515-001	Anonymous	pH	----	E108	0.10	pH units	7.83	7.89	0.763%	4%	----
<b>Physical Tests (QC Lot: 309715)</b>											
CG2104515-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	171	169	1.41%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	171	169	1.41%	20%	----
<b>Physical Tests (QC Lot: 309716)</b>											
CG2104515-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1360	1340	1.11%	10%	----
<b>Physical Tests (QC Lot: 310208)</b>											
CG2104450-014	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	513	516	0.447%	15%	----
<b>Anions and Nutrients (QC Lot: 307681)</b>											
CG2104531-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 307959)</b>											
CG2104501-001	Anonymous	fluoride	16984-48-8	E235.F	0.200	mg/L	0.571	0.525	0.046	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 307963)</b>											
CG2104501-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	3.00	mg/L	1490	1390	6.50%	20%	----
<b>Anions and Nutrients (QC Lot: 307964)</b>											
CG2104522-002	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.54	0.53	0.006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 307965)</b>											
CG2104522-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0743	0.0746	0.403%	20%	----
<b>Anions and Nutrients (QC Lot: 307966)</b>											
CG2104522-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 307968)</b>											
CG2104522-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 307983)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 307983) - continued</b>											
CG2104515-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 308328)</b>											
CG2104540-001	FR_TT43_QTR_2021-07-05_N	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0130	0.0062	0.0068	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 307648)</b>											
CG2104493-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.87	0.90	0.03	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 307659)</b>											
CG2104493-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.94	0.84	0.10	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 310823)</b>											
CG2104515-008	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 311019)</b>											
YL2101422-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00020	0.00022	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 311020)</b>											
YL2101422-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0045	0.0051	0.0006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00015	0.00014	0.0000002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00019	0.00019	0.00000008	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0252	0.0257	1.65%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.408	0.408	0.0302%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0000100	mg/L	<0.0000100	<0.0000100	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	63.6	63.9	0.556%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00018	0.00017	0.000007	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00110	0.00108	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.012	0.012	0.0002	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0047	0.0047	0.000003	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	27.6	28.3	2.41%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00270	0.00280	3.78%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0216	0.0218	0.900%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0174	0.0177	2.00%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	7.50	7.42	1.07%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000267	0.000265	0.000002	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.74	4.78	1.03%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	17.4	17.5	1.02%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 311020) - continued</b>											
YL2101422-001	Anonymous	strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.406	0.411	1.25%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	60.2	61.2	1.63%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000012	0.000012	0.00000003	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00297	0.00296	0.432%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0094	0.0095	0.0001	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 308014)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 308020)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 308293)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 308651)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 309715)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 309716)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 307681)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 307959)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 307963)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 307964)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 307965)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 307966)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 307968)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 307983)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 308328)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 311112)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 311112) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 307648)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 307659)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 310823)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 311019)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 311020)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---

Page : 8 of 13  
Work Order : CG2104540  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 311020) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 308014)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	89.5	85.0	115	---
<b>Physical Tests (QCLot: 308020)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.7	85.0	115	---
<b>Physical Tests (QCLot: 308293)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 308651)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100	85.0	115	---
<b>Physical Tests (QCLot: 309714)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 309715)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 309716)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.7	90.0	110	---
<b>Physical Tests (QCLot: 310208)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 307681)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	99.8	80.0	120	---
<b>Anions and Nutrients (QCLot: 307959)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 307963)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 307964)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 307965)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 307966)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 307968)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.6	85.0	115	---
<b>Anions and Nutrients (QCLot: 307983)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	109	80.0	120	---
<b>Anions and Nutrients (QCLot: 308328)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 308328) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.8	85.0	115	----
<b>Anions and Nutrients (QCLot: 311112)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 307648)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 307659)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	105	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.9	80.0	120	----
<b>Dissolved Metals (QCLot: 311019)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
<b>Dissolved Metals (QCLot: 311020)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.9	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.0	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.9	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.6	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.6	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.2	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.9	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 311020) - continued</b>									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	94.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.6	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.4	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 307681)</b>										
CG2104535-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0552 mg/L	0.05 mg/L	110	70.0	130	----
<b>Anions and Nutrients (QCLot: 307959)</b>										
CG2104522-009	Anonymous	fluoride	16984-48-8	E235.F	1.07 mg/L	1 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 307963)</b>										
CG2104540-001	FR_TT43_QTR_2021-07-05_N	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 307964)</b>										
CG2104522-010	Anonymous	chloride	16887-00-6	E235.Cl-L	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 307965)</b>										
CG2104522-010	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.71 mg/L	2.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 307966)</b>										
CG2104522-010	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.544 mg/L	0.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 307968)</b>										
CG2104522-010	Anonymous	bromide	24959-67-9	E235.Br-L	0.531 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 307983)</b>										
CG2104515-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0580 mg/L	0.0676 mg/L	85.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 308328)</b>										
CG2104547-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.101 mg/L	0.1 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 311112)</b>										
CG2104515-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.78 mg/L	2.5 mg/L	111	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 307648)</b>										
CG2104493-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.5 mg/L	23.9 mg/L	102	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 307659)</b>										
CG2104493-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.0 mg/L	23.9 mg/L	96.1	70.0	130	----
<b>Dissolved Metals (QCLot: 310823)</b>										
CG2104531-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000963 mg/L	0.0001 mg/L	96.3	70.0	130	----
<b>Dissolved Metals (QCLot: 311019)</b>										
YL2101422-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0400 mg/L	0.04 mg/L	100	70.0	130	----





Sub-Matrix: **Water**

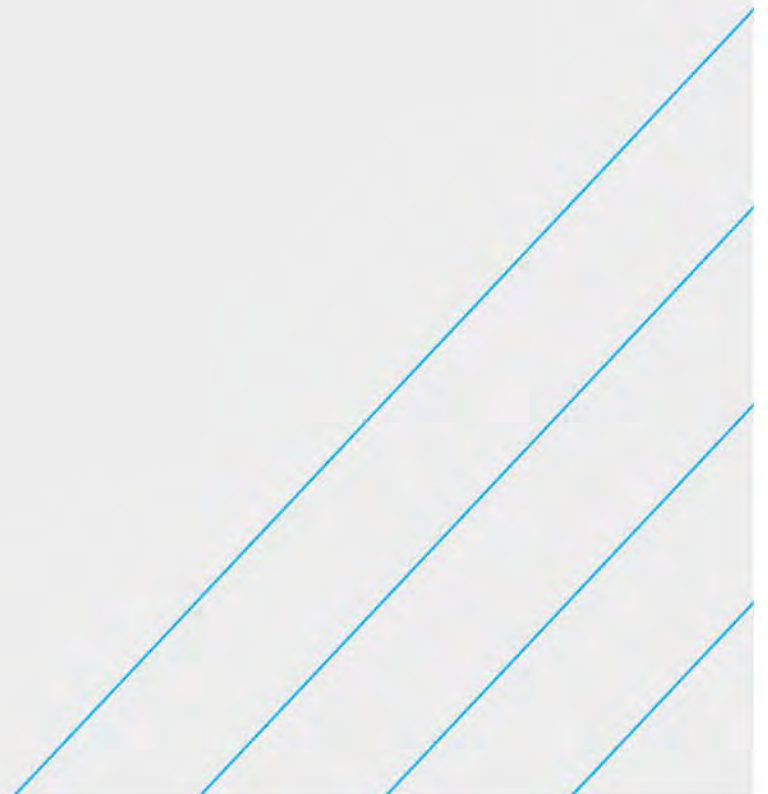
					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 311020)</b>										
YL2101422-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0194 mg/L	0.02 mg/L	97.3	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0392 mg/L	0.04 mg/L	98.1	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00859 mg/L	0.01 mg/L	85.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.99 mg/L	2 mg/L	99.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0975 mg/L	0.1 mg/L	97.5	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0196 mg/L	0.02 mg/L	98.3	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.77 mg/L	10 mg/L	87.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00376 mg/L	0.004 mg/L	94.1	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00361 mg/L	0.004 mg/L	90.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00378 mg/L	0.004 mg/L	94.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.394 mg/L	0.4 mg/L	98.4	70.0	130	----





# Certificates of Analysis 2021 SSGMP and RGMP Report

- › Greenhills Operations





Teck Coal Ltd.  
ATTN: Cam Jaeger  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 04-MAR-21  
Report Date: 10-DEC-21 11:00 (MT)  
Version: FINAL REV. 2

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2563847  
Project P.O. #: VPO00690772  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 01-03\_Q1-2021  
Legal Site Desc:

Comments:

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Lyudmyla Shvets, B.Sc.  
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2563847-1 WP 03-MAR-21 09:31 RG_DW-01- 03_WP_Q1- 2021_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	354			
	Hardness (as CaCO3) (mg/L)	199			
	pH (pH)	8.35			
	ORP (mV)	450			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	230 <sup>DLHC</sup>			
	Turbidity (NTU)	<0.10			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	153			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	6.6			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	160			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	187			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	0.72			
	Fluoride (F) (mg/L)	0.116			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	97.8			
	Nitrate (as N) (mg/L)	0.797			
	Nitrite (as N) (mg/L)	0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.240			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	41.3			
	Anion Sum (meq/L)	4.13			
	Cation Sum (meq/L)	4.04			
	Cation - Anion Balance (%)	-1.1			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.64			
	Total Organic Carbon (mg/L)	0.70			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.0733			
	Beryllium (Be)-Total (ug/L)	<0.020			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2563847-1 WP 03-MAR-21 09:31 RG_DW-01- 03_WP_Q1- 2021_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0051			
	Calcium (Ca)-Total (mg/L)	58.2			
	Chromium (Cr)-Total (mg/L)	0.00026			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00064			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0027			
	Magnesium (Mg)-Total (mg/L)	13.7			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Molybdenum (Mo)-Total (mg/L)	0.00102			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.426			
	Selenium (Se)-Total (ug/L)	3.66			
	Silicon (Si)-Total (mg/L)	2.15			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	1.44			
	Strontium (Sr)-Total (mg/L)	0.213			
	Sulfur (S)-Total (mg/L)	15.2			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000842			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0672			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	57.4			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2563847-1 WP 03-MAR-21 09:31 RG_DW-01- 03_WP_Q1- 2021_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Chromium (Cr)-Dissolved (mg/L)	0.00025			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00058			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0027			
	Magnesium (Mg)-Dissolved (mg/L)	13.5			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000984			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.360			
	Selenium (Se)-Dissolved (ug/L)	3.47			
	Silicon (Si)-Dissolved (mg/L)	2.15			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	1.21			
	Strontium (Sr)-Dissolved (mg/L)	0.224			
	Sulfur (S)-Dissolved (mg/L)	14.9			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000874			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0022			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2563847-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2563847-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2563847-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2563847-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2563847-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2563847-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2563847-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2563847-1
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2563847-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2563847-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2563847-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2563847-1
Matrix Spike	Copper (Cu)-Total	MS-B	L2563847-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2563847-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2563847-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2563847-1
Matrix Spike	Sulfur (S)-Total	MS-B	L2563847-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The			

## Reference Information

carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-L-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**CO3-CL** Water Carbonate (CO3) APHA 2320 B-Potentiometric Titration

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.



## Reference Information

<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

01-03\_Q1-2021

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2563847

Report Date: 10-DEC-21

Page 1 of 11

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R5400355							
<b>WG3501363-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			111.1		%		85-115	11-MAR-21
<b>WG3501363-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	11-MAR-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R5400402							
<b>WG3501418-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			105.4		%		85-115	11-MAR-21
<b>WG3501418-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-MAR-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R5398492							
<b>WG3498207-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.5		%		80-120	08-MAR-21
<b>WG3498207-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-MAR-21
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R5398698							
<b>WG3498218-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			107.2		%		80-120	09-MAR-21
<b>WG3498218-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	09-MAR-21
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R5400402							
<b>WG3501418-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	12-MAR-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R5399705							
<b>WG3500579-2</b>	<b>LCS</b>							
Bromide (Br)			96.5		%		85-115	06-MAR-21
<b>WG3500579-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	06-MAR-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2563847

Report Date: 10-DEC-21

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5400678							
<b>WG3501742-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.7		%		80-120	12-MAR-21
<b>WG3501742-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-MAR-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5400678							
<b>WG3501742-2</b>	<b>LCS</b>							
Total Organic Carbon			105.5		%		80-120	12-MAR-21
<b>WG3501742-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	12-MAR-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5399705							
<b>WG3500579-2</b>	<b>LCS</b>							
Chloride (Cl)			101.0		%		85-115	06-MAR-21
<b>WG3500579-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	06-MAR-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5400402							
<b>WG3501418-13</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	12-MAR-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5400402							
<b>WG3501418-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			103.3		%		90-110	11-MAR-21
<b>WG3501418-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-MAR-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5399705							
<b>WG3500579-2</b>	<b>LCS</b>							
Fluoride (F)			97.4		%		90-110	06-MAR-21
<b>WG3500579-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	06-MAR-21
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2563847

Report Date: 10-DEC-21

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5398492</b>							
<b>WG3498207-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.6		%		80-120	08-MAR-21
Antimony (Sb)-Dissolved			104.8		%		80-120	08-MAR-21
Arsenic (As)-Dissolved			98.2		%		80-120	08-MAR-21
Barium (Ba)-Dissolved			91.5		%		80-120	08-MAR-21
Bismuth (Bi)-Dissolved			112.9		%		80-120	08-MAR-21
Boron (B)-Dissolved			90.0		%		80-120	08-MAR-21
Cadmium (Cd)-Dissolved			96.1		%		80-120	08-MAR-21
Calcium (Ca)-Dissolved			103.3		%		80-120	08-MAR-21
Chromium (Cr)-Dissolved			102.7		%		80-120	08-MAR-21
Cobalt (Co)-Dissolved			99.5		%		80-120	08-MAR-21
Copper (Cu)-Dissolved			96.7		%		80-120	08-MAR-21
Iron (Fe)-Dissolved			97.0		%		80-120	08-MAR-21
Lead (Pb)-Dissolved			108.5		%		80-120	08-MAR-21
Lithium (Li)-Dissolved			95.5		%		80-120	08-MAR-21
Magnesium (Mg)-Dissolved			101.1		%		80-120	08-MAR-21
Manganese (Mn)-Dissolved			95.9		%		80-120	08-MAR-21
Molybdenum (Mo)-Dissolved			105.0		%		80-120	08-MAR-21
Nickel (Ni)-Dissolved			104.8		%		80-120	08-MAR-21
Potassium (K)-Dissolved			94.1		%		80-120	08-MAR-21
Selenium (Se)-Dissolved			95.9		%		80-120	08-MAR-21
Silicon (Si)-Dissolved			99.4		%		60-140	08-MAR-21
Silver (Ag)-Dissolved			100.4		%		80-120	08-MAR-21
Sodium (Na)-Dissolved			96.2		%		80-120	08-MAR-21
Strontium (Sr)-Dissolved			107.5		%		80-120	08-MAR-21
Sulfur (S)-Dissolved			110.4		%		80-120	08-MAR-21
Thallium (Tl)-Dissolved			110.5		%		80-120	08-MAR-21
Tin (Sn)-Dissolved			95.3		%		80-120	08-MAR-21
Titanium (Ti)-Dissolved			94.4		%		80-120	08-MAR-21
Uranium (U)-Dissolved			110.0		%		80-120	08-MAR-21
Vanadium (V)-Dissolved			98.8		%		80-120	08-MAR-21
Zinc (Zn)-Dissolved			95.4		%		80-120	08-MAR-21
<b>WG3498207-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21



## Quality Control Report

Workorder: L2563847

Report Date: 10-DEC-21

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5398492</b>							
<b>WG3498207-1</b>	<b>MB</b>	<b>NP</b>						
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-MAR-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-MAR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-MAR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-MAR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-MAR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-MAR-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-MAR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-MAR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-MAR-21
<b>Batch</b>	<b>R5398838</b>							
<b>WG3498207-1</b>	<b>MB</b>	<b>NP</b>						
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	09-MAR-21
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2563847

Report Date: 10-DEC-21

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5398698</b>							
<b>WG3498218-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			94.1		%		80-120	09-MAR-21
Antimony (Sb)-Total			110.6		%		80-120	09-MAR-21
Arsenic (As)-Total			92.7		%		80-120	09-MAR-21
Barium (Ba)-Total			89.0		%		80-120	09-MAR-21
Bismuth (Bi)-Total			108.0		%		80-120	09-MAR-21
Boron (B)-Total			101.0		%		80-120	09-MAR-21
Cadmium (Cd)-Total			91.4		%		80-120	09-MAR-21
Calcium (Ca)-Total			104.4		%		80-120	09-MAR-21
Chromium (Cr)-Total			95.2		%		80-120	09-MAR-21
Cobalt (Co)-Total			93.0		%		80-120	09-MAR-21
Copper (Cu)-Total			93.2		%		80-120	09-MAR-21
Iron (Fe)-Total			87.9		%		80-120	09-MAR-21
Lead (Pb)-Total			105.5		%		80-120	09-MAR-21
Lithium (Li)-Total			105.5		%		80-120	09-MAR-21
Magnesium (Mg)-Total			91.8		%		80-120	09-MAR-21
Manganese (Mn)-Total			91.0		%		80-120	09-MAR-21
Molybdenum (Mo)-Total			102.4		%		80-120	09-MAR-21
Nickel (Ni)-Total			92.6		%		80-120	09-MAR-21
Potassium (K)-Total			96.6		%		80-120	09-MAR-21
Selenium (Se)-Total			102.0		%		80-120	09-MAR-21
Silicon (Si)-Total			98.1		%		80-120	09-MAR-21
Silver (Ag)-Total			99.98		%		80-120	09-MAR-21
Sodium (Na)-Total			97.4		%		80-120	09-MAR-21
Strontium (Sr)-Total			103.6		%		80-120	09-MAR-21
Sulfur (S)-Total			104.3		%		80-120	09-MAR-21
Thallium (Tl)-Total			105.1		%		80-120	09-MAR-21
Tin (Sn)-Total			91.6		%		80-120	09-MAR-21
Titanium (Ti)-Total			90.9		%		80-120	09-MAR-21
Uranium (U)-Total			103.9		%		80-120	09-MAR-21
Vanadium (V)-Total			93.0		%		80-120	09-MAR-21
Zinc (Zn)-Total			94.8		%		80-120	09-MAR-21
<b>WG3498218-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	09-MAR-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	09-MAR-21



## Quality Control Report

Workorder: L2563847

Report Date: 10-DEC-21

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5398698</b>							
<b>WG3498218-1</b>	<b>MB</b>							
Arsenic (As)-Total			<0.00010		mg/L		0.0001	09-MAR-21
Barium (Ba)-Total			<0.00010		mg/L		0.0001	09-MAR-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	09-MAR-21
Boron (B)-Total			<0.010		mg/L		0.01	09-MAR-21
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	09-MAR-21
Calcium (Ca)-Total			<0.050		mg/L		0.05	09-MAR-21
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	09-MAR-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	09-MAR-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	09-MAR-21
Iron (Fe)-Total			<0.010		mg/L		0.01	09-MAR-21
Lead (Pb)-Total			<0.000050		mg/L		0.00005	09-MAR-21
Lithium (Li)-Total			<0.0010		mg/L		0.001	09-MAR-21
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	09-MAR-21
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	09-MAR-21
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	09-MAR-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	09-MAR-21
Potassium (K)-Total			<0.050		mg/L		0.05	09-MAR-21
Selenium (Se)-Total			<0.000050		mg/L		0.00005	09-MAR-21
Silicon (Si)-Total			<0.10		mg/L		0.1	09-MAR-21
Silver (Ag)-Total			<0.000010		mg/L		0.00001	09-MAR-21
Sodium (Na)-Total			<0.050		mg/L		0.05	09-MAR-21
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	09-MAR-21
Sulfur (S)-Total			<0.50		mg/L		0.5	09-MAR-21
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	09-MAR-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	09-MAR-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	09-MAR-21
Uranium (U)-Total			<0.000010		mg/L		0.00001	09-MAR-21
Vanadium (V)-Total			<0.00050		mg/L		0.0005	09-MAR-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	09-MAR-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5399608</b>							
<b>WG3500196-19</b>	<b>DUP</b>	<b>L2563847-1</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	10-MAR-21
<b>WG3500196-18</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2563847

Report Date: 10-DEC-21

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
Batch R5399608								
WG3500196-18	LCS							
Ammonia as N			90.0		%		85-115	10-MAR-21
WG3500196-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	10-MAR-21
WG3500196-20	MS	L2563847-1						
Ammonia as N			82.9		%		75-125	10-MAR-21
<b>NO2-L-IC-N-CL</b>								
Batch R5399705								
WG3500579-2	LCS							
Nitrite (as N)			102.2		%		90-110	06-MAR-21
WG3500579-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	06-MAR-21
<b>NO3-L-IC-N-CL</b>								
Batch R5399705								
WG3500579-2	LCS							
Nitrate (as N)			102.3		%		90-110	06-MAR-21
WG3500579-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	06-MAR-21
<b>OH-CL</b>								
Batch R5400402								
WG3501418-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	12-MAR-21
<b>ORP-CL</b>								
Batch R5400001								
WG3500937-11	CRM	CL-ORP						
ORP			225		mV		210-230	11-MAR-21
WG3500937-12	DUP	L2563847-1						
ORP		450	445	J	mV	4.8	15	11-MAR-21
<b>P-T-L-COL-CL</b>								
Batch R5399032								
WG3499810-2	LCS							
Phosphorus (P)-Total			96.7		%		80-120	10-MAR-21
WG3499810-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	10-MAR-21
<b>PH-CL</b>								
Batch R5399032								





## Quality Control Report

Workorder: L2563847

Report Date: 10-DEC-21

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R5400402							
<b>WG3501418-14</b>	<b>LCS</b>							
pH			6.97		pH		6.9-7.1	11-MAR-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5397614							
<b>WG3497937-4</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			92.5		%		80-120	05-MAR-21
<b>WG3497937-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-MAR-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5399705							
<b>WG3500579-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.0		%		90-110	06-MAR-21
<b>WG3500579-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	06-MAR-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5399811							
<b>WG3499779-11</b>	<b>LCS</b>							
Total Dissolved Solids			88.9		%		85-115	10-MAR-21
<b>WG3499779-10</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	10-MAR-21
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5399314							
<b>WG3500049-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.0		%		75-125	10-MAR-21
<b>WG3500049-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.1		%		75-125	10-MAR-21
<b>WG3500049-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.0		%		75-125	10-MAR-21
<b>WG3500049-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.0		%		75-125	10-MAR-21
<b>WG3500049-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-MAR-21
<b>WG3500049-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-MAR-21
<b>WG3500049-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-MAR-21
<b>WG3500049-9</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2563847

Report Date: 10-DEC-21

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5399314							
<b>WG3500049-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-MAR-21
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5399742							
<b>WG3499781-8 LCS</b>								
Total Suspended Solids			108.1		%		85-115	10-MAR-21
<b>WG3499781-7 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	10-MAR-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5397434							
<b>WG3497890-14 LCS</b>								
Turbidity			100.5		%		85-115	05-MAR-21
<b>WG3497890-13 MB</b>								
Turbidity			<0.10		NTU		0.1	05-MAR-21

# Quality Control Report

Workorder: L2563847

Report Date: 10-DEC-21

Page 10 of 11

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2563847

Report Date: 10-DEC-21

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	03-MAR-21 09:31	11-MAR-21 14:30	0.25	197	hours	EHTR-FM
pH	1	03-MAR-21 09:31	11-MAR-21 13:00	0.25	196	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).


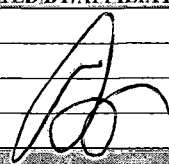
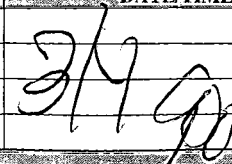
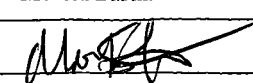
### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2563847 were received on 04-MAR-21 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b> 01-03_Q1-2021		<b>TURNAROUND TIME:</b>			<b>RUSH:</b>															
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>													
Facility Name / Job# Regional Effects Program		Lab Name ALS Calgary			Report Format / Distribution		Excel	PDF	EDD											
Project Manager Cam Jaeger		Lab Contact Lyudmyla Shvets			Email 1: cam.jaeger@teck.com		X	X	X											
Email cam.jaeger@teck.com		Email lyudmyla.shvets@alsglobal.com			Email 2: monica.bartha@teck.com		X	X	X											
Address 421 Pine Ave		Address 2559 29 st NE			Email 3: teckcoal@equisonline.com		X	X	X											
City Sparwood Province BC		City Calgary Province AB			Email 4: teck.lab.results@sharepoint		X	X												
Postal Code V0B 2G0 Country Canada		Postal Code T1Y 7B5 Country Canada			Email 5:															
Phone Number 250-425-8449		Phone Number 403-407-1800			PO number		VPO00690772													
<b>SAMPLE DETAILS</b>				<b>ANALYSIS REQUESTED</b>																
 L2563847-COFC	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Filtered: F: Field; L: Lab; F1: Field & Lab; N: None												
								F	N	F	N	F	N	N						
<b>Sample ID</b>								PREP	H2SO4	H2SO4	HCL	HCL	HNO3	HNO3						
RG_DW-01-03_WP_Q1-2021_NP	RG_DW-01-03	WP	N	3-Mar-21	09:31	G	5	ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA					
<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>				<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>										
																				
<b>SERVICE REQUEST (rush - subject to availability)</b>																				
Regular (default) X				<b>Sampler's Name</b>		Monica Bartha		<b>Mobile #</b>		250-425-4784										
Priority (2-3 business days) - 50% surcharge				<b>Sampler's Signature</b>				<b>Date/Time</b>		March 3 2021										
Emergency (1 Business Day) - 100% surcharge																				
For Emergency <1 Day, ASAP or Weekend - Contact ALS																				



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100220**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-03-01-WG  
**Sampler** : HS/JF  
**Site** : ---  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 02-Mar-2021 08:45  
**Date Analysis Commenced** : 02-Mar-2021  
**Issue Date** : 13-Oct-2021 12:14

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	<i>Detection Limit Raised: Dilution required due to high concentration of test analyte(s).</i>
DLM	<i>Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).</i>
DTMF	<i>Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.</i>
DTS	<i>Dissolved Sulfur concentration exceeds total. Negative bias on Total Sulfur suspected due to presence of volatile sulfur species lost during digestion.</i>
IB:INT	<i>Ion Balance Reviewed: Imbalance is due to interference or non-measured component.</i>





## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					GH_GA-MW-3_	----	----	----	----
					WG_2021-01-0				
					4_NP				
					Client sampling date / time	01-Mar-2021	---	---	---
					12:45	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100220-001	-----	-----	-----	-----
					Result	---	---	---	---
<b>Physical Tests</b>									
acidity (as CaCO3)	---	E283	2.0	mg/L	18.0	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	246	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	246	---	---	---	---
conductivity	---	E100	2.0	µS/cm	696	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.60	mg/L	332	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	455	---	---	---	---
pH	---	E108	0.10	pH units	7.46	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	424 <sup>DLHC</sup>	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	21.9	---	---	---	---
turbidity	---	E121	0.10	NTU	62.8	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	300	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.556 <sup>DLM</sup>	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	6.29	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.543	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.111	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0042	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0339	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	108	---	---	---	---
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	0.58	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	1.01	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					GH_GA-MW-3_ WG_2021-01-0 4_NP	----	----	----	----
					Client sampling date / time	01-Mar-2021 12:45	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100220-001	-----	-----	-----	-----
					Result	----	----	----	----
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	7.37	----	----	----	----
cation sum	----	EC101	0.10	meq/L	8.49	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	115 <sup>IB.INT</sup>	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	7.06	----	----	----	----
<b>Total Metals</b>									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0781	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00012	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00015	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.125	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.299	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0453	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	67.0	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00301	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.0136	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.186	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000196	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.104	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	44.6	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0149	----	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00089	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000116	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00264	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	2.57	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	4.67	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	5.05	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	0.000381	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	38.7	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID					
					<b>GH_GA-MW-3_WG_2021-01-04_NP</b>	----	----	----	----	
					Client sampling date / time	01-Mar-2021 12:45	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100220-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	2.80	----	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	45.7	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00170	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000186	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00057	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0038	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0021	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.108	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.269	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	63.0	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00107	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.016	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.105	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	42.4	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00972	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000100 <sup>DLM</sup>	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000060	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00104	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.73	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					GH_GA-MW-3_ WG_2021-01-0 4_NP	----	----	----	----
					Client sampling date / time	01-Mar-2021 12:45	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100220-001	-----	-----	-----	-----
					Result	----	----	----	----
<b>Dissolved Metals</b>									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	7.04	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.98	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	40.3	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	2.41	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	104 <sup>DTS</sup>	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000267 <sup>DTMF</sup>	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: **2021-03-01-WG**      TURNAROUND TIME: **NORMAL**      RUSH: **NO**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Burnaa			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burnaa@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2859 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:	ashlee.fudge@teck.com	X	X	X
Phone Number	280-865-3048			Phone Number	403 407 1794			Email 6:	DL-Equis-GHD-Field@teck.com	X	X	X
								Email 7:	jeremy.enns@teck.com	X	X	X
								PO number	739453			

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**      Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED												
							ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH	BOD/COLOUR	EPH/PAH			
GH_GA-MW-3_WG_2021-01-04_NP	GH_GA-MW-3	WG	X	3/01/2021	12:45	G	7	I	I	I	I	I	I						

Environmental Division  
Calgary  
Work Order Reference  
**CG2100220**



Telephone : +1 403 407 1800

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME

*[Handwritten Signature]*      **3/12/2021**

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	HS/JF
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	Mobile #
Emergency (1 Business Day) - 100% surcharge			Date/Time
For Emergency <1 Day, ASAP or Weekend - Contact ALS			<b>MAR 01 2021</b>

*[Handwritten Signature]*



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100266**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATIONS  
**PO** : VPO00739453  
**C-O-C number** : 2021-03-05-WG  
**Sampler** : HS/AF  
**Site** : ---  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 06-Mar-2021 09:00  
**Date Analysis Commenced** : 07-Mar-2021  
**Issue Date** : 13-Oct-2021 12:17

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

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Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).





## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					GH_MW-ERSC-1_WG_2021-01-04_NP	----	----	----	----
Client sampling date / time					05-Mar-2021 10:00	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100266-001	-----	-----	-----	-----
					Result	---	---	---	---
<b>Physical Tests</b>									
acidity (as CaCO3)	---	E283	2.0	mg/L	3.8	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	209	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	209	---	---	---	---
conductivity	---	E100	2.0	µS/cm	1110	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.60	mg/L	750	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	238	---	---	---	---
pH	---	E108	0.10	pH units	8.15	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	824 <sup>DLHC</sup>	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	---	---	---	---
turbidity	---	E121	0.10	NTU	0.72	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	255	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0065	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	6.61 <sup>DLHC</sup>	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.106 <sup>DLHC</sup>	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	<0.050	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	10.7 <sup>DLHC</sup>	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0162 <sup>DLHC</sup>	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0016	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0116	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	434 <sup>DLHC</sup>	---	---	---	---
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	0.96	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	1.07	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-ERSC-1_WG_2021-01-04_NP	----	----	----	----
Client sampling date / time					05-Mar-2021 10:00	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100266-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	14.2	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	15.4	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	108	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.05	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0307	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00016	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.196	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.011	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0501	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	155	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00040	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00130	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.094	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000052	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0195	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	63.9	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00799	----	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00050	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00274	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00090	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.05	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	60.3	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.73	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000012	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	7.74	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-ERSC-1_WG_2021-01-04_NP	----	----	----	----
Client sampling date / time					05-Mar-2021 10:00	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100266-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.584	----	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	160	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00120 <sup>DLM</sup>	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00222	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.199	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.011	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0469	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	184	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00022	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00062	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0206	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	70.5	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00670	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00239	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00081	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.09	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					<b>GH_MW-ERSC-1_WG_2021-01-04_NP</b>	----	----	----	----
					Client sampling date / time	05-Mar-2021 10:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	<b>CG2100266-001</b>	-----	-----	-----	-----
					Result	----	----	----	----
<b>Dissolved Metals</b>									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	62.8	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.55	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.96	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.577	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	160	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00219	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0020	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: 2021-03-05-WG

TURNAROUND TIME: NORMAL

RUSH: NO

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

Facility Name / Job#	Greenhills Operation		
Project Manager	Jeremy Enns		
Email	jeremy.enns@teck.com		
Address	P.O. BOX 5000		
City	Elkford	Province	BC
Postal Code	V0B1H0	Country	Canada
Phone Number	280-865-3048		

Lab Name	ALS Calgary		
Lab Contact	Justine Buma-a		
Email	Justine.bumaa@alsglobal.com		
Address	2859 29 Street NE		
City	Calgary	Province	AB
Postal Code	T1Y 7B5	Country	Can
Phone Number	403 407 1794		

Report Format / Distribution		Excel	PDF	EDD
Email 1:	Leigh.Stickney@teck.com	X	X	X
Email 2:	Heather.stevenson@teck.com	X	X	X
Email 3:	teckcoal@equisonline.com			X
Email 4:	jaydon.francis@teck.com	X	X	X
Email 5:	ashlee.fudge@teck.com	X	X	X
Email 6:	DL-Equis-CHO-Field@teck.com	X	X	X
Email 7:	jeremy.enns@teck.com	X	X	X
PO number	739453			

Environmental Division  
Calgary  
Work Order Reference  
**CG2100266**



Telephone : +1 403 407 1800

**SAMPLE DETAILS**

Sample ID	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.
GH_MW-ERSC-1_WG_2021-01-04_NP	GH_MW-ERSC-1	WG	N	3/05/2021	10:00	G : 7

**ANALYSIS REQUESTED**

File	Y	Y	N	Y	N	N	N						
Prep:	H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4						
ANALYSIS	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH	BOD/COLOUR	EPH/PAH			
	1	1	1	1	1	1	1						

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>HE</i>	3/6 09:00

<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name		HS/AF	Mobile #	
Sampler's Signature		Date/Time	MAR 05 2021	

*ge*







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).





## Analytical Results

Sub-Matrix: Water					Client sample ID					
(Matrix: Water)					GH_GA-MW-2_	----	----	----	----	
					WG_2021-01-0					
					4_NP					
					Client sampling date / time	08-Mar-2021	---	---	---	---
					11:50					
Analyte	CAS Number	Method	LOR	Unit	CG2100285-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	2.3	---	---	---	---	
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	222	---	---	---	---	
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	222	---	---	---	---	
conductivity	---	E100	2.0	µS/cm	1210	---	---	---	---	
hardness (as CaCO3), dissolved	---	EC100	0.60	mg/L	782	---	---	---	---	
oxidation-reduction potential [ORP]	---	E125	0.10	mV	330	---	---	---	---	
pH	---	E108	0.10	pH units	8.18	---	---	---	---	
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 <sup>DLHC</sup>	---	---	---	---	
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	1.0	---	---	---	---	
turbidity	---	E121	0.10	NTU	0.17	---	---	---	---	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	270	---	---	---	---	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	---	---	---	---	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	6.66 <sup>DLHC</sup>	---	---	---	---	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLHC</sup>	---	---	---	---	
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	<0.050	---	---	---	---	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	10.6 <sup>DLHC</sup>	---	---	---	---	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.100 <sup>DLHC</sup>	---	---	---	---	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	---	---	---	---	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	481 <sup>DLHC</sup>	---	---	---	---	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	0.98	---	---	---	---	
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	0.95	---	---	---	---	



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					GH_GA-MW-2_WG_2021-01-04_NP	----	----	----	----
Client sampling date / time					08-Mar-2021 11:50	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100285-001	-----	-----	-----	-----
					Result	----	----	----	----
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	15.4	----	----	----	----
cation sum	----	EC101	0.10	meq/L	16.2	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	105	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	2.53	----	----	----	----
<b>Total Metals</b>									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0067	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00179	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00026	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0327	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.019	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0731	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	229	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	0.79	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.0226	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.016	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0216	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	60.6	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.112	----	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0354	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00918	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	1.41	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	27.5	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	3.52	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	0.000121	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	11.4	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					<b>GH_GA-MW-2_WG_2021-01-04_NP</b>	----	----	----	----
					Client sampling date / time				
					08-Mar-2021 11:50	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100285-001				
					Result	----	----	----	----
<b>Total Metals</b>									
strontium, total	7440-24-6	E420	0.00020	mg/L	0.783	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	172	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00897	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0173	----	----	----	----
<b>Dissolved Metals</b>									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00189	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00022	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0344	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.020	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0688	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	217	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.54	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00204	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0222	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	58.4	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0965	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0368	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00857	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.52	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					<b>GH_GA-MW-2_</b>	----	----	----	----
					<b>WG_2021-01-0</b>				
					<b>4_NP</b>				
					Client sampling date / time	08-Mar-2021	----	----	----
						11:50			
Analyte	CAS Number	Method	LOR	Unit	<b>CG2100285-001</b>	-----	-----	-----	-----
					Result	----	----	----	----
<b>Dissolved Metals</b>									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	32.4	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.67	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	11.6	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.796	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	172	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00015	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00971	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0121	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: **2021-03-08-WG**      TURNAROUND TIME: **NORMAL**      RUSH: **NO**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Buma-a			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.bumaa@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2859 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:	ashlee.fudge@teck.com	X	X	X
	3048			Phone Number	403 407 1794			Email 6:	DL-Equis-GHO-Field@teck.com	X	X	X
								Email 7:	jeremy.enns@teck.com	X	X	X
								PO number	739453			

Environmental Division  
Calgary  
Work Order Reference  
**CG2100285**



Telephone : 1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.		Filter	Y	Y	N	Y	N	N	N				
								Preserv.	H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4				
								ANALYSIS	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH	BOD/COLOUR	EPH/PAH	
GH_GA-MW-2_WG_2021-01-04_NP	-GH_GA-MW-2	WG	N	3/08/2021	11:50	G	7		1	1	1	1	1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	3/9 4:30
<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	AF/JM	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	MAR 08 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100354**

**Amendment** : **1**

**Client** : **Teck Coal Limited**

**Contact** : Jeremy Enns

**Address** : Greenhills Operations BOX 5000  
Elkford BC Canada V0B1H0

**Telephone** : 250 865 3305

**Project** : GREENHILLS OPERATIONS

**PO** : VPO00739453

**C-O-C number** : 2021-03-12-WG

**Sampler** : AF/HS/JM

**Site** : ---

**Quote number** : Teck Coal Master Quote

**No. of samples received** : 1

**No. of samples analysed** : 1

**Page** : 1 of 7

**Laboratory** : Calgary - Environmental

**Account Manager** : Justine Buma-a

**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5

**Telephone** : +1 403 407 1800

**Date Samples Received** : 13-Mar-2021 09:00

**Date Analysis Commenced** : 13-Mar-2021

**Issue Date** : 13-Oct-2021 12:00

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebeccah Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).





## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					GH_MW-TD_W G_2021-03-12_ NP	----	----	----	----
Client sampling date / time					12-Mar-2021 13:15	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100354-001	-----	-----	-----	-----
					Result	---	---	---	---
<b>Physical Tests</b>									
acidity (as CaCO3)	---	E283	2.0	mg/L	6.1	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	337	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	337	---	---	---	---
conductivity	---	E100	2.0	µS/cm	679	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.60	mg/L	377	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	386	---	---	---	---
pH	---	E108	0.10	pH units	8.00	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	417 <sup>DLHC</sup>	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	13.9	---	---	---	---
turbidity	---	E121	0.10	NTU	22.5	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	411	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.106	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.34	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.287	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.114	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0152	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	85.6	---	---	---	---
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	<0.50	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	0.83	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					GH_MW-TD_W G_2021-03-12_ NP	----	----	----	----
					Client sampling date / time				
					12-Mar-2021 13:15	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100354-001				
					Result	----	----	----	----
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	8.54	----	----	----	----
cation sum	----	EC101	0.10	meq/L	9.00	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	105	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	2.62	----	----	----	----
<b>Total Metals</b>									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.735	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00050	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0302	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	0.040	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.372	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	2.48	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	81.2	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00107	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	0.73	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00221	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.863	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000438	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0385	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	35.1	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.710	----	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00194	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00288	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00250	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	2.69	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	0.253	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	8.08	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	0.000034	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	28.1	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					GH_MW-TD_W G_2021-03-12_ NP	----	----	----	----
					Client sampling date / time				
					12-Mar-2021 13:15	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100354-001				
					Result	----	----	----	----
<b>Total Metals</b>									
strontium, total	7440-24-6	E420	0.00020	mg/L	1.19	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	32.6	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000203	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0169	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000986	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00207	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0124	----	----	----	----
<b>Dissolved Metals</b>									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00017	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0240	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.420	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.121	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	91.3	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.42	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.122	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0429	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	36.2	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.722	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00253	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00065	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.46	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					<b>GH_MW-TD_W G_2021-03-12_ NP</b>	----	----	----	----
					Client sampling date / time	12-Mar-2021 13:15	----	----	----
Analyte	CAS Number	Method	LOR	Unit	<b>CG2100354-001</b>	-----	-----	-----	-----
					Result	----	----	----	----
<b>Dissolved Metals</b>									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.14	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	31.4	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.25	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	29.7	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000157	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000969	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0019	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: 2021-03-12-WG

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	eric.olsen@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:	jennifer.manolovic@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:	DL-Equis-GHD-Fields@teck.com	X	X	X
								Email 7:	jeremy.enns@teck.com	X	X	X
								PO number	739453			

SAMPLE DETAILS								ANALYSIS REQUESTED																
File	Y	Y	N	Y	N	N	N		N															
Prevalence	H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4	Sodium bisulphate	ZN acetate, NaOH															
ANALYSIS	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH/PAH/LEPH/HEPH	SULPHIDE	BOD	COD	Phenols	VOC/PH/BTEX											
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.																			
GH_MW-TD_WG_2021-03-12_NP	GH_MW-TD	WG	N	3/12/2021	13:15	G	7	1	1	1	1	1	1	1										

Environmental Division  
Calgary  
Work Order Reference  
**CG2100354**



Telephone: +1 403 407 1800

*Handwritten signature and date: 3/15/2021*

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	AF/HS/JM
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	Mobile #
Emergency (1 Business Day) - 100% surcharge			Date/Time
For Emergency <1 Day, ASAP or Weekend - Contact ALS			MAR 12 2021



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100432**  
**Amendment** : **2**  
**Client** : **Teck Coal Limited**  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-03-18-WG  
**Sampler** : AF/HS/JM/EO  
**Site** : ---  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 19-Mar-2021 09:00  
**Date Analysis Commenced** : 19-Mar-2021  
**Issue Date** : 13-Oct-2021 12:21

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maqsood Ul Hassan	Laboratory Analyst	Organics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
IB:INT	Ion Balance Reviewed: Imbalance is due to interference or non-measured component.





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-PC_W G_2021-01-04_ NP	GH_MW-EF1A_ WG_2021-03-1 8_NP	GH_MW-EF1B_ WG_2021-03-1 8_NP	GH_FOX3_WG_ 2021-03-18_NP	GH_JDW3_WG _2021-03-18_N P
Client sampling date / time					18-Mar-2021 12:00	18-Mar-2021 14:30	18-Mar-2021 13:25	18-Mar-2021 14:30	18-Mar-2021 14:30	
Analyte	CAS Number	Method	LOR	Unit	CG2100432-001 Result	CG2100432-002 Result	CG2100432-003 Result	CG2100432-004 Result	CG2100432-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	198	111	157	154	<1.0	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	4.4	2.8	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	198	111	161	156	<1.0	
conductivity	----	E100	2.0	µS/cm	1000	335	347	338	<2.0	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	610	178	188	183	<0.50	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	334	335	388	384	425	
pH	----	E108	0.10	pH units	8.24	8.29	8.32	8.30	5.61	
solids, total dissolved [TDS]	----	E162	10	mg/L	756 <sup>DLHC</sup>	176 <sup>DLHC</sup>	200 <sup>DLHC</sup>	187 <sup>DLHC</sup>	<10	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	83.0	<1.0	<1.0	<1.0	<1.0	
turbidity	----	E121	0.10	NTU	44.5	<0.10	0.11	0.18	<0.10	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	242	135	192	187	<1.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	2.6	1.7	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0120	<0.0050	<0.0050	<0.0050	<0.0050	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.92	0.89	0.83	0.87	<0.10	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.202	0.082	0.080	0.079	<0.020	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.625	0.241	0.198	0.281	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.61	0.585	0.639	0.622	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0017	<0.0010	<0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0076	0.0013	0.0019	0.0014	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0963 <sup>DLHC</sup>	<0.0020	<0.0020	<0.0020	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	389	38.0	39.6	37.1	<0.30	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.57	<0.50	<0.50	<0.50	<0.50	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.43	<0.50	<0.50	<0.50	<0.50	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-PC_W G_2021-01-04_ NP	GH_MW-EF1A_ WG_2021-03-1 8_NP	GH_MW-EF1B_ WG_2021-03-1 8_NP	GH_FOX3_WG_ 2021-03-18_NP	GH_JDW3_WG_ _2021-03-18_N P
Client sampling date / time					18-Mar-2021 12:00	18-Mar-2021 14:30	18-Mar-2021 13:25	18-Mar-2021 14:30	18-Mar-2021 14:30	
Analyte	CAS Number	Method	LOR	Unit	CG2100432-001	CG2100432-002	CG2100432-003	CG2100432-004	CG2100432-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	12.2	3.08	4.12	3.96	<0.10	
cation sum	----	EC101	0.10	meq/L	12.2	3.63	3.82	3.72	<0.10	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	118 <sup>IB.INT</sup>	92.7	93.9	100	
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	8.20	3.78	3.12	<0.010	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	2.47	<0.0030	<0.0030	<0.0030	<0.0030	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00019	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00134	<0.00010	<0.00010	<0.00010	<0.00010	
barium, total	7440-39-3	E420	0.00010	mg/L	0.251	0.0595	0.0520	0.0609	<0.00010	
beryllium, total	7440-41-7	E420	0.020	µg/L	0.218	<0.020	<0.020	<0.020	<0.020	
bismuth, total	7440-69-9	E420	0.000050	mg/L	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.132	<0.0050	0.0060	0.0056	<0.0050	
calcium, total	7440-70-2	E420	0.050	mg/L	107	48.6	51.6	49.2	<0.050	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00347	0.00025	0.00025	0.00024	<0.00010	
cobalt, total	7440-48-4	E420	0.10	µg/L	2.61	<0.10	<0.10	<0.10	<0.10	
copper, total	7440-50-8	E420	0.00050	mg/L	0.0590	<0.00050	<0.00050	<0.00050	<0.00050	
iron, total	7439-89-6	E420	0.010	mg/L	2.58	<0.010	<0.010	<0.010	<0.010	
lead, total	7439-92-1	E420	0.000050	mg/L	0.00244	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0083	0.0031	0.0030	0.0032	<0.0010	
magnesium, total	7439-95-4	E420	0.0050	mg/L	74.9	12.6	13.2	12.5	<0.0050	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.147	<0.00010	<0.00010	<0.00010	<0.00010	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00882	<0.00050	<0.00050	<0.00050	<0.00050	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00265	0.00104	0.00104	0.00103	<0.000050	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00422	<0.00050	<0.00050	<0.00050	<0.00050	
potassium, total	7440-09-7	E420	0.050	mg/L	1.42	0.379	0.343	0.378	<0.050	
selenium, total	7782-49-2	E420	0.050	µg/L	61.6	3.00	2.81	2.88	<0.050	
silicon, total	7440-21-3	E420	0.10	mg/L	7.76	2.10	1.86	2.11	<0.10	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000147	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, total	17341-25-2	E420	0.050	mg/L	0.924	1.25	1.24	1.22	<0.050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-PC_W G_2021-01-04_ NP	GH_MW-EF1A_ WG_2021-03-1 8_NP	GH_MW-EF1B_ WG_2021-03-1 8_NP	GH_FOX3_WG_ 2021-03-18_NP	GH_JDW3_WG_ _2021-03-18_N P
Client sampling date / time					18-Mar-2021 12:00	18-Mar-2021 14:30	18-Mar-2021 13:25	18-Mar-2021 14:30	18-Mar-2021 14:30	
Analyte	CAS Number	Method	LOR	Unit	CG2100432-001	CG2100432-002	CG2100432-003	CG2100432-004	CG2100432-005	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.155	0.224	0.231	0.224	<0.00020	
sulfur, total	7704-34-9	E420	0.50	mg/L	139	12.5	13.6	12.8	<0.50	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000056	<0.000010	<0.000010	<0.000010	<0.000010	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00025	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0432	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00521	0.000851	0.000926	0.000830	<0.000010	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00469	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0175	<0.0030	<0.0030	<0.0030	<0.0030	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0022	0.0015	0.0010	0.0010	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00016	<0.00010	<0.00010	<0.00010	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0826	0.0604	0.0542	0.0600	<0.00010	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0368	<0.0050	0.0071	0.0058	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	110	49.7	51.9	51.4	<0.050	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00024	0.00023	0.00024	0.00023	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0117	<0.00020	<0.00020	<0.00020	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0068	0.0030	0.0029	0.0031	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	81.4	13.2	14.2	13.2	<0.0050	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00056	<0.00010	<0.00010	<0.00010	<0.00010	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00261	0.00108	0.00106	0.00105	<0.000050	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00084	<0.00050	<0.00050	<0.00050	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.994	0.393	0.362	0.411	<0.050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-PC_W G_2021-01-04_ NP	GH_MW-EF1A_ WG_2021-03-1 8_NP	GH_MW-EF1B_ WG_2021-03-1 8_NP	GH_FOX3_WG_ 2021-03-18_NP	GH_JDW3_WG_ _2021-03-18_N P
Client sampling date / time					18-Mar-2021 12:00	18-Mar-2021 14:30	18-Mar-2021 13:25	18-Mar-2021 14:30	18-Mar-2021 14:30	
Analyte	CAS Number	Method	LOR	Unit	CG2100432-001	CG2100432-002	CG2100432-003	CG2100432-004	CG2100432-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	74.0	3.38	3.43	3.50	<0.050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.43	1.98	1.77	2.01	<0.050	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.953	1.30	1.33	1.30	<0.050	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.143	0.218	0.221	0.217	<0.00020	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	154	13.7	14.9	14.4	<0.50	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00475	0.000796	0.000927	0.000811	<0.000010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0048	<0.0010	<0.0010	<0.0010	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	----	----	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%	97.2	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: 2021-03-18-WG

1 day TAT

RUSII: YES

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Buma-a			Email 1:	Leigh Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burman@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckonl@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	eric.nksen@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:	janifer.marjolovic@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:	DL.Equis-GH0-field@teck.com	X	X	X
								Email 7:	jeremy.enns@teck.com	X	X	X
								PO number	739453			

Environmental Division  
Calgary  
Work Order Reference  
**CG2100432**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED													
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	Preserv.	ALS Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-TKN/TOC	EPH	SULPHIDE	BOD	COD	Phenols	VOC/PH/BTEX	
GH_MW-PC_WG_2021-01-04_NP	GH_MW-TD	WG	N	3/18/2021	12:00	G	9	1	1	1	1	1	1	1	1						
GH_MW-EF1A_WG_2021-03-18_NP	GH_EF1A	WG	N	3/18/2021	14:30	G	9	1	1	1	1	1	1	1	1						
GH_MW-EF1B_WG_2021-03-18_NP	GH_EF1B	WG	N	3/18/2021	13:25	G	9	1	1	1	1	1	1	1	1						
GH_FOX3_WG_2021-03-18_NP	GH_EF1			3/18/2021	1430	G	9	1	1	1	1	1	1	1	1						
GH_JDW3_WG_2021-03-18_NP	GH_EF1			3/18/2021	1430	G	9	1	1	1	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Please rush MW-PC and MW-EF1A and MW-EF1B			D/K	3/19 0900

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	AF/HS/JM/EO	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature		Date/Time

MAR 18 2021

109



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100638**

**Amendment** : **2**

**Client** : **Teck Coal Limited**

**Contact** : Jeremy Enns

**Address** : Greenhills Operations BOX 5000  
Elkford BC Canada V0B1H0

**Telephone** : 250 865 3305

**Project** : GREENHILLS OPERATION

**PO** : VPO00739453

**C-O-C number** : 2021-03-31-WS

**Sampler** : SS/AF

**Site** : ---

**Quote number** : Teck Coal Master Quote

**No. of samples received** : 7

**No. of samples analysed** : 7

**Page** : 1 of 11

**Laboratory** : Calgary - Environmental

**Account Manager** : Justine Buma-a

**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5

**Telephone** : +1 403 407 1800

**Date Samples Received** : 01-Apr-2021 08:55

**Date Analysis Commenced** : 01-Apr-2021

**Issue Date** : 24-Jan-2022 11:31

---

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

---

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Shirley Li		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
CU	colour units (1 CU = 1 mg/L Pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	<i>Detection Limit Raised: Dilution required due to high concentration of test analyte(s).</i>
DLM	<i>Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).</i>
IB:INT	<i>Ion Balance Reviewed: Imbalance is due to interference or non-measured component.</i>
RRV	<i>Reported result verified by repeat analysis.</i>





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_E1A_WS_2 021-03-29_NP	GH_E2A_WS_2 021-03-29_NP	GH_GH1_WS_2 021-03-29_N	GH_RLP_WS_2 021-03-29_N	GH_SITE-F_WS _2021-03-29_N P
Client sampling date / time					31-Mar-2021 12:00	31-Mar-2021 12:30	31-Mar-2021 11:45	31-Mar-2021 11:30	31-Mar-2021 13:15	
Analyte	CAS Number	Method	LOR	Unit	CG2100638-001 Result	CG2100638-002 Result	CG2100638-003 Result	CG2100638-004 Result	CG2100638-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	---	---	---	---	3.1	
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	---	---	---	---	136	
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	---	---	---	---	<1.0	
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	---	---	---	---	<1.0	
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	---	---	---	---	136	
colour, true	---	E329	5.0	CU	---	---	---	---	93.0 <sup>DLHC</sup>	
conductivity	---	E100	2.0	µS/cm	---	---	---	---	672	
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	---	---	---	---	145	
oxidation-reduction potential [ORP]	---	E125	0.10	mV	---	---	---	---	356	
pH	---	E108	0.10	pH units	---	---	---	---	7.92	
solids, total dissolved [TDS]	---	E162	10	mg/L	---	---	---	---	839 <sup>DLHC</sup>	
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	24.6	2450 <sup>DLHC</sup>	13.0	12.3	3300 <sup>DLHC</sup>	
turbidity	---	E121	0.10	NTU	52.0	1010	1.65	17.4	3290	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	---	---	---	---	166	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	---	---	---	---	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	---	---	---	---	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	---	---	---	---	0.0353 <sup>DLM</sup>	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	---	---	---	---	0.516	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	---	---	---	---	140	
fluoride	16984-48-8	E235.F	0.020	mg/L	---	---	---	---	0.155	
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	---	---	---	---	9.20 <sup>DLHC</sup>	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	---	---	---	---	0.0604	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	---	---	---	---	0.0048	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	---	---	---	---	0.0090	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	---	---	---	---	5.44 <sup>DLHC</sup>	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	---	---	---	---	44.7	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	---	---	---	---	29.1 <sup>RRV</sup>	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_E1A_WS_2 021-03-29_NP	GH_E2A_WS_2 021-03-29_NP	GH_GH1_WS_2 021-03-29_N	GH_RLP_WS_2 021-03-29_N	GH_SITE-F_WS _2021-03-29_N P
Client sampling date / time					31-Mar-2021 12:00	31-Mar-2021 12:30	31-Mar-2021 11:45	31-Mar-2021 11:30	31-Mar-2021 13:15	
Analyte	CAS Number	Method	LOR	Unit	CG2100638-001 Result	CG2100638-002 Result	CG2100638-003 Result	CG2100638-004 Result	CG2100638-005 Result	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	----	----	----	----	375 <sup>DLHC</sup>	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	----	----	----	----	7.61	
cation sum	----	EC101	0.10	meq/L	----	----	----	----	6.64	
ion balance (cations/anions ratio)	----	EC101	0.010	%	----	----	----	----	87.2 <sup>IB.INT</sup>	
ion balance (cation-anion difference)	----	EC101	0.010	%	----	----	----	----	6.81	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	----	----	----	----	17.0	
antimony, total	7440-36-0	E420	0.00010	mg/L	----	----	----	----	0.00205	
arsenic, total	7440-38-2	E420	0.00010	mg/L	----	----	----	----	0.0163	
barium, total	7440-39-3	E420	0.00010	mg/L	----	----	----	----	1.18	
beryllium, total	7440-41-7	E420	0.020	µg/L	----	----	----	----	2.78	
bismuth, total	7440-69-9	E420	0.000050	mg/L	----	----	----	----	0.000788	
boron, total	7440-42-8	E420	0.010	mg/L	----	----	----	----	0.050	
cadmium, total	7440-43-9	E420	0.0050	µg/L	----	----	----	----	6.32	
calcium, total	7440-70-2	E420	0.050	mg/L	----	----	----	----	173	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	----	----	----	----	0.0490	
cobalt, total	7440-48-4	E420	0.10	µg/L	----	----	----	----	33.8	
copper, total	7440-50-8	E420	0.00050	mg/L	----	----	----	----	0.0930	
iron, total	7439-89-6	E420	0.010	mg/L	----	----	----	----	44.9	
lead, total	7439-92-1	E420	0.000050	mg/L	----	----	----	----	0.0446	
lithium, total	7439-93-2	E420	0.0010	mg/L	----	----	----	----	0.0714	
magnesium, total	7439-95-4	E420	0.0050	mg/L	----	----	----	----	56.5	
manganese, total	7439-96-5	E420	0.00010	mg/L	----	----	----	----	1.25	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	----	----	----	----	0.0896 <sup>DLM</sup>	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	----	----	----	----	0.00511	
nickel, total	7440-02-0	E420	0.00050	mg/L	----	----	----	----	0.123	
potassium, total	7440-09-7	E420	0.050	mg/L	----	----	----	----	13.9	
selenium, total	7782-49-2	E420	0.050	µg/L	----	----	----	----	6.51	
silicon, total	7440-21-3	E420	0.10	mg/L	----	----	----	----	23.1	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_E1A_WS_2 021-03-29_NP	GH_E2A_WS_2 021-03-29_NP	GH_GH1_WS_2 021-03-29_N	GH_RLP_WS_2 021-03-29_N	GH_SITE-F_WS _2021-03-29_N P
Client sampling date / time					31-Mar-2021 12:00	31-Mar-2021 12:30	31-Mar-2021 11:45	31-Mar-2021 11:30	31-Mar-2021 13:15	
Analyte	CAS Number	Method	LOR	Unit	CG2100638-001	CG2100638-002	CG2100638-003	CG2100638-004	CG2100638-005	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
silver, total	7440-22-4	E420	0.000010	mg/L	---	---	---	---	0.00176	
sodium, total	7440-23-5	E420	0.050	mg/L	---	---	---	---	83.1	
strontium, total	7440-24-6	E420	0.00020	mg/L	---	---	---	---	0.653	
sulfur, total	7704-34-9	E420	0.50	mg/L	---	---	---	---	24.2	
thallium, total	7440-28-0	E420	0.000010	mg/L	---	---	---	---	0.000880	
tin, total	7440-31-5	E420	0.00010	mg/L	---	---	---	---	0.00037	
titanium, total	7440-32-6	E420	0.00030	mg/L	---	---	---	---	0.0511	
uranium, total	7440-61-1	E420	0.000010	mg/L	---	---	---	---	0.00558	
vanadium, total	7440-62-2	E420	0.00050	mg/L	---	---	---	---	0.0801	
zinc, total	7440-66-6	E420	0.0030	mg/L	---	---	---	---	0.451	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	---	---	---	---	0.102	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	---	---	---	---	0.00098	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	---	---	---	---	0.00095	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	---	---	---	---	0.122	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	---	---	---	---	0.028	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	---	---	---	---	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	---	---	---	---	0.026	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	---	---	---	---	0.184	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	---	---	---	---	37.0	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	---	---	---	---	0.00115	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	---	---	---	---	1.75	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	---	---	---	---	0.00878	
iron, dissolved	7439-89-6	E421	0.010	mg/L	---	---	---	---	0.901	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	---	---	---	---	0.00131	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	---	---	---	---	0.0430	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	---	---	---	---	12.7	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	---	---	---	---	0.123	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	---	---	---	---	0.0000164	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	---	---	---	---	0.00533	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_E1A_WS_2 021-03-29_NP	GH_E2A_WS_2 021-03-29_NP	GH_GH1_WS_2 021-03-29_N	GH_RLP_WS_2 021-03-29_N	GH_SITE-F_WS _2021-03-29_N P
Client sampling date / time					31-Mar-2021 12:00	31-Mar-2021 12:30	31-Mar-2021 11:45	31-Mar-2021 11:30	31-Mar-2021 13:15	
Analyte	CAS Number	Method	LOR	Unit	CG2100638-001 Result	CG2100638-002 Result	CG2100638-003 Result	CG2100638-004 Result	CG2100638-005 Result	
<b>Dissolved Metals</b>										
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	----	----	----	----	0.0139	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	----	----	----	----	8.05	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	----	----	----	----	3.25	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	----	----	----	----	1.36	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	----	----	----	----	0.000091	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	----	----	----	----	80.4	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	----	----	----	----	0.353	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	----	----	----	----	22.2	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	----	----	----	----	0.000044	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	----	----	----	----	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	----	----	----	----	0.0232	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	----	----	----	----	0.00163	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	----	----	----	----	0.00205	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	----	----	----	----	0.0102	
dissolved mercury filtration location	----	EP509	-	-	----	----	----	----	Laboratory	
dissolved metals filtration location	----	EP421	-	-	----	----	----	----	Laboratory	
<b>Aggregate Organics</b>										
biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	----	----	----	----	<6.0 <sup>DLM</sup>	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_FC1_WS_2 021-03-29_NP	GH_RLP-2_WG _2021-03-31_N P	----	----	----
Client sampling date / time					31-Mar-2021 09:40	31-Mar-2021	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100638-006 Result	CG2100638-007 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	276	291	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	276	291	----	----	----	
colour, true	----	E329	5.0	CU	190	----	----	----	----	
conductivity	----	E100	2.0	µS/cm	487	1040	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	289	602	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	347	318	----	----	----	
pH	----	E108	0.10	pH units	8.03	7.86	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	316 <sup>DLHC</sup>	821 <sup>DLHC</sup>	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	4.8	----	----	----	
turbidity	----	E121	0.10	NTU	0.24	3.36	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	336	354	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0444 <sup>DLM</sup>	0.210	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.074	0.062	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.50	16.0	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.101	0.507	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.262	0.397	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0057	0.243	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0038	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0084	0.0072	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	26.1	316	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	7.28	5.02	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	7.90	4.92	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_FC1_WS_2 021-03-29_NP	GH_RLP-2_WG _2021-03-31_N P	----	----	----
Client sampling date / time					31-Mar-2021 09:40	31-Mar-2021	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100638-006 Result	CG2100638-007 Result	-----	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.08	12.9	----	----	----	
cation sum	----	EC101	0.10	meq/L	5.91	12.8	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	97.2	99.2	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.42	0.389	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0065	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00017	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0523	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	67.3	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.020	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0033	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	28.4	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00328	----	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00059	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000743	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.32	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	0.125	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	6.40	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000093	----	----	----	----	
sodium, total	7440-23-5	E420	0.050	mg/L	2.39	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_FC1_WS_2 021-03-29_NP	GH_RLP-2_WG _2021-03-31_N P	---	---	---
Client sampling date / time					31-Mar-2021 09:40	31-Mar-2021	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2100638-006 Result	CG2100638-007 Result	----- ---	----- ---	----- ---	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0798	---	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	9.74	---	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	---	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	---	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	---	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000277	---	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	---	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	---	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0022	0.0031	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	0.00025	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0526	0.130	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.022	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0224	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	69.6	143	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	2.21	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00020	0.00031	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.013	0.220	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0032	0.0364	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	27.9	59.6	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00183	1.47	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000742	0.00583	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00595	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.31	3.92	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_FC1_WS_2 021-03-29_NP	GH_RLP-2_WG _2021-03-31_N P	----	----	----
Client sampling date / time					31-Mar-2021 09:40	31-Mar-2021	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100638-006 Result	CG2100638-007 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.150	0.992	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.24	5.20	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.46	12.9	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0812	0.421	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	8.56	106	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000303	0.00392	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	0.00069	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0010	0.0031	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	
<b>Aggregate Organics</b>										
biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b>	: <b>CG2100638</b>	<b>Page</b>	: 1 of 18
<b>Amendment</b>	: 2		
<b>Client</b>	: <b>Teck Coal Limited</b>	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Jeremy Enns	<b>Account Manager</b>	: Justine Buma-a
<b>Address</b>	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	<b>Address</b>	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
<b>Telephone</b>	: 250 865 3305	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: GREENHILLS OPERATION	<b>Date Samples Received</b>	: 01-Apr-2021 08:55
<b>PO</b>	: VPO00739453	<b>Issue Date</b>	: 24-Jan-2022 11:32
<b>C-O-C number</b>	: 2021-03-31-WS		
<b>Sampler</b>	: SS/AF		
<b>Site</b>	: ----		
<b>Quote number</b>	: Teck Coal Master Quote		
<b>No. of samples received</b>	: 7		
<b>No. of samples analysed</b>	: 7		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

### Summary of Outliers

#### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

#### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>											
<b>HDPE [BOD HT 3d]</b> GH_FC1_WS_2021-03-29_NP	E550	31-Mar-2021	----	----	----		01-Apr-2021	3 days	1 days	✓	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>											
<b>HDPE [BOD HT 3d]</b> GH_SITE-F_WS_2021-03-29_NP	E550	31-Mar-2021	----	----	----		01-Apr-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_FC1_WS_2021-03-29_NP	E298	31-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_SITE-F_WS_2021-03-29_NP	E298	31-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_RLP-2_WG_2021-03-31_NP	E298	31-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_FC1_WS_2021-03-29_NP	E235.Br-L	31-Mar-2021	----	----	----		02-Apr-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_SITE-F_WS_2021-03-29_NP	E235.Br-L	31-Mar-2021	----	----	----		02-Apr-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE GH_RLP-2_WG_2021-03-31_NP	E235.Br-L	31-Mar-2021	----	----	----		02-Apr-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE GH_FC1_WS_2021-03-29_NP	E235.Cl-L	31-Mar-2021	----	----	----		02-Apr-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE GH_SITE-F_WS_2021-03-29_NP	E235.Cl-L	31-Mar-2021	----	----	----		02-Apr-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE GH_RLP-2_WG_2021-03-31_NP	E235.Cl-L	31-Mar-2021	----	----	----		02-Apr-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_FC1_WS_2021-03-29_NP	E378-U	31-Mar-2021	----	----	----		03-Apr-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_RLP-2_WG_2021-03-31_NP	E378-U	31-Mar-2021	----	----	----		03-Apr-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_SITE-F_WS_2021-03-29_NP	E378-U	31-Mar-2021	----	----	----		03-Apr-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_FC1_WS_2021-03-29_NP	E235.F	31-Mar-2021	----	----	----		02-Apr-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_SITE-F_WS_2021-03-29_NP	E235.F	31-Mar-2021	----	----	----		02-Apr-2021	28 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE GH_RLP-2_WG_2021-03-31_NP	E235.F	31-Mar-2021	----	----	----		02-Apr-2021	28 days	3 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE GH_FC1_WS_2021-03-29_NP	E235.NO3-L	31-Mar-2021	----	----	----		02-Apr-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE GH_SITE-F_WS_2021-03-29_NP	E235.NO3-L	31-Mar-2021	----	----	----		02-Apr-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE GH_RLP-2_WG_2021-03-31_NP	E235.NO3-L	31-Mar-2021	----	----	----		02-Apr-2021	3 days	3 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE GH_FC1_WS_2021-03-29_NP	E235.NO2-L	31-Mar-2021	----	----	----		02-Apr-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE GH_SITE-F_WS_2021-03-29_NP	E235.NO2-L	31-Mar-2021	----	----	----		02-Apr-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE GH_RLP-2_WG_2021-03-31_NP	E235.NO2-L	31-Mar-2021	----	----	----		02-Apr-2021	3 days	3 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE GH_FC1_WS_2021-03-29_NP	E235.SO4	31-Mar-2021	----	----	----		02-Apr-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE GH_SITE-F_WS_2021-03-29_NP	E235.SO4	31-Mar-2021	----	----	----		02-Apr-2021	28 days	2 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_RLP-2_WG_2021-03-31_NP	E235.SO4	31-Mar-2021	----	----	----		02-Apr-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_FC1_WS_2021-03-29_NP	E318	31-Mar-2021	02-Apr-2021	----	----		03-Apr-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_RLP-2_WG_2021-03-31_NP	E318	31-Mar-2021	02-Apr-2021	----	----		03-Apr-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_SITE-F_WS_2021-03-29_NP	E318	31-Mar-2021	02-Apr-2021	----	----		03-Apr-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_FC1_WS_2021-03-29_NP	E372-U	31-Mar-2021	03-Apr-2021	----	----		03-Apr-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_RLP-2_WG_2021-03-31_NP	E372-U	31-Mar-2021	03-Apr-2021	----	----		03-Apr-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_SITE-F_WS_2021-03-29_NP	E372-U	31-Mar-2021	03-Apr-2021	----	----		03-Apr-2021	28 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_FC1_WS_2021-03-29_NP	E421.Cr-L	31-Mar-2021	05-Apr-2021	----	----		05-Apr-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_RLP-2_WG_2021-03-31_NP	E421.Cr-L	31-Mar-2021	05-Apr-2021	----	----		05-Apr-2021	180 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_SITE-F_WS_2021-03-29_NP	E421.Cr-L	31-Mar-2021	06-Apr-2021	----	----		06-Apr-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_FC1_WS_2021-03-29_NP	E509	31-Mar-2021	06-Apr-2021	----	----		06-Apr-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_SITE-F_WS_2021-03-29_NP	E509	31-Mar-2021	06-Apr-2021	----	----		06-Apr-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_RLP-2_WG_2021-03-31_NP	E509	31-Mar-2021	06-Apr-2021	----	----		06-Apr-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_FC1_WS_2021-03-29_NP	E421	31-Mar-2021	05-Apr-2021	----	----		05-Apr-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_RLP-2_WG_2021-03-31_NP	E421	31-Mar-2021	05-Apr-2021	----	----		05-Apr-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_SITE-F_WS_2021-03-29_NP	E421	31-Mar-2021	06-Apr-2021	----	----		06-Apr-2021	180 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_FC1_WS_2021-03-29_NP	E358-L	31-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_SITE-F_WS_2021-03-29_NP	E358-L	31-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_RLP-2_WG_2021-03-31_NP	E358-L	31-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_FC1_WS_2021-03-29_NP	E355-L	31-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_SITE-F_WS_2021-03-29_NP	E355-L	31-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_RLP-2_WG_2021-03-31_NP	E355-L	31-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_FC1_WS_2021-03-29_NP	E283	31-Mar-2021	----	----	----		04-Apr-2021	14 days	4 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_SITE-F_WS_2021-03-29_NP	E283	31-Mar-2021	----	----	----		04-Apr-2021	14 days	4 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_RLP-2_WG_2021-03-31_NP	E283	31-Mar-2021	----	----	----		04-Apr-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_FC1_WS_2021-03-29_NP	E290	31-Mar-2021	----	----	----		03-Apr-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_RLP-2_WG_2021-03-31_NP	E290	31-Mar-2021	----	----	----		03-Apr-2021	14 days	3 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE GH_SITE-F_WS_2021-03-29_NP	E290	31-Mar-2021	----	----	----		03-Apr-2021	14 days	3 days	✓	
<b>Physical Tests : Colour (True) by Spectrometer</b>											
HDPE GH_FC1_WS_2021-03-29_NP	E329	31-Mar-2021	----	----	----		03-Apr-2021	3 days	3 days	✓	
<b>Physical Tests : Colour (True) by Spectrometer</b>											
HDPE GH_SITE-F_WS_2021-03-29_NP	E329	31-Mar-2021	----	----	----		03-Apr-2021	3 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE GH_FC1_WS_2021-03-29_NP	E100	31-Mar-2021	----	----	----		03-Apr-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE GH_RLP-2_WG_2021-03-31_NP	E100	31-Mar-2021	----	----	----		03-Apr-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE GH_SITE-F_WS_2021-03-29_NP	E100	31-Mar-2021	----	----	----		03-Apr-2021	28 days	3 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_SITE-F_WS_2021-03-29_NP	E125	31-Mar-2021	----	----	----		02-Apr-2021	0.25 hrs	43 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_FC1_WS_2021-03-29_NP	E125	31-Mar-2021	----	----	----		02-Apr-2021	0.25 hrs	46 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_RLP-2_WG_2021-03-31_NP	E125	31-Mar-2021	----	----	----		02-Apr-2021	0.25 hrs	56 hrs	* EHTR-FM	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE GH_SITE-F_WS_2021-03-29_NP	E108	31-Mar-2021	----	----	----		03-Apr-2021	0.25 hrs	67 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE GH_FC1_WS_2021-03-29_NP	E108	31-Mar-2021	----	----	----		03-Apr-2021	0.25 hrs	70 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE GH_RLP-2_WG_2021-03-31_NP	E108	31-Mar-2021	----	----	----		03-Apr-2021	0.25 hrs	80 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE GH_FC1_WS_2021-03-29_NP	E162	31-Mar-2021	----	----	----		02-Apr-2021	7 days	2 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE GH_RLP-2_WG_2021-03-31_NP	E162	31-Mar-2021	----	----	----		02-Apr-2021	7 days	2 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE GH_SITE-F_WS_2021-03-29_NP	E162	31-Mar-2021	----	----	----		02-Apr-2021	7 days	2 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE GH_E1A_WS_2021-03-29_NP	E160-L	31-Mar-2021	----	----	----		02-Apr-2021	7 days	2 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE GH_E2A_WS_2021-03-29_NP	E160-L	31-Mar-2021	----	----	----		02-Apr-2021	7 days	2 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] GH_FC1_WS_2021-03-29_NP	E160-L	31-Mar-2021	----	----	----		02-Apr-2021	7 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE</b> GH_GH1_WS_2021-03-29_N	E160-L	31-Mar-2021	----	----	----		02-Apr-2021	7 days	2 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE</b> GH_RLP_WS_2021-03-29_N	E160-L	31-Mar-2021	----	----	----		02-Apr-2021	7 days	2 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_RLP-2_WG_2021-03-31_NP	E160-L	31-Mar-2021	----	----	----		02-Apr-2021	7 days	2 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_SITE-F_WS_2021-03-29_NP	E160-L	31-Mar-2021	----	----	----		02-Apr-2021	7 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_E1A_WS_2021-03-29_NP	E121	31-Mar-2021	----	----	----		01-Apr-2021	3 days	1 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_E2A_WS_2021-03-29_NP	E121	31-Mar-2021	----	----	----		01-Apr-2021	3 days	1 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_FC1_WS_2021-03-29_NP	E121	31-Mar-2021	----	----	----		01-Apr-2021	3 days	1 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_GH1_WS_2021-03-29_N	E121	31-Mar-2021	----	----	----		01-Apr-2021	3 days	1 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_RLP_WS_2021-03-29_N	E121	31-Mar-2021	----	----	----		01-Apr-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> GH_SITE-F_WS_2021-03-29_NP	E121	31-Mar-2021	----	----	----		01-Apr-2021	3 days	1 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> GH_RLP-2_WG_2021-03-31_NP	E121	31-Mar-2021	----	----	----		01-Apr-2021	3 days	2 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_FC1_WS_2021-03-29_NP	E420.Cr-L	31-Mar-2021	----	----	----		06-Apr-2021	180 days	6 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_SITE-F_WS_2021-03-29_NP	E420.Cr-L	31-Mar-2021	----	----	----		06-Apr-2021	180 days	6 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_FC1_WS_2021-03-29_NP	E508-L	31-Mar-2021	----	----	----		06-Apr-2021	28 days	6 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_SITE-F_WS_2021-03-29_NP	E508-L	31-Mar-2021	----	----	----		06-Apr-2021	28 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_FC1_WS_2021-03-29_NP	E420	31-Mar-2021	----	----	----		06-Apr-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_SITE-F_WS_2021-03-29_NP	E420	31-Mar-2021	----	----	----		06-Apr-2021	180 days	6 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	173385	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	172927	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	172616	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	172772	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	172883	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	172884	1	20	5.0	5.0	✓
Colour (True) by Spectrometer	E329	172933	1	2	50.0	5.0	✓
Conductivity in Water	E100	172928	1	10	10.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	173692	2	8	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	174058	2	3	66.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	173693	3	8	37.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	172430	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	173060	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	172887	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	172885	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	172886	1	20	5.0	5.0	✓
ORP by Electrode	E125	172835	1	20	5.0	5.0	✓
pH by Meter	E108	172926	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	172882	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	172840	1	3	33.3	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	173631	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172856	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	173887	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	173632	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	172432	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	172717	1	14	7.1	5.0	✓
Turbidity by Nephelometry	E121	172694	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	173385	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	172927	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	172616	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	172772	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	172883	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	172884	1	20	5.0	5.0	✓
Colour (True) by Spectrometer	E329	172933	1	2	50.0	5.0	✓
Conductivity in Water	E100	172928	1	10	10.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	173692	2	8	25.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Mercury in Water by CVAAS	E509	174058	2	3	66.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	173693	2	8	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	172430	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	173060	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	172887	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	172885	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	172886	1	20	5.0	5.0	✓
ORP by Electrode	E125	172835	1	20	5.0	5.0	✓
pH by Meter	E108	172926	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	172882	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	172840	1	3	33.3	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	173631	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172856	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	173887	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	173632	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	172432	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	172717	1	14	7.1	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	172838	1	14	7.1	5.0	✓
Turbidity by Nephelometry	E121	172694	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	173385	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	172927	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	172616	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	172772	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	172883	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	172884	1	20	5.0	5.0	✓
Colour (True) by Spectrometer	E329	172933	1	2	50.0	5.0	✓
Conductivity in Water	E100	172928	1	10	10.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	173692	2	8	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	174058	2	3	66.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	173693	2	8	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	172430	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	173060	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	172887	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	172885	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	172886	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	172882	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	172840	1	3	33.3	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	173631	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172856	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	173887	1	18	5.5	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Method Blanks (MB) - Continued</b>							
Total Metals in Water by CRC ICPMS	E420	173632	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	172432	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	172717	1	14	7.1	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	172838	1	14	7.1	5.0	✓
Turbidity by Nephelometry	E121	172694	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	172616	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	172883	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	172884	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	173692	2	8	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	174058	1	3	33.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	173693	2	8	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	172430	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	173060	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	172887	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	172885	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	172886	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	172882	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	173631	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172856	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	173887	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	173632	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	172432	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	172717	1	14	7.1	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Colour (True) by Spectrometer	E329 Calgary - Environmental	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.  Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2100638**  
**Amendment** : **2**

Page : 1 of 23

Client : Teck Coal Limited  
 Contact : Jeremy Enns  
 Address : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
 Telephone : 250 865 3305  
 Project : GREENHILLS OPERATION  
 PO : VPO00739453  
 C-O-C number : 2021-03-31-WS  
 Sampler : SS/AF  
 Site : ----  
 Quote number : Teck Coal Master Quote  
 No. of samples received : 7  
 No. of samples analysed : 7

Laboratory : Calgary - Environmental  
 Account Manager : Justine Buma-a  
 Address : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
 Telephone : +1 403 407 1800  
 Date Samples Received : 01-Apr-2021 08:55  
 Date Analysis Commenced : 01-Apr-2021  
 Issue Date : 24-Jan-2022 11:31

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta

Sara Niroomand

Shaneel Dayal

Shirley Li

Analyst

Inorganics, Calgary, Alberta

Metals, Burnaby, British Columbia

Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 172694)</b>											
CG2100638-001	GH_E1A_WS_2021-03-29_NP	turbidity	----	E121	0.10	NTU	52.0	54.7	5.06%	15%	----
<b>Physical Tests (QC Lot: 172835)</b>											
CG2100621-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	421	423	0.426%	15%	----
<b>Physical Tests (QC Lot: 172840)</b>											
CG2100638-005	GH_SITE-F_WS_2021-03-29_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	839	713	16.2%	20%	----
<b>Physical Tests (QC Lot: 172926)</b>											
CG2100638-005	GH_SITE-F_WS_2021-03-29_NP	pH	----	E108	0.10	pH units	7.92	7.94	0.252%	4%	----
<b>Physical Tests (QC Lot: 172927)</b>											
CG2100638-005	GH_SITE-F_WS_2021-03-29_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	136	136	0.221%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	136	136	0.221%	20%	----
<b>Physical Tests (QC Lot: 172928)</b>											
CG2100638-005	GH_SITE-F_WS_2021-03-29_NP	conductivity	----	E100	2.0	µS/cm	672	676	0.593%	10%	----
<b>Physical Tests (QC Lot: 172933)</b>											
CG2100638-005	GH_SITE-F_WS_2021-03-29_NP	colour, true	----	E329	25.0	CU	93.0	99.5	6.4	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 173385)</b>											
CG2100614-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172616)</b>											
CG2100621-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172717)</b>											
CG2100638-005	GH_SITE-F_WS_2021-03-29_NP	phosphorus, total	7723-14-0	E372-U	0.200	mg/L	5.44	6.03	10.3%	20%	----
<b>Anions and Nutrients (QC Lot: 172856)</b>											
CG2100628-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172882)</b>											
CG2100644-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172883)</b>											
CG2100644-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 172884)</b>											
CG2100644-003	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172885)</b>											
CG2100644-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172886)</b>											
CG2100644-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172887)</b>											
CG2100644-003	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 173060)</b>											
CG2100634-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0105	0.0099	5.30%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 172430)</b>											
CG2100594-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 172432)</b>											
CG2100594-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 173631)</b>											
CG2100634-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 173632)</b>											
CG2100634-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00027	0.00026	0.000005	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00046	0.00043	0.00003	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0533	0.0525	1.46%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.023	0.023	0.00008	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	0.106 µg/L	0.000116	8.42%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	255	257	1.08%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	2.26 µg/L	0.00227	0.386%	20%	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	0.236	0.233	1.35%	20%	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.0441	0.0426	3.54%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	163	162	0.542%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	0.0769	0.0759	1.37%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00195	0.00207	5.96%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.0125	0.0120	4.38%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	6.11	6.05	1.03%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 173632) - continued</b>											
CG2100634-001	Anonymous	selenium, total	7782-49-2	E420	0.100	mg/L	113 µg/L	0.116	3.13%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	3.61	3.65	0.954%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.100	mg/L	39.8	39.9	0.185%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.298	0.308	3.13%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	302	308	1.74%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.000027	0.000030	0.000003	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.00962	0.00989	2.68%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.0060	<0.0060	0.00006	Diff <2x LOR	----
<b>Total Metals (QC Lot: 173887)</b>											
CG2100589-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	0.00070 µg/L	0.69	0.007	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 173692)</b>											
CG2100638-006	GH_FC1_WS_2021-03-29_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 173693)</b>											
CG2100638-006	GH_FC1_WS_2021-03-29_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0022	0.0017	0.0005	Diff <2x LOR	----
CG2100638-006	GH_FC1_WS_2021-03-29_NP	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	0.00016	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0526	0.0523	0.430%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	69.6	68.9	0.941%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00020	<0.00020	0.000001	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.013	0.012	0.0008	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0032	0.0032	0.000007	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	27.9	27.8	0.346%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00183	0.00181	1.24%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000742	0.000773	3.98%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 173693) - continued</b>											
CG2100638-006	GH_FC1_WS_2021-03-29_NP	nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.31	1.31	0.196%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.150 µg/L	0.000083	0.000068	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.24	6.10	2.23%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.46	2.40	2.24%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0812	0.0815	0.360%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	8.56	8.55	0.153%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000303	0.000304	0.0356%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0010	<0.0010	0.00005	Diff <2x LOR	----		
<b>Dissolved Metals (QC Lot: 173754)</b>											
WR2100283-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 173755)</b>											
WR2100283-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0096	0.0099	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00033	0.00033	0.000002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0632	0.0654	3.43%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000370	0.0000395	0.0000025	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	29.9	29.2	2.17%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00072	0.00072	0.000006	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.022	0.022	0.0006	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0011	0.0011	0.000001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	8.51	8.90	4.45%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0323	0.0328	1.52%	20%	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000962	0.000997	3.55%	20%	----		
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00094	0.00097	0.00003	Diff <2x LOR	----		



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 173755) - continued</b>											
WR2100283-001	Anonymous	potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.09	1.10	1.06%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000276	0.000306	0.000030	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.56	3.71	4.18%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.76	2.93	6.16%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.148	0.153	3.77%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	13.8	14.2	2.48%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000988	0.000997	0.988%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0022	0.0021	0.00005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 174058)</b>											
CG2100638-005	GH_SITE-F_WS_2021-03-29_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	0.0000164	0.0000153	0.0000011	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 174060)</b>											
CG2100638-006	GH_FC1_WS_2021-03-29_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 172772)</b>											
CG2100619-008	Anonymous	biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.00%	30%	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 172694)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 172838)</b>						
solids, total suspended [TSS]	---	E160-L	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 172840)</b>						
solids, total dissolved [TDS]	---	E162	10	mg/L	<10	---
<b>Physical Tests (QCLot: 172927)</b>						
alkalinity, bicarbonate (as CaCO3)	---	E290	1	mg/L	<1.0	---
alkalinity, carbonate (as CaCO3)	---	E290	1	mg/L	<1.0	---
alkalinity, hydroxide (as CaCO3)	---	E290	1	mg/L	<1.0	---
alkalinity, total (as CaCO3)	---	E290	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 172928)</b>						
conductivity	---	E100	1	µS/cm	<1.0	---
<b>Physical Tests (QCLot: 172933)</b>						
colour, true	---	E329	5	CU	<5.0	---
<b>Physical Tests (QCLot: 173385)</b>						
acidity (as CaCO3)	---	E283	2	mg/L	<2.0	---
<b>Anions and Nutrients (QCLot: 172616)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 172717)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 172856)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 172882)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 172883)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 172884)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 172885)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 172886)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 172887)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 172887) - continued</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 173060)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Organic / Inorganic Carbon (QCLot: 172430)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 172432)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 173631)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 173632)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 173632) - continued</b>						
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 173887)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 173692)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 173693)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 173693) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 173754)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 173755)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 173755) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 174058)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 174060)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Aggregate Organics (QCLot: 172772)</b>						
biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 172694)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100.0	85.0	115	---
<b>Physical Tests (QCLot: 172835)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.1	95.4	104	---
<b>Physical Tests (QCLot: 172838)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	99.7	85.0	115	---
<b>Physical Tests (QCLot: 172840)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	89.6	85.0	115	---
<b>Physical Tests (QCLot: 172926)</b>									
pH	---	E108	---	pH units	7 pH units	99.7	98.6	101	---
<b>Physical Tests (QCLot: 172927)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 172928)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.7	90.0	110	---
<b>Physical Tests (QCLot: 172933)</b>									
colour, true	---	E329	5	CU	100 CU	96.4	85.0	115	---
<b>Physical Tests (QCLot: 173385)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	109	85.0	115	---
<b>Anions and Nutrients (QCLot: 172616)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	98.1	85.0	115	---
<b>Anions and Nutrients (QCLot: 172717)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	88.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 172856)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	102	75.0	125	---
<b>Anions and Nutrients (QCLot: 172882)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 172883)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	101	85.0	115	---
<b>Anions and Nutrients (QCLot: 172884)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 172885)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 172886)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 172886) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 172887)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 173060)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	94.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 172430)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	98.6	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 172432)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Total Metals (QCLot: 173631)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
<b>Total Metals (QCLot: 173632)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	106	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	111	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	109	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	105	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.6	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	106	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	102	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	107	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 173632) - continued</b>									
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	96.7	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	106	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	104	80.0	120	----
<b>Total Metals (QCLot: 173887)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	99.2	80.0	120	----
<b>Dissolved Metals (QCLot: 173692)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 173693)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	106	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	104	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 173693) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	110	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 173754)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 173755)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.0	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.8	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.0	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.3	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 173755) - continued</b>									
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.7	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.5	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.5	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	104	80.0	120	----
<b>Aggregate Organics (QCLot: 172772)</b>									
biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	92.8	85.0	115	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 172616)</b>										
CG2100622-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.110 mg/L	0.1 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 172717)</b>										
CG2100638-006	GH_FC1_WS_2021-03-29_9_NP	phosphorus, total	7723-14-0	E372-U	0.0524 mg/L	0.0676 mg/L	77.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 172856)</b>										
CG2100628-005	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.97 mg/L	2.5 mg/L	119	70.0	130	----
<b>Anions and Nutrients (QCLot: 172882)</b>										
CG2100644-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	120 mg/L	100 mg/L	120	75.0	125	----
<b>Anions and Nutrients (QCLot: 172883)</b>										
CG2100644-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.576 mg/L	0.5 mg/L	115	75.0	125	----
<b>Anions and Nutrients (QCLot: 172884)</b>										
CG2100644-003	Anonymous	chloride	16887-00-6	E235.Cl-L	120 mg/L	100 mg/L	120	75.0	125	----
<b>Anions and Nutrients (QCLot: 172885)</b>										
CG2100644-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.18 mg/L	2.5 mg/L	87.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 172886)</b>										
CG2100644-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.618 mg/L	0.5 mg/L	124	75.0	125	----
<b>Anions and Nutrients (QCLot: 172887)</b>										
CG2100644-003	Anonymous	fluoride	16984-48-8	E235.F	1.08 mg/L	1 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 173060)</b>										
CG2100638-005	GH_SITE-F_WS_2021-03-29_9_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0419 mg/L	0.05 mg/L	83.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 172430)</b>										
CG2100594-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.2 mg/L	23.9 mg/L	101	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 172432)</b>										
CG2100594-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.4 mg/L	23.9 mg/L	106	70.0	130	----
<b>Total Metals (QCLot: 173631)</b>										
CG2100634-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0813 mg/L	0.08 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 173632)</b>										
CG2100634-001	Anonymous	aluminum, total	7429-90-5	E420	0.406 mg/L	0.4 mg/L	101	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 173632) - continued</b>										
CG2100634-001	Anonymous	antimony, total	7440-36-0	E420	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0757 mg/L	0.08 mg/L	94.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		boron, total	7440-42-8	E420	0.200 mg/L	0.2 mg/L	99.9	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00820 mg/L	0.008 mg/L	102	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		iron, total	7439-89-6	E420	3.86 mg/L	4 mg/L	96.4	70.0	130	----
		lead, total	7439-92-1	E420	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.184 mg/L	0.2 mg/L	91.9	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0736 mg/L	0.08 mg/L	91.9	70.0	130	----
		potassium, total	7440-09-7	E420	8.24 mg/L	8 mg/L	103	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	18.9 mg/L	20 mg/L	94.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00788 mg/L	0.008 mg/L	98.6	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00783 mg/L	0.008 mg/L	97.9	70.0	130	----
		tin, total	7440-31-5	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		titanium, total	7440-32-6	E420	0.0799 mg/L	0.08 mg/L	99.9	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.778 mg/L	0.8 mg/L	97.2	70.0	130	----
<b>Total Metals (QCLot: 173887)</b>										
CG2100589-002	Anonymous	mercury, total	7439-97-6	E508-L	5.08 ng/L	5 ng/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 173692)</b>										
CG2100638-006	GH_FC1_WS_2021-03-29_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
<b>Dissolved Metals (QCLot: 173693)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 173693) - continued</b>										
-----		aluminum, dissolved	7429-90-5	E421	0.199 mg/L	0.2 mg/L	99.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0392 mg/L	0.04 mg/L	98.1	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00867 mg/L	0.01 mg/L	86.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.091 mg/L	0.1 mg/L	91.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0186 mg/L	0.02 mg/L	93.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.93 mg/L	2 mg/L	96.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0190 mg/L	0.02 mg/L	94.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0981 mg/L	0.1 mg/L	98.1	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.79 mg/L	4 mg/L	94.7	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.39 mg/L	10 mg/L	83.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00384 mg/L	0.004 mg/L	95.9	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.1 mg/L	20 mg/L	95.4	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00386 mg/L	0.004 mg/L	96.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00379 mg/L	0.004 mg/L	94.9	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0975 mg/L	0.1 mg/L	97.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.398 mg/L	0.4 mg/L	99.4	70.0	130	----
<b>Dissolved Metals (QCLot: 173754)</b>										
WR2100283-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0400 mg/L	0.04 mg/L	100.0	70.0	130	----
<b>Dissolved Metals (QCLot: 173755)</b>										
WR2100283-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.196 mg/L	0.2 mg/L	97.8	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 173755) - continued</b>										
WR2100283-001	Anonymous	arsenic, dissolved	7440-38-2	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00841 mg/L	0.01 mg/L	84.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	99.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	95.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0991 mg/L	0.1 mg/L	99.1	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.04 mg/L	4 mg/L	101	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.31 mg/L	10 mg/L	93.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.5 mg/L	20 mg/L	102	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00400 mg/L	0.004 mg/L	100.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00403 mg/L	0.004 mg/L	101	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0988 mg/L	0.1 mg/L	98.8	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.400 mg/L	0.4 mg/L	99.9	70.0	130	----
<b>Dissolved Metals (QCLot: 174060)</b>										
CG2100638-007	GH_RLP-2_WG_2021-03-31_NP	mercury, dissolved	7439-97-6	E509	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----





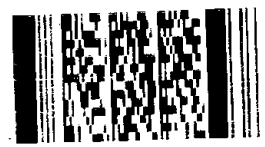
COC ID: 2021-03-31-WS

1 day

RUSH: Yes

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Burma-a			Email 1:	Leigh.Stickney@teck.com	X	X	X
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Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:	ashlee.fudge@teck.com	X	X	X
				Phone Number	403 407 1794			Email 6:	DL-Equis-GHO-Field@teck.com	X	X	X
								Email 7:	jeremy.enns@teck.com	X	X	X
								PO number	739453			

Environmental Division  
Calgary  
Work Order Reference  
**CG2100638**



Telephone: 403 407 1900

SAMPLE DETAILS								ANALYSIS REQUESTED									
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH	BOD/COLOUR	ts/turbidity		
GH_E1A_WS_2021-03-29_NP	GH_E1A	WS	N	3/31/2021	12:00	G	1								1		
GH_E2A_WS_2021-03-29_NP	GH_E2A	WS	N	3/31/2021	12:30	G	1								1		
GH_GH1_WS_2021-03-29_N	GH_GH1	WS	N	3/31/2021	11:45	G	1								1		
GH_RLP_WS_2021-03-29_N	GH_RLP	WS	N	3/31/2021	11:30	G	1								1		
GH_SITE-F_WS_2021-03-29_NP	GH_SITE-F	WS	N	3/31/2021	1:15	G	8	1	1	1	1	1		1			
GH_FCI_WS_2021-03-29_NP	GH_FCI	WS	N	3/31/2021	9:40	G	8	1	1	1	1	1		1			
								1			1	1					

GH\_RLP-2 - WS 2021-03-31 - NP  
↓  
EXTRA SAMPLE

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
<b>Please Rush All Samples</b>			<i>[Signature]</i>	04/01 2:55
SERVICE REQUEST (rush - subject to availability)				
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	SS/AF	Mobile #	
	Sampler's Signature		Date/Time	MAR 31 2021



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jeremy Enns  
BOX 5000  
Elkford BC V0B1H0

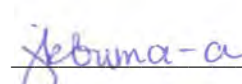
Date Received: 16-JAN-21  
Report Date: 01-FEB-22 11:29 (MT)  
Version: FINAL REV. 3

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2548822  
Project P.O. #: VPO00739453  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: 2021-01-15-WG  
Legal Site Desc:

Comments:

  
\_\_\_\_\_  
Justine Buma-a  
Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2548822-1 GH_POTW10_WG_2021-01-04_NP							
Sampled By: HS on 15-JAN-21 @ 12:35							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	260		5.0	mg/L		19-JAN-21	R5355666
Carbonate (CO3)	<5.0		5.0	mg/L		19-JAN-21	R5355666
Dissolved Organic Carbon	1.41		0.50	mg/L		23-JAN-21	R5357596
Hydroxide (OH)	<5.0		5.0	mg/L		19-JAN-21	R5355666
Iron Bacteria	<1.0		1.0	CFU/mL		16-JAN-21	R5359448
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		16-JAN-21	R5359448
Total Kjeldahl Nitrogen	0.288		0.050	mg/L		22-JAN-21	R5356774
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		21-JAN-21	R5356212
Total Organic Carbon	1.36		0.50	mg/L		23-JAN-21	R5357596
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	19-JAN-21	20-JAN-21	R5354509
Dissolved Metals Filtration Location	FIELD					19-JAN-21	R5353946
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	20-JAN-21	20-JAN-21	R5354577
Dissolved Mercury Filtration Location	FIELD					20-JAN-21	R5354552
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					19-JAN-21	R5353946
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	19-JAN-21	20-JAN-21	R5354509
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Arsenic (As)-Dissolved	0.00101		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Barium (Ba)-Dissolved	0.0181		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Boron (B)-Dissolved	0.037		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509
Cadmium (Cd)-Dissolved	0.0098		0.0050	ug/L	19-JAN-21	20-JAN-21	R5354509
Calcium (Ca)-Dissolved	92.1		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Cobalt (Co)-Dissolved	0.12		0.10	ug/L	19-JAN-21	20-JAN-21	R5354509
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	19-JAN-21	20-JAN-21	R5354509
Iron (Fe)-Dissolved	0.425		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Lithium (Li)-Dissolved	0.0157		0.0010	mg/L	19-JAN-21	20-JAN-21	R5354509
Magnesium (Mg)-Dissolved	40.4		0.10	mg/L	19-JAN-21	20-JAN-21	R5354509
Manganese (Mn)-Dissolved	0.0421		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Molybdenum (Mo)-Dissolved	0.00272		0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Nickel (Ni)-Dissolved	0.00093		0.00050	mg/L	19-JAN-21	20-JAN-21	R5354509
Potassium (K)-Dissolved	1.58		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Selenium (Se)-Dissolved	5.24		0.050	ug/L	19-JAN-21	20-JAN-21	R5354509
Silicon (Si)-Dissolved	4.48		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Sodium (Na)-Dissolved	4.84		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Strontium (Sr)-Dissolved	0.530		0.00020	mg/L	19-JAN-21	20-JAN-21	R5354509
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509
Uranium (U)-Dissolved	0.000713		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	19-JAN-21	20-JAN-21	R5354509
Zinc (Zn)-Dissolved	0.0021		0.0010	mg/L	19-JAN-21	20-JAN-21	R5354509
<b>Hardness</b>							
Hardness (as CaCO3)	396		0.50	mg/L		24-JAN-21	
<b>Total Metals in Water</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2548822-1 GH_POTW10_WG_2021-01-04_NP							
Sampled By: HS on 15-JAN-21 @ 12:35							
Matrix: WG							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		20-JAN-21	R5354503
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		20-JAN-21	R5354503
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		20-JAN-21	R5354503
Arsenic (As)-Total	0.00108		0.00010	mg/L		20-JAN-21	R5354503
Barium (Ba)-Total	0.0185		0.00010	mg/L		20-JAN-21	R5354503
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		20-JAN-21	R5354503
Boron (B)-Total	0.035		0.010	mg/L		20-JAN-21	R5354503
Cadmium (Cd)-Total	0.0103		0.0050	ug/L		20-JAN-21	R5354503
Calcium (Ca)-Total	87.1		0.050	mg/L		20-JAN-21	R5354503
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		20-JAN-21	R5354503
Cobalt (Co)-Total	0.13		0.10	ug/L		20-JAN-21	R5354503
Copper (Cu)-Total	0.00126		0.00050	mg/L		20-JAN-21	R5354503
Iron (Fe)-Total	0.662		0.010	mg/L		20-JAN-21	R5354503
Lead (Pb)-Total	0.00231		0.000050	mg/L		20-JAN-21	R5354503
Lithium (Li)-Total	0.0144		0.0010	mg/L		20-JAN-21	R5354503
Magnesium (Mg)-Total	40.6		0.10	mg/L		20-JAN-21	R5354503
Manganese (Mn)-Total	0.0459		0.00010	mg/L		20-JAN-21	R5354503
Molybdenum (Mo)-Total	0.00263		0.000050	mg/L		20-JAN-21	R5354503
Nickel (Ni)-Total	0.00221		0.00050	mg/L		20-JAN-21	R5354503
Potassium (K)-Total	1.66		0.050	mg/L		20-JAN-21	R5354503
Selenium (Se)-Total	5.49		0.050	ug/L		20-JAN-21	R5354503
Silicon (Si)-Total	4.83		0.10	mg/L		20-JAN-21	R5354503
Silver (Ag)-Total	<0.000010		0.000010	mg/L		20-JAN-21	R5354503
Sodium (Na)-Total	5.05		0.050	mg/L		20-JAN-21	R5354503
Strontium (Sr)-Total	0.473		0.00020	mg/L		20-JAN-21	R5354503
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		20-JAN-21	R5354503
Tin (Sn)-Total	<0.00010		0.00010	mg/L		20-JAN-21	R5354503
Titanium (Ti)-Total	<0.010		0.010	mg/L		20-JAN-21	R5354503
Uranium (U)-Total	0.000695		0.000010	mg/L		20-JAN-21	R5354503
Vanadium (V)-Total	<0.00050		0.00050	mg/L		20-JAN-21	R5354503
Zinc (Zn)-Total	0.0032		0.0030	mg/L		20-JAN-21	R5354503
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	5.2		1.0	mg/L		19-JAN-21	R5355617
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	213		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Total (as CaCO3)	213		1.0	mg/L		19-JAN-21	R5355666
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0748		0.0050	mg/L		20-JAN-21	R5355261
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		16-JAN-21	R5350261
<b>Chloride in Water by IC</b>							
Chloride (Cl)	9.09		0.10	mg/L		16-JAN-21	R5350261
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	722		2.0	uS/cm		19-JAN-21	R5355666
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.938		0.020	mg/L		16-JAN-21	R5350261
<b>Ion Balance Calculation</b>							
Ion Balance	97.4		-100	%		24-JAN-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2548822-1 GH_POTW10_WG_2021-01-04_NP Sampled By: HS on 15-JAN-21 @ 12:35 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.3			%		24-JAN-21	
Anion Sum	9.54			meq/L		24-JAN-21	
Cation Sum	9.29			meq/L		24-JAN-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	1.03		0.0050	mg/L		16-JAN-21	R5350261
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0166		0.0010	mg/L		16-JAN-21	R5350261
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		17-JAN-21	R5350136
<b>Oxidation redution potential by elect.</b>							
ORP	439		-1000	mV		24-JAN-21	R5357250
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0026		0.0020	mg/L		18-JAN-21	R5351064
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	235		0.30	mg/L		16-JAN-21	R5350261
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	480	DLHC	20	mg/L		21-JAN-21	R5356750
<b>Total Suspended Solids</b>							
Total Suspended Solids	2.0		1.0	mg/L		21-JAN-21	R5356744
<b>Turbidity</b>							
Turbidity	10.9		0.10	NTU		17-JAN-21	R5350240
<b>pH</b>							
pH	7.90		0.10	pH		19-JAN-21	R5355666
L2548822-2 GH_POTW15_WG_2021-01-04_NP Sampled By: HS on 15-JAN-21 @ 12:20 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	292		5.0	mg/L		19-JAN-21	R5355666
Carbonate (CO3)	<5.0		5.0	mg/L		19-JAN-21	R5355666
Dissolved Organic Carbon	1.88		0.50	mg/L		23-JAN-21	R5357596
Hydroxide (OH)	<5.0		5.0	mg/L		19-JAN-21	R5355666
Iron Bacteria	<1.0		1.0	CFU/mL		16-JAN-21	R5359448
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		16-JAN-21	R5359448
Total Kjeldahl Nitrogen	0.070		0.050	mg/L		22-JAN-21	R5356774
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		21-JAN-21	R5356212
Total Organic Carbon	1.66		0.50	mg/L		23-JAN-21	R5357596
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	19-JAN-21	20-JAN-21	R5354509
Dissolved Metals Filtration Location	FIELD					19-JAN-21	R5353946
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	20-JAN-21	20-JAN-21	R5354577
Dissolved Mercury Filtration Location	FIELD					20-JAN-21	R5354552
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					19-JAN-21	R5353946
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	19-JAN-21	20-JAN-21	R5354509
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Arsenic (As)-Dissolved	0.00132		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Barium (Ba)-Dissolved	0.0206		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Boron (B)-Dissolved	0.020		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2548822-2 GH_POTW15_WG_2021-01-04_NP							
Sampled By: HS on 15-JAN-21 @ 12:20							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Cadmium (Cd)-Dissolved	0.0112		0.0050	ug/L	19-JAN-21	20-JAN-21	R5354509
Calcium (Ca)-Dissolved	129		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Cobalt (Co)-Dissolved	0.19		0.10	ug/L	19-JAN-21	20-JAN-21	R5354509
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	19-JAN-21	20-JAN-21	R5354509
Iron (Fe)-Dissolved	0.559		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Lithium (Li)-Dissolved	0.0145		0.0010	mg/L	19-JAN-21	20-JAN-21	R5354509
Magnesium (Mg)-Dissolved	44.8		0.10	mg/L	19-JAN-21	20-JAN-21	R5354509
Manganese (Mn)-Dissolved	0.178		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Molybdenum (Mo)-Dissolved	0.00239		0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Nickel (Ni)-Dissolved	0.00068		0.00050	mg/L	19-JAN-21	20-JAN-21	R5354509
Potassium (K)-Dissolved	1.53		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Selenium (Se)-Dissolved	0.077		0.050	ug/L	19-JAN-21	20-JAN-21	R5354509
Silicon (Si)-Dissolved	3.93		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Sodium (Na)-Dissolved	10.7		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Strontium (Sr)-Dissolved	0.375		0.00020	mg/L	19-JAN-21	20-JAN-21	R5354509
Thallium (Tl)-Dissolved	0.000016		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509
Uranium (U)-Dissolved	0.00144		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	19-JAN-21	20-JAN-21	R5354509
Zinc (Zn)-Dissolved	0.0017		0.0010	mg/L	19-JAN-21	20-JAN-21	R5354509
<b>Hardness</b>							
Hardness (as CaCO3)	506		0.50	mg/L		24-JAN-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		20-JAN-21	R5354503
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		20-JAN-21	R5354503
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		20-JAN-21	R5354503
Arsenic (As)-Total	0.00126		0.00010	mg/L		20-JAN-21	R5354503
Barium (Ba)-Total	0.0199		0.00010	mg/L		20-JAN-21	R5354503
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		20-JAN-21	R5354503
Boron (B)-Total	0.019		0.010	mg/L		20-JAN-21	R5354503
Cadmium (Cd)-Total	0.0121		0.0050	ug/L		20-JAN-21	R5354503
Calcium (Ca)-Total	122		0.050	mg/L		20-JAN-21	R5354503
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		20-JAN-21	R5354503
Cobalt (Co)-Total	0.20		0.10	ug/L		20-JAN-21	R5354503
Copper (Cu)-Total	0.00210		0.00050	mg/L		20-JAN-21	R5354503
Iron (Fe)-Total	0.674		0.010	mg/L		20-JAN-21	R5354503
Lead (Pb)-Total	0.000679		0.000050	mg/L		20-JAN-21	R5354503
Lithium (Li)-Total	0.0131		0.0010	mg/L		20-JAN-21	R5354503
Magnesium (Mg)-Total	44.0		0.10	mg/L		20-JAN-21	R5354503
Manganese (Mn)-Total	0.183		0.00010	mg/L		20-JAN-21	R5354503
Molybdenum (Mo)-Total	0.00229		0.000050	mg/L		20-JAN-21	R5354503
Nickel (Ni)-Total	0.00148		0.00050	mg/L		20-JAN-21	R5354503
Potassium (K)-Total	1.53		0.050	mg/L		20-JAN-21	R5354503
Selenium (Se)-Total	0.101		0.050	ug/L		20-JAN-21	R5354503
Silicon (Si)-Total	4.35		0.10	mg/L		20-JAN-21	R5354503
Silver (Ag)-Total	<0.000010		0.000010	mg/L		20-JAN-21	R5354503

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2548822-2 GH_POTW15_WG_2021-01-04_NP							
Sampled By: HS on 15-JAN-21 @ 12:20							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Total	10.6		0.050	mg/L		20-JAN-21	R5354503
Strontium (Sr)-Total	0.343		0.00020	mg/L		20-JAN-21	R5354503
Thallium (Tl)-Total	0.000014		0.000010	mg/L		20-JAN-21	R5354503
Tin (Sn)-Total	<0.00010		0.00010	mg/L		20-JAN-21	R5354503
Titanium (Ti)-Total	<0.010		0.010	mg/L		20-JAN-21	R5354503
Uranium (U)-Total	0.00134		0.000010	mg/L		20-JAN-21	R5354503
Vanadium (V)-Total	<0.00050		0.00050	mg/L		20-JAN-21	R5354503
Zinc (Zn)-Total	0.0045		0.0030	mg/L		20-JAN-21	R5354503
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	8.7		1.0	mg/L		19-JAN-21	R5355617
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	240		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Total (as CaCO3)	240		1.0	mg/L		19-JAN-21	R5355666
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0407		0.0050	mg/L		20-JAN-21	R5355261
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		16-JAN-21	R5350261
<b>Chloride in Water by IC</b>							
Chloride (Cl)	32.8	DLHC	0.50	mg/L		16-JAN-21	R5350261
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	908		2.0	uS/cm		19-JAN-21	R5355666
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.20	DLHC	0.10	mg/L		16-JAN-21	R5350261
<b>Ion Balance Calculation</b>							
Ion Balance	89.8		-100	%		24-JAN-21	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-5.4			%		24-JAN-21	
Anion Sum	12.4			meq/L		24-JAN-21	
Cation Sum	11.1			meq/L		24-JAN-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.090	DLHC	0.025	mg/L		16-JAN-21	R5350261
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0124	DLHC	0.0050	mg/L		16-JAN-21	R5350261
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		17-JAN-21	R5350136
<b>Oxidation redution potential by elect.</b>							
ORP	450		-1000	mV		24-JAN-21	R5357250
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		18-JAN-21	R5351064
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	321	DLHC	1.5	mg/L		16-JAN-21	R5350261
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	624	DLHC	20	mg/L		21-JAN-21	R5356750
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		21-JAN-21	R5356744
<b>Turbidity</b>							
Turbidity	5.95		0.10	NTU		17-JAN-21	R5350240
<b>pH</b>							
pH	7.69		0.10	pH		19-JAN-21	R5355666

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2548822-2 GH_POTW15_WG_2021-01-04_NP Sampled By: HS on 15-JAN-21 @ 12:20 Matrix: WG							
L2548822-3 GH_POTW17_WG_2021-01-04_NP Sampled By: HS on 15-JAN-21 @ 12:05 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	363		5.0	mg/L		19-JAN-21	R5355666
Carbonate (CO3)	<5.0		5.0	mg/L		19-JAN-21	R5355666
Dissolved Organic Carbon	0.83		0.50	mg/L		25-JAN-21	R5357596
Hydroxide (OH)	<5.0		5.0	mg/L		19-JAN-21	R5355666
Iron Bacteria	25.0	IRB:BR	1.0	CFU/mL		16-JAN-21	R5359448
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		16-JAN-21	R5359448
Total Kjeldahl Nitrogen	0.059		0.050	mg/L		22-JAN-21	R5356774
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		21-JAN-21	R5356212
Total Organic Carbon	0.75		0.50	mg/L		25-JAN-21	R5357596
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	19-JAN-21	20-JAN-21	R5354509
Dissolved Metals Filtration Location	FIELD					19-JAN-21	R5353946
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	20-JAN-21	20-JAN-21	R5354577
Dissolved Mercury Filtration Location	FIELD					20-JAN-21	R5354552
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					19-JAN-21	R5353946
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	19-JAN-21	20-JAN-21	R5354509
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Arsenic (As)-Dissolved	0.00017		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Barium (Ba)-Dissolved	0.0271		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Boron (B)-Dissolved	0.027		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509
Cadmium (Cd)-Dissolved	0.0434		0.0050	ug/L	19-JAN-21	20-JAN-21	R5354509
Calcium (Ca)-Dissolved	179		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Cobalt (Co)-Dissolved	0.12		0.10	ug/L	19-JAN-21	20-JAN-21	R5354509
Copper (Cu)-Dissolved	0.00023		0.00020	mg/L	19-JAN-21	20-JAN-21	R5354509
Iron (Fe)-Dissolved	0.050		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509
Lead (Pb)-Dissolved	0.000081		0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Lithium (Li)-Dissolved	0.0143		0.0010	mg/L	19-JAN-21	20-JAN-21	R5354509
Magnesium (Mg)-Dissolved	69.2		0.10	mg/L	19-JAN-21	20-JAN-21	R5354509
Manganese (Mn)-Dissolved	0.0576		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Molybdenum (Mo)-Dissolved	0.00108		0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Nickel (Ni)-Dissolved	0.00579		0.00050	mg/L	19-JAN-21	20-JAN-21	R5354509
Potassium (K)-Dissolved	1.67		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Selenium (Se)-Dissolved	4.57		0.050	ug/L	19-JAN-21	20-JAN-21	R5354509
Silicon (Si)-Dissolved	4.46		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Sodium (Na)-Dissolved	8.30		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Strontium (Sr)-Dissolved	0.494		0.00020	mg/L	19-JAN-21	20-JAN-21	R5354509
Thallium (Tl)-Dissolved	0.000011		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509
Uranium (U)-Dissolved	0.00229		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	19-JAN-21	20-JAN-21	R5354509

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2548822-3 GH_POTW17_WG_2021-01-04_NP							
Sampled By: HS on 15-JAN-21 @ 12:05							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Zinc (Zn)-Dissolved	0.0046		0.0010	mg/L	19-JAN-21	20-JAN-21	R5354509
<b>Hardness</b>							
Hardness (as CaCO3)	731		0.50	mg/L		24-JAN-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		20-JAN-21	R5354503
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		20-JAN-21	R5354503
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		20-JAN-21	R5354503
Arsenic (As)-Total	0.00017		0.00010	mg/L		20-JAN-21	R5354503
Barium (Ba)-Total	0.0255		0.00010	mg/L		20-JAN-21	R5354503
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		20-JAN-21	R5354503
Boron (B)-Total	0.025		0.010	mg/L		20-JAN-21	R5354503
Cadmium (Cd)-Total	0.0351		0.0050	ug/L		20-JAN-21	R5354503
Calcium (Ca)-Total	164		0.050	mg/L		20-JAN-21	R5354503
Chromium (Cr)-Total	0.00014		0.00010	mg/L		20-JAN-21	R5354503
Cobalt (Co)-Total	0.12		0.10	ug/L		20-JAN-21	R5354503
Copper (Cu)-Total	0.00076		0.00050	mg/L		20-JAN-21	R5354503
Iron (Fe)-Total	0.182		0.010	mg/L		20-JAN-21	R5354503
Lead (Pb)-Total	0.000154		0.000050	mg/L		20-JAN-21	R5354503
Lithium (Li)-Total	0.0126		0.0010	mg/L		20-JAN-21	R5354503
Magnesium (Mg)-Total	71.2		0.10	mg/L		20-JAN-21	R5354503
Manganese (Mn)-Total	0.0551		0.00010	mg/L		20-JAN-21	R5354503
Molybdenum (Mo)-Total	0.00104		0.000050	mg/L		20-JAN-21	R5354503
Nickel (Ni)-Total	0.00489		0.00050	mg/L		20-JAN-21	R5354503
Potassium (K)-Total	1.69		0.050	mg/L		20-JAN-21	R5354503
Selenium (Se)-Total	4.74		0.050	ug/L		20-JAN-21	R5354503
Silicon (Si)-Total	4.72		0.10	mg/L		20-JAN-21	R5354503
Silver (Ag)-Total	<0.000010		0.000010	mg/L		20-JAN-21	R5354503
Sodium (Na)-Total	8.65		0.050	mg/L		20-JAN-21	R5354503
Strontium (Sr)-Total	0.430		0.00020	mg/L		20-JAN-21	R5354503
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		20-JAN-21	R5354503
Tin (Sn)-Total	<0.00010		0.00010	mg/L		20-JAN-21	R5354503
Titanium (Ti)-Total	<0.010		0.010	mg/L		20-JAN-21	R5354503
Uranium (U)-Total	0.00210		0.000010	mg/L		20-JAN-21	R5354503
Vanadium (V)-Total	<0.00050		0.00050	mg/L		20-JAN-21	R5354503
Zinc (Zn)-Total	0.0044		0.0030	mg/L		20-JAN-21	R5354503
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	13.0		1.0	mg/L		19-JAN-21	R5355617
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	297		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Total (as CaCO3)	297		1.0	mg/L		19-JAN-21	R5355666
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0141		0.0050	mg/L		20-JAN-21	R5355261
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		16-JAN-21	R5350261
<b>Chloride in Water by IC</b>							
Chloride (Cl)	19.2	DLHC	0.50	mg/L		16-JAN-21	R5350261
<b>Electrical Conductivity (EC)</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2548822-3 GH_POTW17_WG_2021-01-04_NP Sampled By: HS on 15-JAN-21 @ 12:05 Matrix: WG							
<b>Electrical Conductivity (EC)</b> Conductivity (@ 25C)	1190		2.0	uS/cm		19-JAN-21	R5355666
<b>Fluoride in Water by IC</b> Fluoride (F)	0.13	DLHC	0.10	mg/L		16-JAN-21	R5350261
<b>Ion Balance Calculation</b> Ion Balance	89.1		-100	%		24-JAN-21	
<b>Ion Balance Calculation</b> Cation - Anion Balance	-5.8			%		24-JAN-21	
Anion Sum	17.5			meq/L		24-JAN-21	
Cation Sum	15.6			meq/L		24-JAN-21	
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	0.237	DLHC	0.025	mg/L		16-JAN-21	R5350261
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	0.0108	DLHC	0.0050	mg/L		16-JAN-21	R5350261
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		17-JAN-21	R5350136
<b>Oxidation redution potential by elect.</b> ORP	489		-1000	mV		24-JAN-21	R5357250
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		18-JAN-21	R5351064
<b>Sulfate in Water by IC</b> Sulfate (SO4)	528	DLHC	1.5	mg/L		16-JAN-21	R5350261
<b>Total Dissolved Solids</b> Total Dissolved Solids	926	DLHC	20	mg/L		21-JAN-21	R5356750
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		21-JAN-21	R5356744
<b>Turbidity</b> Turbidity	2.05		0.10	NTU		17-JAN-21	R5350240
<b>pH</b> pH	7.62		0.10	pH		19-JAN-21	R5355666
L2548822-4 GH_POTW06_WG_2021-01-04_NP Sampled By: HS on 15-JAN-21 @ 11:40 Matrix: WG							
<b>Miscellaneous Parameters</b> Bicarbonate (HCO3)	374		5.0	mg/L		19-JAN-21	R5355666
Carbonate (CO3)	<5.0		5.0	mg/L		19-JAN-21	R5355666
Dissolved Organic Carbon	1.94		0.50	mg/L		25-JAN-21	R5357596
Hydroxide (OH)	<5.0		5.0	mg/L		19-JAN-21	R5355666
Iron Bacteria	2200	IRB:BR	1.0	CFU/mL		16-JAN-21	R5359448
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		16-JAN-21	R5359448
Total Kjeldahl Nitrogen	0.354		0.050	mg/L		22-JAN-21	R5356774
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		21-JAN-21	R5356212
Total Organic Carbon	2.43		0.50	mg/L		23-JAN-21	R5357596
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	19-JAN-21	20-JAN-21	R5354509
Dissolved Metals Filtration Location	FIELD					19-JAN-21	R5353946
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-JAN-21	20-JAN-21	R5354577
Dissolved Mercury Filtration Location	FIELD					20-JAN-21	R5354552
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					19-JAN-21	R5353946

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2548822-4 GH_POTW06_WG_2021-01-04_NP							
Sampled By: HS on 15-JAN-21 @ 11:40							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	19-JAN-21	20-JAN-21	R5354509
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Arsenic (As)-Dissolved	0.00013		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Barium (Ba)-Dissolved	0.0556		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Boron (B)-Dissolved	0.015		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509
Cadmium (Cd)-Dissolved	0.0517		0.0050	ug/L	19-JAN-21	20-JAN-21	R5354509
Calcium (Ca)-Dissolved	176		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Chromium (Cr)-Dissolved	0.00031		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	19-JAN-21	20-JAN-21	R5354509
Copper (Cu)-Dissolved	0.00056		0.00020	mg/L	19-JAN-21	20-JAN-21	R5354509
Iron (Fe)-Dissolved	0.436		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509
Lead (Pb)-Dissolved	0.000701		0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Lithium (Li)-Dissolved	0.0124		0.0010	mg/L	19-JAN-21	20-JAN-21	R5354509
Magnesium (Mg)-Dissolved	90.1		0.10	mg/L	19-JAN-21	20-JAN-21	R5354509
Manganese (Mn)-Dissolved	0.00231		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Molybdenum (Mo)-Dissolved	0.00136	DTMF	0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Nickel (Ni)-Dissolved	0.0122		0.00050	mg/L	19-JAN-21	20-JAN-21	R5354509
Potassium (K)-Dissolved	1.60		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Selenium (Se)-Dissolved	30.6		0.050	ug/L	19-JAN-21	20-JAN-21	R5354509
Silicon (Si)-Dissolved	3.97		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Sodium (Na)-Dissolved	7.16		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Strontium (Sr)-Dissolved	0.319		0.00020	mg/L	19-JAN-21	20-JAN-21	R5354509
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Tin (Sn)-Dissolved	0.00014		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509
Uranium (U)-Dissolved	0.00388		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	19-JAN-21	20-JAN-21	R5354509
Zinc (Zn)-Dissolved	0.0388		0.0010	mg/L	19-JAN-21	20-JAN-21	R5354509
<b>Hardness</b>							
Hardness (as CaCO3)	811		0.50	mg/L		24-JAN-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		20-JAN-21	R5354503
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0035		0.0030	mg/L		20-JAN-21	R5354503
Antimony (Sb)-Total	0.00018		0.00010	mg/L		20-JAN-21	R5354503
Arsenic (As)-Total	0.00013		0.00010	mg/L		20-JAN-21	R5354503
Barium (Ba)-Total	0.0530		0.00010	mg/L		20-JAN-21	R5354503
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		20-JAN-21	R5354503
Boron (B)-Total	0.014		0.010	mg/L		20-JAN-21	R5354503
Cadmium (Cd)-Total	0.0531		0.0050	ug/L		20-JAN-21	R5354503
Calcium (Ca)-Total	166		0.050	mg/L		20-JAN-21	R5354503
Chromium (Cr)-Total	0.00112		0.00010	mg/L		20-JAN-21	R5354503
Cobalt (Co)-Total	<0.10		0.10	ug/L		20-JAN-21	R5354503
Copper (Cu)-Total	0.119		0.00050	mg/L		20-JAN-21	R5354503
Iron (Fe)-Total	0.752		0.010	mg/L		20-JAN-21	R5354503
Lead (Pb)-Total	0.00569		0.000050	mg/L		20-JAN-21	R5354503
Lithium (Li)-Total	0.0110		0.0010	mg/L		20-JAN-21	R5354503
Magnesium (Mg)-Total	92.4		0.10	mg/L		20-JAN-21	R5354503
Manganese (Mn)-Total	0.00291		0.00010	mg/L		20-JAN-21	R5354503

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2548822-4 GH_POTW06_WG_2021-01-04_NP							
Sampled By: HS on 15-JAN-21 @ 11:40							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Molybdenum (Mo)-Total	0.000783		0.000050	mg/L		20-JAN-21	R5354503
Nickel (Ni)-Total	0.0148		0.000050	mg/L		20-JAN-21	R5354503
Potassium (K)-Total	1.66		0.050	mg/L		20-JAN-21	R5354503
Selenium (Se)-Total	30.8		0.050	ug/L		20-JAN-21	R5354503
Silicon (Si)-Total	4.28		0.10	mg/L		20-JAN-21	R5354503
Silver (Ag)-Total	0.000043		0.000010	mg/L		20-JAN-21	R5354503
Sodium (Na)-Total	7.69		0.050	mg/L		20-JAN-21	R5354503
Strontium (Sr)-Total	0.264		0.00020	mg/L		20-JAN-21	R5354503
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		20-JAN-21	R5354503
Tin (Sn)-Total	0.00661		0.00010	mg/L		20-JAN-21	R5354503
Titanium (Ti)-Total	<0.010		0.010	mg/L		20-JAN-21	R5354503
Uranium (U)-Total	0.00323		0.000010	mg/L		20-JAN-21	R5354503
Vanadium (V)-Total	<0.00050		0.00050	mg/L		20-JAN-21	R5354503
Zinc (Zn)-Total	0.0940		0.0030	mg/L		20-JAN-21	R5354503
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	13.4		1.0	mg/L		19-JAN-21	R5355617
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	307		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Total (as CaCO3)	307		1.0	mg/L		19-JAN-21	R5355666
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		20-JAN-21	R5355261
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		16-JAN-21	R5350261
<b>Chloride in Water by IC</b>							
Chloride (Cl)	19.3	DLHC	0.50	mg/L		16-JAN-21	R5350261
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1290		2.0	uS/cm		19-JAN-21	R5355666
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.15	DLHC	0.10	mg/L		16-JAN-21	R5350261
<b>Ion Balance Calculation</b>							
Ion Balance	89.0		-100	%		24-JAN-21	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-5.8			%		24-JAN-21	
Anion Sum	19.6			meq/L		24-JAN-21	
Cation Sum	17.4			meq/L		24-JAN-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	1.44	DLHC	0.025	mg/L		16-JAN-21	R5350261
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0061	DLHC	0.0050	mg/L		16-JAN-21	R5350261
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		17-JAN-21	R5350136
<b>Oxidation redution potential by elect.</b>							
ORP	501		-1000	mV		24-JAN-21	R5357250
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0026		0.0020	mg/L		18-JAN-21	R5351064
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	615	DLHC	1.5	mg/L		16-JAN-21	R5350261
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1020	DLHC	20	mg/L		21-JAN-21	R5356750

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2548822-4 GH_POTW06_WG_2021-01-04_NP Sampled By: HS on 15-JAN-21 @ 11:40 Matrix: WG							
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.0		1.0	mg/L		21-JAN-21	R5356744
<b>Turbidity</b>							
Turbidity	3.68		0.10	NTU		17-JAN-21	R5350240
<b>pH</b>							
pH	7.72		0.10	pH		19-JAN-21	R5355666
L2548822-5 GH_POTW09_WG_2021-01-04_NP Sampled By: HS on 15-JAN-21 @ 13:10 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	317		5.0	mg/L		19-JAN-21	R5355666
Carbonate (CO3)	<5.0		5.0	mg/L		19-JAN-21	R5355666
Dissolved Organic Carbon	1.25		0.50	mg/L		23-JAN-21	R5357596
Hydroxide (OH)	<5.0		5.0	mg/L		19-JAN-21	R5355666
Iron Bacteria	<1.0		1.0	CFU/mL		16-JAN-21	R5359448
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		16-JAN-21	R5359448
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		22-JAN-21	R5356774
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		21-JAN-21	R5356212
Total Organic Carbon	1.41		0.50	mg/L		23-JAN-21	R5357596
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	19-JAN-21	20-JAN-21	R5354509
Dissolved Metals Filtration Location	FIELD					19-JAN-21	R5353946
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	20-JAN-21	20-JAN-21	R5354577
Dissolved Mercury Filtration Location	FIELD					20-JAN-21	R5354552
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					19-JAN-21	R5353946
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	19-JAN-21	20-JAN-21	R5354509
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Arsenic (As)-Dissolved	0.00054		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Barium (Ba)-Dissolved	0.0339		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Boron (B)-Dissolved	0.020		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509
Cadmium (Cd)-Dissolved	0.0105		0.0050	ug/L	19-JAN-21	20-JAN-21	R5354509
Calcium (Ca)-Dissolved	105		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Cobalt (Co)-Dissolved	0.18		0.10	ug/L	19-JAN-21	20-JAN-21	R5354509
Copper (Cu)-Dissolved	0.00140		0.00020	mg/L	19-JAN-21	20-JAN-21	R5354509
Iron (Fe)-Dissolved	0.158		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Lithium (Li)-Dissolved	0.0119		0.0010	mg/L	19-JAN-21	20-JAN-21	R5354509
Magnesium (Mg)-Dissolved	40.6		0.10	mg/L	19-JAN-21	20-JAN-21	R5354509
Manganese (Mn)-Dissolved	0.179		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Molybdenum (Mo)-Dissolved	0.00248		0.000050	mg/L	19-JAN-21	20-JAN-21	R5354509
Nickel (Ni)-Dissolved	0.00122		0.00050	mg/L	19-JAN-21	20-JAN-21	R5354509
Potassium (K)-Dissolved	1.56		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Selenium (Se)-Dissolved	1.38		0.050	ug/L	19-JAN-21	20-JAN-21	R5354509
Silicon (Si)-Dissolved	4.55		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Sodium (Na)-Dissolved	7.24		0.050	mg/L	19-JAN-21	20-JAN-21	R5354509

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2548822-5 GH_POTW09_WG_2021-01-04_NP							
Sampled By: HS on 15-JAN-21 @ 13:10							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Strontium (Sr)-Dissolved	0.349		0.00020	mg/L	19-JAN-21	20-JAN-21	R5354509
Thallium (Tl)-Dissolved	0.000014		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	19-JAN-21	20-JAN-21	R5354509
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	19-JAN-21	20-JAN-21	R5354509
Uranium (U)-Dissolved	0.00247		0.000010	mg/L	19-JAN-21	20-JAN-21	R5354509
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	19-JAN-21	20-JAN-21	R5354509
Zinc (Zn)-Dissolved	0.0091		0.0010	mg/L	19-JAN-21	20-JAN-21	R5354509
<b>Hardness</b>							
Hardness (as CaCO3)	429		0.50	mg/L		25-JAN-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		20-JAN-21	R5354503
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		20-JAN-21	R5354503
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		20-JAN-21	R5354503
Arsenic (As)-Total	0.00049		0.00010	mg/L		20-JAN-21	R5354503
Barium (Ba)-Total	0.0320		0.00010	mg/L		20-JAN-21	R5354503
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		20-JAN-21	R5354503
Boron (B)-Total	0.019		0.010	mg/L		20-JAN-21	R5354503
Cadmium (Cd)-Total	0.0104		0.0050	ug/L		20-JAN-21	R5354503
Calcium (Ca)-Total	98.2		0.050	mg/L		20-JAN-21	R5354503
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		20-JAN-21	R5354503
Cobalt (Co)-Total	0.17		0.10	ug/L		20-JAN-21	R5354503
Copper (Cu)-Total	0.00430		0.00050	mg/L		20-JAN-21	R5354503
Iron (Fe)-Total	0.174		0.010	mg/L		20-JAN-21	R5354503
Lead (Pb)-Total	<0.000050		0.000050	mg/L		20-JAN-21	R5354503
Lithium (Li)-Total	0.0105		0.0010	mg/L		20-JAN-21	R5354503
Magnesium (Mg)-Total	40.7		0.10	mg/L		20-JAN-21	R5354503
Manganese (Mn)-Total	0.180		0.00010	mg/L		20-JAN-21	R5354503
Molybdenum (Mo)-Total	0.00232		0.000050	mg/L		20-JAN-21	R5354503
Nickel (Ni)-Total	0.00127		0.00050	mg/L		20-JAN-21	R5354503
Potassium (K)-Total	1.54		0.050	mg/L		20-JAN-21	R5354503
Selenium (Se)-Total	1.40		0.050	ug/L		20-JAN-21	R5354503
Silicon (Si)-Total	4.71		0.10	mg/L		20-JAN-21	R5354503
Silver (Ag)-Total	<0.000010		0.000010	mg/L		20-JAN-21	R5354503
Sodium (Na)-Total	7.42		0.050	mg/L		20-JAN-21	R5354503
Strontium (Sr)-Total	0.308		0.00020	mg/L		20-JAN-21	R5354503
Thallium (Tl)-Total	0.000013		0.000010	mg/L		20-JAN-21	R5354503
Tin (Sn)-Total	<0.00010		0.00010	mg/L		20-JAN-21	R5354503
Titanium (Ti)-Total	<0.010		0.010	mg/L		20-JAN-21	R5354503
Uranium (U)-Total	0.00230		0.000010	mg/L		20-JAN-21	R5354503
Vanadium (V)-Total	<0.00050		0.00050	mg/L		20-JAN-21	R5354503
Zinc (Zn)-Total	0.0078		0.0030	mg/L		20-JAN-21	R5354503
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	7.5		1.0	mg/L		19-JAN-21	R5355617
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	260		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		19-JAN-21	R5355666
Alkalinity, Total (as CaCO3)	260		1.0	mg/L		19-JAN-21	R5355666
<b>Ammonia, Total (as N)</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2548822-5 GH_POTW09_WG_2021-01-04_NP							
Sampled By: HS on 15-JAN-21 @ 13:10							
Matrix: WG							
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0236		0.0050	mg/L		20-JAN-21	R5355261
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		16-JAN-21	R5350261
<b>Chloride in Water by IC</b>							
Chloride (Cl)	7.46		0.10	mg/L		16-JAN-21	R5350261
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	749		2.0	uS/cm		19-JAN-21	R5355666
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.895		0.020	mg/L		16-JAN-21	R5350261
<b>Ion Balance Calculation</b>							
Ion Balance	95.8		-100	%		25-JAN-21	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.2			%		25-JAN-21	
Anion Sum	10.0			meq/L		25-JAN-21	
Cation Sum	9.58			meq/L		25-JAN-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0183		0.0050	mg/L		16-JAN-21	R5350261
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		16-JAN-21	R5350261
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		17-JAN-21	R5350136
<b>Oxidation redution potential by elect.</b>							
ORP	426		-1000	mV		24-JAN-21	R5357250
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0024		0.0020	mg/L		18-JAN-21	R5351064
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	219		0.30	mg/L		16-JAN-21	R5350261
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	491	DLHC	20	mg/L		21-JAN-21	R5356750
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		21-JAN-21	R5356744
<b>Turbidity</b>							
Turbidity	1.10		0.10	NTU		17-JAN-21	R5350240
<b>pH</b>							
pH	7.79		0.10	pH		19-JAN-21	R5355666

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
IRB:BR	Brown Ring: IRB dominant
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.</p>			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
<p>Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
<p>This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.</p>			
IB-BART-SQ-CL	Water	Iron Bacteria, Semi-quantitative	Standard Methods BART
<p>Iron Related Bacteria- IRB BART Method (Semi-Quantitative):</p> <p>A small amount of sample is transferred to a vial (anaerobic chamber). Approximate IRB populations (colony forming units /mL) are determined by observing the reaction within the chamber over a period of 9 days. This method is applicable to both iron-oxidizing and iron-reducing bacteria.</p>			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
<p>Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended</p>			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
SRB-BART-SQ-CL	Water	Sulphate Reducing Bacteria, Semi-quantit	Standard Methods BART
		Sulfate-Reducing Bacteria SRB BART Method (Semi-Quantitative):	
		A small amount of sample is transferred to a vial (anaerobic chamber) that contains ferrous iron. If SRB activity is present sulfate is reduced to hydrogen sulphide, which reacts with the ferrous iron to form black iron sulfide. The formation of this product is observed over 9 days to determine the approximate SRB population (colony forming units /ml). Operators using the SRB-BART method for the detection of deep-seated SRB infestations associated with wells and distribution systems may find it advantageous to have observations continued to the 15th day. This is because some SRB do not exhibit reaction patterns until other bacteria have already grown within the tester. In water pipelines and biofouling water wells the time lags can be delayed until days 11 to 15.	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

2021-01-15-WG

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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#### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2548822

Report Date: 01-FEB-22

Page 1 of 12

Client: TECK COAL LIMITED (GREENHILLS)  
 BOX 5000  
 Elkford BC V0B1H0  
 Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R5355617							
<b>WG3476189-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			97.6		%		85-115	19-JAN-21
<b>WG3476189-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	19-JAN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R5355666							
<b>WG3476222-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.8		%		85-115	19-JAN-21
<b>WG3476222-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-JAN-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R5354509							
<b>WG3475501-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			106.7		%		80-120	20-JAN-21
<b>WG3475501-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	20-JAN-21
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R5354503							
<b>WG3475446-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			100.5		%		80-120	20-JAN-21
<b>WG3475446-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	20-JAN-21
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R5355666							
<b>WG3476222-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	19-JAN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R5350261							
<b>WG3474514-2</b>	<b>LCS</b>							
Bromide (Br)			106.8		%		85-115	16-JAN-21
<b>WG3474514-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	16-JAN-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2548822

Report Date: 01-FEB-22

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5357596</b>							
<b>WG3478439-3</b>	<b>DUP</b>	<b>L2548822-5</b>						
Dissolved Organic Carbon		1.25	1.37		mg/L	9.7	20	23-JAN-21
<b>WG3478439-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			113.1		%		80-120	23-JAN-21
<b>WG3478439-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-JAN-21
<b>WG3478439-4</b>	<b>MS</b>	<b>L2548822-5</b>						
Dissolved Organic Carbon			116.3		%		70-130	23-JAN-21
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5357596</b>							
<b>WG3478439-3</b>	<b>DUP</b>	<b>L2548822-5</b>						
Total Organic Carbon		1.41	1.41		mg/L	0.1	20	23-JAN-21
<b>WG3478439-2</b>	<b>LCS</b>							
Total Organic Carbon			114.1		%		80-120	23-JAN-21
<b>WG3478439-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	23-JAN-21
<b>WG3478439-4</b>	<b>MS</b>	<b>L2548822-5</b>						
Total Organic Carbon			116.4		%		70-130	23-JAN-21
<b>CL-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5350261</b>							
<b>WG3474514-2</b>	<b>LCS</b>							
Chloride (Cl)			103.3		%		85-115	16-JAN-21
<b>WG3474514-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	16-JAN-21
<b>CO3-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5355666</b>							
<b>WG3476222-1</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	19-JAN-21
<b>EC-L-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5355666</b>							
<b>WG3476222-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.0		%		90-110	19-JAN-21
<b>WG3476222-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-JAN-21
<b>F-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2548822

Report Date: 01-FEB-22

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Batch R5350261</b>								
<b>WG3474514-2</b>	<b>LCS</b>							
Fluoride (F)			100.6		%		90-110	16-JAN-21
<b>WG3474514-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	16-JAN-21
<b>HG-D-CVAA-VA</b>								
<b>Batch R5354577</b>								
<b>WG3475724-3</b>	<b>DUP</b>	<b>L2548822-3</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	20-JAN-21
<b>WG3475724-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			101.5		%		80-120	20-JAN-21
<b>WG3475724-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	20-JAN-21
<b>HG-T-U-CVAF-VA</b>								
<b>Batch R5356212</b>								
<b>WG3476846-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			95.4		%		80-120	21-JAN-21
<b>WG3476846-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	21-JAN-21
<b>WG3476846-4</b>	<b>MS</b>	<b>L2548822-3</b>						
Mercury (Hg)-Total			83.1		%		70-130	21-JAN-21
<b>IB-BART-SQ-CL</b>								
<b>Batch R5359448</b>								
<b>WG3480574-2</b>	<b>DUP</b>	<b>L2548822-5</b>						
Iron Bacteria		<1.0	<1.0	RPD-NA	CFU/mL	N/A	50	16-JAN-21
<b>WG3480574-1</b>	<b>MB</b>							
Iron Bacteria			<1.0		CFU/mL		1	16-JAN-21
<b>MET-D-CCMS-VA</b>								
<b>Batch R5354509</b>								
<b>WG3475501-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.8		%		80-120	20-JAN-21
Antimony (Sb)-Dissolved			114.0		%		80-120	20-JAN-21
Arsenic (As)-Dissolved			109.8		%		80-120	20-JAN-21
Barium (Ba)-Dissolved			104.3		%		80-120	20-JAN-21
Bismuth (Bi)-Dissolved			105.4		%		80-120	20-JAN-21
Boron (B)-Dissolved			101.3		%		80-120	20-JAN-21
Cadmium (Cd)-Dissolved			107.3		%		80-120	20-JAN-21
Calcium (Ca)-Dissolved			101.6		%		80-120	20-JAN-21



## Quality Control Report

Workorder: L2548822

Report Date: 01-FEB-22

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5354509</b>							
<b>WG3475501-2</b>	<b>LCS</b>							
Chromium (Cr)-Dissolved			95.1		%		80-120	20-JAN-21
Cobalt (Co)-Dissolved			95.3		%		80-120	20-JAN-21
Copper (Cu)-Dissolved			93.1		%		80-120	20-JAN-21
Iron (Fe)-Dissolved			92.7		%		80-120	20-JAN-21
Lead (Pb)-Dissolved			96.5		%		80-120	20-JAN-21
Lithium (Li)-Dissolved			100.6		%		80-120	20-JAN-21
Magnesium (Mg)-Dissolved			96.0		%		80-120	20-JAN-21
Manganese (Mn)-Dissolved			95.6		%		80-120	20-JAN-21
Molybdenum (Mo)-Dissolved			104.8		%		80-120	20-JAN-21
Nickel (Ni)-Dissolved			93.8		%		80-120	20-JAN-21
Potassium (K)-Dissolved			98.5		%		80-120	20-JAN-21
Selenium (Se)-Dissolved			96.8		%		80-120	20-JAN-21
Silicon (Si)-Dissolved			98.4		%		60-140	20-JAN-21
Silver (Ag)-Dissolved			95.6		%		80-120	20-JAN-21
Sodium (Na)-Dissolved			104.2		%		80-120	20-JAN-21
Strontium (Sr)-Dissolved			101.5		%		80-120	20-JAN-21
Thallium (Tl)-Dissolved			94.2		%		80-120	20-JAN-21
Tin (Sn)-Dissolved			93.4		%		80-120	20-JAN-21
Titanium (Ti)-Dissolved			98.2		%		80-120	20-JAN-21
Uranium (U)-Dissolved			112.0		%		80-120	20-JAN-21
Vanadium (V)-Dissolved			100.3		%		80-120	20-JAN-21
Zinc (Zn)-Dissolved			105.6		%		80-120	20-JAN-21
<b>WG3475501-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	20-JAN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	20-JAN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	20-JAN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	20-JAN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	20-JAN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	20-JAN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	20-JAN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	20-JAN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	20-JAN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	20-JAN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	20-JAN-21





## Quality Control Report

Workorder: L2548822

Report Date: 01-FEB-22

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5354509</b>							
<b>WG3475501-1</b>	<b>MB</b>	<b>NP</b>						
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	20-JAN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	20-JAN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	20-JAN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	20-JAN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	20-JAN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	20-JAN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	20-JAN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	20-JAN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	20-JAN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	20-JAN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	20-JAN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	20-JAN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	20-JAN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	20-JAN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	20-JAN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	20-JAN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	20-JAN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	20-JAN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	20-JAN-21
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5354503</b>							
<b>WG3475446-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			102.7		%		80-120	20-JAN-21
Antimony (Sb)-Total			99.1		%		80-120	20-JAN-21
Arsenic (As)-Total			102.7		%		80-120	20-JAN-21
Barium (Ba)-Total			100.6		%		80-120	20-JAN-21
Bismuth (Bi)-Total			97.4		%		80-120	20-JAN-21
Boron (B)-Total			101.7		%		80-120	20-JAN-21
Cadmium (Cd)-Total			100.6		%		80-120	20-JAN-21
Calcium (Ca)-Total			107.3		%		80-120	20-JAN-21
Chromium (Cr)-Total			102.4		%		80-120	20-JAN-21
Cobalt (Co)-Total			102.7		%		80-120	20-JAN-21
Copper (Cu)-Total			101.9		%		80-120	20-JAN-21
Iron (Fe)-Total			106.7		%		80-120	20-JAN-21



## Quality Control Report

Workorder: L2548822

Report Date: 01-FEB-22

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R5354503</b>							
<b>WG3475446-2</b>	<b>LCS</b>							
Lead (Pb)-Total			100.1		%		80-120	20-JAN-21
Lithium (Li)-Total			96.6		%		80-120	20-JAN-21
Magnesium (Mg)-Total			101.9		%		80-120	20-JAN-21
Manganese (Mn)-Total			102.2		%		80-120	20-JAN-21
Molybdenum (Mo)-Total			98.4		%		80-120	20-JAN-21
Nickel (Ni)-Total			105.1		%		80-120	20-JAN-21
Potassium (K)-Total			102.8		%		80-120	20-JAN-21
Selenium (Se)-Total			104.2		%		80-120	20-JAN-21
Silicon (Si)-Total			98.3		%		80-120	20-JAN-21
Silver (Ag)-Total			97.7		%		80-120	20-JAN-21
Sodium (Na)-Total			103.7		%		80-120	20-JAN-21
Strontium (Sr)-Total			96.3		%		80-120	20-JAN-21
Thallium (Tl)-Total			97.3		%		80-120	20-JAN-21
Tin (Sn)-Total			95.5		%		80-120	20-JAN-21
Titanium (Ti)-Total			102.6		%		80-120	20-JAN-21
Uranium (U)-Total			103.8		%		80-120	20-JAN-21
Vanadium (V)-Total			103.4		%		80-120	20-JAN-21
Zinc (Zn)-Total			105.5		%		80-120	20-JAN-21
<b>WG3475446-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	20-JAN-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	20-JAN-21
Arsenic (As)-Total			<0.00010		mg/L		0.0001	20-JAN-21
Barium (Ba)-Total			<0.00010		mg/L		0.0001	20-JAN-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	20-JAN-21
Boron (B)-Total			<0.010		mg/L		0.01	20-JAN-21
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	20-JAN-21
Calcium (Ca)-Total			<0.050		mg/L		0.05	20-JAN-21
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	20-JAN-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	20-JAN-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	20-JAN-21
Iron (Fe)-Total			<0.010		mg/L		0.01	20-JAN-21
Lead (Pb)-Total			<0.000050		mg/L		0.00005	20-JAN-21
Lithium (Li)-Total			<0.0010		mg/L		0.001	20-JAN-21
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	20-JAN-21



## Quality Control Report

Workorder: L2548822

Report Date: 01-FEB-22

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R5354503</b>							
<b>WG3475446-1</b>	<b>MB</b>							
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	20-JAN-21
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	20-JAN-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	20-JAN-21
Potassium (K)-Total			<0.050		mg/L		0.05	20-JAN-21
Selenium (Se)-Total			<0.000050		mg/L		0.00005	20-JAN-21
Silicon (Si)-Total			<0.10		mg/L		0.1	20-JAN-21
Silver (Ag)-Total			<0.000010		mg/L		0.00001	20-JAN-21
Sodium (Na)-Total			<0.050		mg/L		0.05	20-JAN-21
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	20-JAN-21
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	20-JAN-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	20-JAN-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	20-JAN-21
Uranium (U)-Total			<0.000010		mg/L		0.00001	20-JAN-21
Vanadium (V)-Total			<0.00050		mg/L		0.0005	20-JAN-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	20-JAN-21
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5355261</b>							
<b>WG3476093-10</b>	<b>LCS</b>							
Ammonia as N			92.3		%		85-115	20-JAN-21
<b>WG3476093-14</b>	<b>LCS</b>							
Ammonia as N			97.6		%		85-115	20-JAN-21
<b>WG3476093-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	20-JAN-21
<b>WG3476093-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	20-JAN-21
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5350261</b>							
<b>WG3474514-2</b>	<b>LCS</b>							
Nitrite (as N)			106.0		%		90-110	16-JAN-21
<b>WG3474514-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	16-JAN-21
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2548822

Report Date: 01-FEB-22

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5350261							
<b>WG3474514-2</b>	<b>LCS</b>							
Nitrate (as N)			105.1		%		90-110	16-JAN-21
<b>WG3474514-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	16-JAN-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5355666							
<b>WG3476222-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	19-JAN-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5357250							
<b>WG3478056-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	24-JAN-21
<b>WG3478056-2</b>	<b>DUP</b>	<b>L2548822-5</b>						
ORP		426	422	J	mV	4.2	15	24-JAN-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5351064							
<b>WG3474765-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			94.9		%		80-120	18-JAN-21
<b>WG3474765-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	18-JAN-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5355666							
<b>WG3476222-2</b>	<b>LCS</b>							
pH			6.98		pH		6.9-7.1	19-JAN-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5350136							
<b>WG3474491-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			98.3		%		80-120	17-JAN-21
<b>WG3474491-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	17-JAN-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5350261							
<b>WG3474514-2</b>	<b>LCS</b>							
Sulfate (SO4)			104.6		%		90-110	16-JAN-21
<b>WG3474514-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2548822

Report Date: 01-FEB-22

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
Water								
Batch R5350261								
WG3474514-1 MB								
Sulfate (SO4)								
			<0.30		mg/L		0.3	16-JAN-21
<b>SOLIDS-TDS-CL</b>								
Water								
Batch R5356750								
WG3476717-2 LCS								
Total Dissolved Solids								
			87.7		%		85-115	21-JAN-21
WG3476717-1 MB								
Total Dissolved Solids								
			<10		mg/L		10	21-JAN-21
<b>SRB-BART-SQ-CL</b>								
Water								
Batch R5359448								
WG3480574-2 DUP								
Sulfur Reducing Bacteria								
		L2548822-5	<1.0	RPD-NA	CFU/mL	N/A	50	16-JAN-21
WG3480574-1 MB								
Sulfur Reducing Bacteria								
			<1.0		CFU/mL		1	16-JAN-21
<b>TKN-L-F-CL</b>								
Water								
Batch R5356774								
WG3477460-2 LCS								
Total Kjeldahl Nitrogen								
			81.2		%		75-125	22-JAN-21
WG3477460-8 LCS								
Total Kjeldahl Nitrogen								
			81.6		%		75-125	22-JAN-21
WG3477460-1 MB								
Total Kjeldahl Nitrogen								
			<0.050		mg/L		0.05	22-JAN-21
WG3477460-7 MB								
Total Kjeldahl Nitrogen								
			<0.050		mg/L		0.05	22-JAN-21
<b>TSS-L-CL</b>								
Water								
Batch R5356744								
WG3476716-2 LCS								
Total Suspended Solids								
			99.8		%		85-115	21-JAN-21
WG3476716-1 MB								
Total Suspended Solids								
			<1.0		mg/L		1	21-JAN-21
<b>TURBIDITY-CL</b>								
Water								
Batch R5350240								
WG3474533-3 DUP								
Turbidity								
		L2548822-1	10.9		NTU	2.7	15	17-JAN-21
WG3474533-2 LCS								
Turbidity								
			96.5		%		85-115	17-JAN-21



## Quality Control Report

Workorder: L2548822

Report Date: 01-FEB-22

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5350240							
WG3474533-1	MB							
Turbidity			<0.10		NTU		0.1	17-JAN-21

# Quality Control Report

Workorder: L2548822

Report Date: 01-FEB-22

Page 11 of 12

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2548822

Report Date: 01-FEB-22

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	15-JAN-21 12:35	24-JAN-21 11:40	0.25	215	hours	EHTR-FM
	2	15-JAN-21 12:20	24-JAN-21 11:40	0.25	215	hours	EHTR-FM
	3	15-JAN-21 12:05	24-JAN-21 11:40	0.25	216	hours	EHTR-FM
	4	15-JAN-21 11:40	24-JAN-21 11:40	0.25	216	hours	EHTR-FM
	5	15-JAN-21 13:10	24-JAN-21 11:40	0.25	215	hours	EHTR-FM
pH							
	1	15-JAN-21 12:35	19-JAN-21 14:00	0.25	97	hours	EHTR-FM
	2	15-JAN-21 12:20	19-JAN-21 14:00	0.25	98	hours	EHTR-FM
	3	15-JAN-21 12:05	19-JAN-21 14:00	0.25	98	hours	EHTR-FM
	4	15-JAN-21 11:40	19-JAN-21 14:00	0.25	98	hours	EHTR-FM
	5	15-JAN-21 13:10	19-JAN-21 14:00	0.25	97	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2548822 were received on 16-JAN-21 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: 2021-01-15-WG

TURNAROUND TIME:

Regular

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Burrnga			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	VOB1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:	jeremy.enns@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:	DL-Equis-GHO-Field@teck.com	X	X	X
								Email 7:	ashlee.fudge@teck.com	X	X	X
								PO number	739453			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sys Loc Code	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	PHL	Y	Y	N	Y	N	N	N	Iron Sulfure Bacteria
									Preserv.	H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4	
								ALS_Package-DOC									
								HG-D-CVAF-VA									
								HG-T-U-CVAF-VA									
								TECKCOAL-MET-D-VA									
								TECKCOAL-MET-T-VA									
								TECKCOAL-ROUTINE-VA									
								ALS_Package-ITKN/IOC									
GH_POTW10_WG_2020-01-04_NP	GH_POTW10	WG		1/15/2021	12:35	G	8		1	1	1	1	1	1	1	1	
GH_POTW15_WG_2020-01-04_NP	GH_POTW15	WG		1/15/2021	12:20	G	8		1	1	1	1	1	1	1	1	
GH_POTW17_WG_2020-01-04_NP	GH_POTW17	WG		1/15/2021	12:05	G	8		1	1	1	1	1	1	1	1	
GH_POTW06_WG_2020-01-04_NP	GH_POTW06	WG		1/15/2021	11:40	G	8		1	1	1	1	1	1	1	1	
GH_POTW09_WG_2020-01-04_NP	GH_POTW09	WG		1/15/2021	13:10	G	8		1	1	1	1	1	1	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME


SERVICE REQUEST (rush - subject to availability)

Regular (default) X	Sampler's Name	HS	Mobile #
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time
Emergency (1 Business Day) - 100% surcharge			Jan 15 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

90

COC ID: **2021-01-15-WG**

TURNAROUND TIME: Regular

RUSH:

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:	jeremy.enns@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:	DL-Equis-GHO-Field@teck.com	X	X	X
								Email 7:	ashlee.fudge@teck.com	X	X	X
								PO number	<b>739453</b>			

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2548822-COFC

Sample ID	Sys Loc Code	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED											
								ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	Iron Sulfure Bacteria				
GH_POTW10_WG_2020-01-04_NP	GH_POTW10	WG		1/15/2021	12:35	G	8	1	1	1	1	1	1	1	1				
GH_POTW15_WG_2020-01-04_NP	GH_POTW15	WG		1/15/2021	12:20	G	8	1	1	1	1	1	1	1	1				
GH_POTW17_WG_2020-01-04_NP	GH_POTW17	WG		1/15/2021	12:05	G	8	1	1	1	1	1	1	1	1				
GH_POTW06_WG_2020-01-04_NP	GH_POTW06	WG		1/15/2021	11:40	G	8	1	1	1	1	1	1	1	1				
GH_POTW09_WG_2020-01-04_NP	GH_POTW09	WG		1/15/2021	13:10	G	8	1	1	1	1	1	1	1	1				

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**


**SERVICE REQUEST (rush - subject to availability)**

Regular (default) X	Sampler's Name	HS	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	Jan 15 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

9°



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jeremy Enns  
BOX 5000  
Elkford BC V0B1H0


Date Received: 22-JAN-21  
Report Date: 18-OCT-21 16:33 (MT)  
Version: FINAL REV. 2

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2550723  
Project P.O. #: VPO00739453  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: 2020-01-21-WG  
Legal Site Desc:

Comments: 18-OCT-21: BIC, CO3, and OH results reported.

  
\_\_\_\_\_  
Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2550723-1 GH_GA-MW-4_WG_2021-01-04_NP							
Sampled By: AF/HS on 21-JAN-21 @ 13:10							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	237		5.0	mg/L		22-JAN-21	R5356920
Carbonate (CO3)	<5.0		5.0	mg/L		22-JAN-21	R5356920
Dissolved Organic Carbon	1.41		0.50	mg/L		29-JAN-21	R5359977
Hydroxide (OH)	<5.0		5.0	mg/L		22-JAN-21	R5356920
Total Kjeldahl Nitrogen	0.646		0.050	mg/L		29-JAN-21	R5359806
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		27-JAN-21	R5358700
Total Organic Carbon	1.47		0.50	mg/L		29-JAN-21	R5359977
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-JAN-21	26-JAN-21	R5357644
Dissolved Metals Filtration Location	FIELD					24-JAN-21	R5357169
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	25-JAN-21	25-JAN-21	R5357593
Dissolved Mercury Filtration Location	FIELD					25-JAN-21	R5357386
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					24-JAN-21	R5357169
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-JAN-21	26-JAN-21	R5357644
Antimony (Sb)-Dissolved	0.00041		0.00010	mg/L	24-JAN-21	26-JAN-21	R5357644
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-21	26-JAN-21	R5357644
Barium (Ba)-Dissolved	0.0907		0.00010	mg/L	24-JAN-21	26-JAN-21	R5357644
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-21	26-JAN-21	R5357644
Boron (B)-Dissolved	0.016		0.010	mg/L	24-JAN-21	26-JAN-21	R5357644
Cadmium (Cd)-Dissolved	<0.015	DLM	0.015	ug/L	24-JAN-21	26-JAN-21	R5357644
Calcium (Ca)-Dissolved	64.4		0.050	mg/L	24-JAN-21	26-JAN-21	R5357644
Chromium (Cr)-Dissolved	0.00015		0.00010	mg/L	24-JAN-21	26-JAN-21	R5357644
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	24-JAN-21	26-JAN-21	R5357644
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	24-JAN-21	26-JAN-21	R5357644
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-JAN-21	26-JAN-21	R5357644
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-21	26-JAN-21	R5357644
Lithium (Li)-Dissolved	0.0402		0.0010	mg/L	24-JAN-21	26-JAN-21	R5357644
Magnesium (Mg)-Dissolved	30.0		0.10	mg/L	24-JAN-21	26-JAN-21	R5357644
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-21	26-JAN-21	R5357644
Molybdenum (Mo)-Dissolved	0.0167	DTMF	0.000050	mg/L	24-JAN-21	26-JAN-21	R5357644
Nickel (Ni)-Dissolved	0.00313		0.00050	mg/L	24-JAN-21	26-JAN-21	R5357644
Potassium (K)-Dissolved	1.62		0.050	mg/L	24-JAN-21	26-JAN-21	R5357644
Selenium (Se)-Dissolved	6.41		0.050	ug/L	24-JAN-21	26-JAN-21	R5357644
Silicon (Si)-Dissolved	2.61		0.050	mg/L	24-JAN-21	26-JAN-21	R5357644
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-21	26-JAN-21	R5357644
Sodium (Na)-Dissolved	7.39		0.050	mg/L	24-JAN-21	26-JAN-21	R5357644
Strontium (Sr)-Dissolved	0.233		0.00020	mg/L	24-JAN-21	26-JAN-21	R5357644
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-21	26-JAN-21	R5357644
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-21	26-JAN-21	R5357644
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-JAN-21	26-JAN-21	R5357644
Uranium (U)-Dissolved	0.00217		0.000010	mg/L	24-JAN-21	26-JAN-21	R5357644
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-JAN-21	26-JAN-21	R5357644
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-JAN-21	26-JAN-21	R5357644
<b>Hardness</b>							
Hardness (as CaCO3)	285		0.50	mg/L		26-JAN-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		25-JAN-21	R5358113

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2550723-1 GH_GA-MW-4_WG_2021-01-04_NP							
Sampled By: AF/HS on 21-JAN-21 @ 13:10							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		25-JAN-21	R5358113
Antimony (Sb)-Total	0.00045		0.00010	mg/L		25-JAN-21	R5358113
Arsenic (As)-Total	0.00013		0.00010	mg/L		25-JAN-21	R5358113
Barium (Ba)-Total	0.0965		0.00010	mg/L		25-JAN-21	R5358113
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		25-JAN-21	R5358113
Boron (B)-Total	0.017		0.010	mg/L		25-JAN-21	R5358113
Cadmium (Cd)-Total	0.0112		0.0050	ug/L		25-JAN-21	R5358113
Calcium (Ca)-Total	73.6		0.050	mg/L		25-JAN-21	R5358113
Chromium (Cr)-Total	0.00025		0.00010	mg/L		25-JAN-21	R5358113
Cobalt (Co)-Total	<0.10		0.10	ug/L		25-JAN-21	R5358113
Copper (Cu)-Total	0.00059		0.00050	mg/L		25-JAN-21	R5358113
Iron (Fe)-Total	<0.010		0.010	mg/L		25-JAN-21	R5358113
Lead (Pb)-Total	<0.000050		0.000050	mg/L		25-JAN-21	R5358113
Lithium (Li)-Total	0.0356		0.0010	mg/L		25-JAN-21	R5358113
Magnesium (Mg)-Total	30.2		0.10	mg/L		25-JAN-21	R5358113
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		25-JAN-21	R5358113
Molybdenum (Mo)-Total	0.00344	DTMF	0.000050	mg/L		25-JAN-21	R5358113
Nickel (Ni)-Total	0.00335		0.00050	mg/L		25-JAN-21	R5358113
Potassium (K)-Total	1.55		0.050	mg/L		25-JAN-21	R5358113
Selenium (Se)-Total	6.75		0.050	ug/L		25-JAN-21	R5358113
Silicon (Si)-Total	2.77		0.10	mg/L		25-JAN-21	R5358113
Silver (Ag)-Total	0.000032		0.000010	mg/L		25-JAN-21	R5358113
Sodium (Na)-Total	7.31		0.050	mg/L		25-JAN-21	R5358113
Strontium (Sr)-Total	0.250		0.00020	mg/L		25-JAN-21	R5358113
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		25-JAN-21	R5358113
Tin (Sn)-Total	<0.00010		0.00010	mg/L		25-JAN-21	R5358113
Titanium (Ti)-Total	<0.010		0.010	mg/L		25-JAN-21	R5358113
Uranium (U)-Total	0.00211		0.000010	mg/L		25-JAN-21	R5358113
Vanadium (V)-Total	<0.00050		0.00050	mg/L		25-JAN-21	R5358113
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		25-JAN-21	R5358113
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	4.0		1.0	mg/L		22-JAN-21	R5356898
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	194		1.0	mg/L		22-JAN-21	R5356920
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		22-JAN-21	R5356920
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		22-JAN-21	R5356920
Alkalinity, Total (as CaCO3)	194		1.0	mg/L		22-JAN-21	R5356920
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		26-JAN-21	R5358590
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		22-JAN-21	R5358912
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.20		0.10	mg/L		22-JAN-21	R5358912
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	505		2.0	uS/cm		22-JAN-21	R5356920
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.165		0.020	mg/L		22-JAN-21	R5358912
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		28-JAN-21	
Anion Sum	6.04			meq/L		28-JAN-21	
Cation Sum	6.05			meq/L		28-JAN-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2550723-1 GH_GA-MW-4_WG_2021-01-04_NP							
Sampled By: AF/HS on 21-JAN-21 @ 13:10							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	100		-100	%		28-JAN-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	1.92		0.0050	mg/L		22-JAN-21	R5358912
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		22-JAN-21	R5358912
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0025		0.0010	mg/L		22-JAN-21	R5356836
<b>Oxidation redution potential by elect.</b>							
ORP	351		-1000	mV		29-JAN-21	R5359933
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.031	DLM	0.030	mg/L		25-JAN-21	R5357453
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	93.7		0.30	mg/L		22-JAN-21	R5358912
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	305	DLHC	20	mg/L		27-JAN-21	R5358906
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		27-JAN-21	R5358430
<b>Turbidity</b>							
Turbidity	0.30		0.10	NTU		22-JAN-21	R5356702
<b>pH</b>							
pH	7.97		0.10	pH		22-JAN-21	R5356920

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS



## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

2020-01-21-WG

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample  
mg/kg wwt - milligrams per kilogram based on wet weight of sample  
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2550723

Report Date: 18-OCT-21

Page 1 of 12

Client: TECK COAL LIMITED (GREENHILLS)  
 BOX 5000  
 Elkford BC V0B1H0  
 Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R5356898							
<b>WG3477662-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.4		%		85-115	22-JAN-21
<b>WG3477662-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.1		mg/L		2	22-JAN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R5356920							
<b>WG3477676-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			103.2		%		85-115	22-JAN-21
<b>WG3477676-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JAN-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R5357644							
<b>WG3477922-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.9		%		80-120	26-JAN-21
<b>WG3477922-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-JAN-21
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R5358113							
<b>WG3477885-3</b>	<b>DUP</b>	<b>L2550723-1</b>						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	25-JAN-21
<b>WG3477885-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			108.2		%		80-120	25-JAN-21
<b>WG3477885-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	25-JAN-21
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R5356920							
<b>WG3477676-10</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	22-JAN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R5358912							
<b>WG3479928-3</b>	<b>DUP</b>	<b>L2550723-1</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-JAN-21
<b>WG3479928-2</b>	<b>LCS</b>							
Bromide (Br)			99.8		%		85-115	22-JAN-21
<b>WG3479928-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	22-JAN-21



## Quality Control Report

Workorder: L2550723

Report Date: 18-OCT-21

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5358912							
<b>WG3479928-4 MS</b>		<b>L2550723-1</b>						
Bromide (Br)			92.4		%		75-125	22-JAN-21
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5359977							
<b>WG3481151-2 LCS</b>								
Dissolved Organic Carbon			105.0		%		80-120	29-JAN-21
<b>WG3481151-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-JAN-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5359977							
<b>WG3481151-2 LCS</b>								
Total Organic Carbon			106.8		%		80-120	29-JAN-21
<b>WG3481151-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	29-JAN-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5358912							
<b>WG3479928-3 DUP</b>		<b>L2550723-1</b>						
Chloride (Cl)		2.20	2.22		mg/L	0.8	20	22-JAN-21
<b>WG3479928-2 LCS</b>								
Chloride (Cl)			102.1		%		85-115	22-JAN-21
<b>WG3479928-1 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	22-JAN-21
<b>WG3479928-4 MS</b>		<b>L2550723-1</b>						
Chloride (Cl)			93.1		%		75-125	22-JAN-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5356920							
<b>WG3477676-10 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	22-JAN-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5356920							
<b>WG3477676-11 LCS</b>								
Conductivity (@ 25C)			98.0		%		90-110	22-JAN-21
<b>WG3477676-10 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	22-JAN-21
<b>F-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2550723

Report Date: 18-OCT-21

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5358912</b>							
<b>WG3479928-3</b>	<b>DUP</b>	<b>L2550723-1</b>						
Fluoride (F)		0.165	0.168		mg/L	1.5	20	22-JAN-21
<b>WG3479928-2</b>	<b>LCS</b>							
Fluoride (F)			102.9		%		90-110	22-JAN-21
<b>WG3479928-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	22-JAN-21
<b>WG3479928-4</b>	<b>MS</b>	<b>L2550723-1</b>						
Fluoride (F)			92.8		%		75-125	22-JAN-21
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5357593</b>							
<b>WG3478195-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.4		%		80-120	25-JAN-21
<b>WG3478195-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	25-JAN-21
<b>HG-T-U-CVAF-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5358700</b>							
<b>WG3479649-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			115.0		%		80-120	27-JAN-21
<b>WG3479649-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	27-JAN-21
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5357644</b>							
<b>WG3477922-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.4		%		80-120	26-JAN-21
Antimony (Sb)-Dissolved			110.6		%		80-120	26-JAN-21
Arsenic (As)-Dissolved			101.7		%		80-120	26-JAN-21
Barium (Ba)-Dissolved			103.2		%		80-120	26-JAN-21
Bismuth (Bi)-Dissolved			114.4		%		80-120	26-JAN-21
Boron (B)-Dissolved			92.2		%		80-120	26-JAN-21
Cadmium (Cd)-Dissolved			102.6		%		80-120	26-JAN-21
Calcium (Ca)-Dissolved			102.5		%		80-120	26-JAN-21
Chromium (Cr)-Dissolved			102.6		%		80-120	26-JAN-21
Cobalt (Co)-Dissolved			101.4		%		80-120	26-JAN-21
Copper (Cu)-Dissolved			101.4		%		80-120	26-JAN-21
Iron (Fe)-Dissolved			98.5		%		80-120	26-JAN-21
Lead (Pb)-Dissolved			103.7		%		80-120	26-JAN-21



## Quality Control Report

Workorder: L2550723

Report Date: 18-OCT-21

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5357644</b>							
<b>WG3477922-2</b>	<b>LCS</b>							
Lithium (Li)-Dissolved			108.3		%		80-120	26-JAN-21
Magnesium (Mg)-Dissolved			102.4		%		80-120	26-JAN-21
Manganese (Mn)-Dissolved			102.3		%		80-120	26-JAN-21
Molybdenum (Mo)-Dissolved			102.4		%		80-120	26-JAN-21
Nickel (Ni)-Dissolved			100.6		%		80-120	26-JAN-21
Potassium (K)-Dissolved			106.5		%		80-120	26-JAN-21
Selenium (Se)-Dissolved			104.0		%		80-120	26-JAN-21
Silicon (Si)-Dissolved			98.0		%		60-140	26-JAN-21
Silver (Ag)-Dissolved			105.2		%		80-120	26-JAN-21
Sodium (Na)-Dissolved			118.1		%		80-120	26-JAN-21
Strontium (Sr)-Dissolved			116.1		%		80-120	26-JAN-21
Thallium (Tl)-Dissolved			111.7		%		80-120	26-JAN-21
Tin (Sn)-Dissolved			100.8		%		80-120	26-JAN-21
Titanium (Ti)-Dissolved			92.7		%		80-120	26-JAN-21
Uranium (U)-Dissolved			112.3		%		80-120	26-JAN-21
Vanadium (V)-Dissolved			102.4		%		80-120	26-JAN-21
Zinc (Zn)-Dissolved			102.6		%		80-120	26-JAN-21
<b>WG3477922-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-JAN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-JAN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-JAN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-JAN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-JAN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-JAN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-JAN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-JAN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21



## Quality Control Report

Workorder: L2550723

Report Date: 18-OCT-21

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5357644</b>							
<b>WG3477922-1</b>	<b>MB</b>	<b>NP</b>						
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-JAN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-JAN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-JAN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-JAN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-JAN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-JAN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-JAN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-JAN-21
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358113</b>							
<b>WG3477885-3</b>	<b>DUP</b>	<b>L2550723-1</b>						
Aluminum (Al)-Total		<0.0030	0.0033	RPD-NA	mg/L	N/A	20	25-JAN-21
Antimony (Sb)-Total		0.00045	0.00044		mg/L	2.7	20	25-JAN-21
Arsenic (As)-Total		0.00013	0.00011		mg/L	11	20	25-JAN-21
Barium (Ba)-Total		0.0965	0.0944		mg/L	2.1	20	25-JAN-21
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-JAN-21
Boron (B)-Total		0.017	0.017		mg/L	0.4	20	25-JAN-21
Cadmium (Cd)-Total		0.0000112	0.0000095		mg/L	16	20	25-JAN-21
Calcium (Ca)-Total		73.6	77.7		mg/L	5.4	20	25-JAN-21
Chromium (Cr)-Total		0.00025	0.00026		mg/L	6.1	20	25-JAN-21
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-JAN-21
Copper (Cu)-Total		0.00059	0.00062		mg/L	4.5	20	25-JAN-21
Iron (Fe)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-JAN-21
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-JAN-21
Lithium (Li)-Total		0.0356	0.0357		mg/L	0.1	20	25-JAN-21
Magnesium (Mg)-Total		30.2	31.2		mg/L	3.4	20	25-JAN-21
Manganese (Mn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-JAN-21
Molybdenum (Mo)-Total		0.00344	0.00351		mg/L	2.0	20	25-JAN-21



## Quality Control Report

Workorder: L2550723

Report Date: 18-OCT-21

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358113</b>							
<b>WG3477885-3</b>	<b>DUP</b>	<b>L2550723-1</b>						
Nickel (Ni)-Total		0.00335	0.00335		mg/L	0.1	20	25-JAN-21
Potassium (K)-Total		1.55	1.58		mg/L	1.9	20	25-JAN-21
Selenium (Se)-Total		0.00675	0.00690		mg/L	2.2	20	25-JAN-21
Silicon (Si)-Total		2.77	2.76		mg/L	0.2	20	25-JAN-21
Silver (Ag)-Total		0.000032	0.000017	J	mg/L	0.000015	0.00002	25-JAN-21
Sodium (Na)-Total		7.31	7.39		mg/L	1.1	20	25-JAN-21
Strontium (Sr)-Total		0.250	0.250		mg/L	0.2	20	25-JAN-21
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-JAN-21
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-JAN-21
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-JAN-21
Uranium (U)-Total		0.00211	0.00222		mg/L	5.5	20	25-JAN-21
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	25-JAN-21
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	25-JAN-21
<b>WG3477885-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			105.4		%		80-120	25-JAN-21
Antimony (Sb)-Total			116.2		%		80-120	25-JAN-21
Arsenic (As)-Total			104.5		%		80-120	25-JAN-21
Barium (Ba)-Total			102.4		%		80-120	25-JAN-21
Bismuth (Bi)-Total			113.3		%		80-120	25-JAN-21
Boron (B)-Total			103.7		%		80-120	25-JAN-21
Cadmium (Cd)-Total			105.4		%		80-120	25-JAN-21
Calcium (Ca)-Total			115.2		%		80-120	25-JAN-21
Chromium (Cr)-Total			103.7		%		80-120	25-JAN-21
Cobalt (Co)-Total			105.4		%		80-120	25-JAN-21
Copper (Cu)-Total			103.0		%		80-120	25-JAN-21
Iron (Fe)-Total			103.2		%		80-120	25-JAN-21
Lead (Pb)-Total			107.9		%		80-120	25-JAN-21
Lithium (Li)-Total			126.2	MES	%		80-120	25-JAN-21
Magnesium (Mg)-Total			107.1		%		80-120	25-JAN-21
Manganese (Mn)-Total			111.3		%		80-120	25-JAN-21
Molybdenum (Mo)-Total			115.6		%		80-120	25-JAN-21
Nickel (Ni)-Total			105.3		%		80-120	25-JAN-21
Potassium (K)-Total			105.6		%		80-120	25-JAN-21
Selenium (Se)-Total			104.1		%		80-120	25-JAN-21



## Quality Control Report

Workorder: L2550723

Report Date: 18-OCT-21

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358113</b>							
<b>WG3477885-2</b>	<b>LCS</b>							
Silicon (Si)-Total			101.8		%		80-120	25-JAN-21
Silver (Ag)-Total			114.3		%		80-120	25-JAN-21
Sodium (Na)-Total			106.3		%		80-120	25-JAN-21
Strontium (Sr)-Total			113.3		%		80-120	25-JAN-21
Thallium (Tl)-Total			104.5		%		80-120	25-JAN-21
Tin (Sn)-Total			106.9		%		80-120	25-JAN-21
Titanium (Ti)-Total			100.5		%		80-120	25-JAN-21
Uranium (U)-Total			114.8		%		80-120	25-JAN-21
Vanadium (V)-Total			106.6		%		80-120	25-JAN-21
Zinc (Zn)-Total			103.3		%		80-120	25-JAN-21
<b>WG3477885-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	25-JAN-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	25-JAN-21
Arsenic (As)-Total			<0.00010		mg/L		0.0001	25-JAN-21
Barium (Ba)-Total			<0.00010		mg/L		0.0001	25-JAN-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	25-JAN-21
Boron (B)-Total			<0.010		mg/L		0.01	25-JAN-21
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	25-JAN-21
Calcium (Ca)-Total			<0.050		mg/L		0.05	25-JAN-21
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	25-JAN-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	25-JAN-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	25-JAN-21
Iron (Fe)-Total			<0.010		mg/L		0.01	25-JAN-21
Lead (Pb)-Total			<0.000050		mg/L		0.00005	25-JAN-21
Lithium (Li)-Total			<0.0010		mg/L		0.001	25-JAN-21
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	25-JAN-21
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	25-JAN-21
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	25-JAN-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	25-JAN-21
Potassium (K)-Total			<0.050		mg/L		0.05	25-JAN-21
Selenium (Se)-Total			<0.000050		mg/L		0.00005	25-JAN-21
Silicon (Si)-Total			<0.10		mg/L		0.1	25-JAN-21
Silver (Ag)-Total			<0.000010		mg/L		0.00001	25-JAN-21
Sodium (Na)-Total			0.095	B	mg/L		0.05	25-JAN-21





## Quality Control Report

Workorder: L2550723

Report Date: 18-OCT-21

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch R5358113</b>								
<b>WG3477885-1 MB</b>								
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	25-JAN-21
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	25-JAN-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	25-JAN-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	25-JAN-21
Uranium (U)-Total			<0.000010		mg/L		0.00001	25-JAN-21
Vanadium (V)-Total			<0.00050		mg/L		0.0005	25-JAN-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	25-JAN-21
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch R5358590</b>								
<b>WG3479166-6 LCS</b>								
Ammonia as N			96.8		%		85-115	26-JAN-21
<b>WG3479166-5 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	26-JAN-21
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch R5358912</b>								
<b>WG3479928-3 DUP</b>		<b>L2550723-1</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-JAN-21
<b>WG3479928-2 LCS</b>								
Nitrite (as N)			103.2		%		90-110	22-JAN-21
<b>WG3479928-1 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JAN-21
<b>WG3479928-4 MS</b>		<b>L2550723-1</b>						
Nitrite (as N)			92.2		%		75-125	22-JAN-21
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch R5358912</b>								
<b>WG3479928-3 DUP</b>		<b>L2550723-1</b>						
Nitrate (as N)		1.92	1.95		mg/L	1.5	20	22-JAN-21
<b>WG3479928-2 LCS</b>								
Nitrate (as N)			102.0		%		90-110	22-JAN-21
<b>WG3479928-1 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	22-JAN-21
<b>WG3479928-4 MS</b>		<b>L2550723-1</b>						
Nitrate (as N)			92.5		%		75-125	22-JAN-21
<b>OH-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2550723

Report Date: 18-OCT-21

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>OH-CL</b>	<b>Water</b>							
Batch	R5356920							
<b>WG3477676-10 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	22-JAN-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5359933							
<b>WG3481061-1 CRM</b>		<b>CL-ORP</b>						
ORP			226		mV		210-230	29-JAN-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5357453							
<b>WG3478145-2 LCS</b>								
Phosphorus (P)-Total			93.5		%		80-120	25-JAN-21
<b>WG3478145-1 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-JAN-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5356920							
<b>WG3477676-11 LCS</b>								
pH			7.00		pH		6.9-7.1	22-JAN-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5356836							
<b>WG3477468-2 LCS</b>								
Orthophosphate-Dissolved (as P)			95.8		%		80-120	22-JAN-21
<b>WG3477468-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-JAN-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5358912							
<b>WG3479928-3 DUP</b>		<b>L2550723-1</b>						
Sulfate (SO4)		93.7	93.5		mg/L	0.2	20	22-JAN-21
<b>WG3479928-2 LCS</b>								
Sulfate (SO4)			100.8		%		90-110	22-JAN-21
<b>WG3479928-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	22-JAN-21
<b>WG3479928-4 MS</b>		<b>L2550723-1</b>						
Sulfate (SO4)			90.8		%		75-125	22-JAN-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2550723

Report Date: 18-OCT-21

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R5358906							
<b>WG3479268-2</b>	<b>LCS</b>							
Total Dissolved Solids			96.1		%		85-115	27-JAN-21
<b>WG3479268-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	27-JAN-21
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R5359806							
<b>WG3480597-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.8		%		75-125	29-JAN-21
<b>WG3480597-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.7		%		75-125	29-JAN-21
<b>WG3480597-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-JAN-21
<b>WG3480597-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-JAN-21
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R5358430							
<b>WG3479267-2</b>	<b>LCS</b>							
Total Suspended Solids			102.8		%		85-115	27-JAN-21
<b>WG3479267-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	27-JAN-21
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R5356702							
<b>WG3477395-2</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	22-JAN-21
<b>WG3477395-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	22-JAN-21

# Quality Control Report

Workorder: L2550723

Report Date: 18-OCT-21

Page 11 of 12

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2550723

Report Date: 18-OCT-21

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	21-JAN-21 13:10	29-JAN-21 16:50	0.25	196	hours	EHTR-FM
pH	1	21-JAN-21 13:10	22-JAN-21 15:00	0.25	26	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2550723 were received on 22-JAN-21 08:25.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **2020-01-21-WG**      TURNAROUND TIME: **NORMAL**      RUSH: **NO**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:	ashlee.fudge@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:	DL-Equis-GHO-Field@teck.com	X	X	X
								Email 7:	jeremy.enns@teck.com	X	X	X
								PO number	739453			

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Filter	Y	Y	N	Y	N	N	N	Filter	L	FL	Field & Lab	N	None	
							Preserv.	H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4	ANALYSIS						
GH_GA-MW-4_WG_2021-01-04_NP	GH_GA-MW-4	WG	N	1/21/2021	13:10	G	7	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH	BOD/COLOUR	EPH/PAH				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>J/A</i>	<i>22/01/2021</i>

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	AF/HS	Mobile #	Date/Time	
Sampler's Signature			JAN 21 2021	

40



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jeremy Enns  
BOX 5000  
Elkford BC V0B1H0

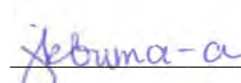
Date Received: 26-JAN-21  
Report Date: 01-FEB-22 11:38 (MT)  
Version: FINAL REV. 3

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2551738  
Project P.O. #: VPO00739453  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: 2020-01-25-WG  
Legal Site Desc:

Comments:

  
\_\_\_\_\_  
Justine Buma-a  
Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2551738-1 GH_MW-GHC-1A_WG_2021-01-04_NP							
Sampled By: AF/JF on 25-JAN-21 @ 14:10							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	370		5.0	mg/L		26-JAN-21	R5358633
Carbonate (CO3)	<5.0		5.0	mg/L		26-JAN-21	R5358633
Dissolved Organic Carbon	3.14		0.50	mg/L		02-FEB-21	R5361674
Hydroxide (OH)	<5.0		5.0	mg/L		26-JAN-21	R5358633
Total Kjeldahl Nitrogen	1.52		0.050	mg/L		29-JAN-21	R5359806
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-JAN-21	R5359283
Total Organic Carbon	3.58		0.50	mg/L		02-FEB-21	R5361674
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-JAN-21	28-JAN-21	R5358917
Dissolved Metals Filtration Location	FIELD					27-JAN-21	R5358666
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358860
Dissolved Mercury Filtration Location	FIELD					27-JAN-21	R5358712
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					27-JAN-21	R5358666
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-JAN-21	28-JAN-21	R5358917
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Barium (Ba)-Dissolved	0.0816		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Boron (B)-Dissolved	0.032		0.010	mg/L	27-JAN-21	28-JAN-21	R5359711
Cadmium (Cd)-Dissolved	0.0228		0.0050	ug/L	27-JAN-21	28-JAN-21	R5358917
Calcium (Ca)-Dissolved	153		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	27-JAN-21	28-JAN-21	R5358917
Copper (Cu)-Dissolved	0.00035		0.00020	mg/L	27-JAN-21	28-JAN-21	R5358917
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JAN-21	28-JAN-21	R5358917
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Lithium (Li)-Dissolved	0.0160		0.0010	mg/L	27-JAN-21	28-JAN-21	R5358917
Magnesium (Mg)-Dissolved	55.3		0.10	mg/L	27-JAN-21	28-JAN-21	R5358917
Manganese (Mn)-Dissolved	0.00015		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Molybdenum (Mo)-Dissolved	0.000718		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Nickel (Ni)-Dissolved	0.00091		0.00050	mg/L	27-JAN-21	28-JAN-21	R5358917
Potassium (K)-Dissolved	1.46		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Selenium (Se)-Dissolved	4.49		0.050	ug/L	27-JAN-21	28-JAN-21	R5358917
Silicon (Si)-Dissolved	4.48		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Sodium (Na)-Dissolved	5.05		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Strontium (Sr)-Dissolved	0.433		0.00020	mg/L	27-JAN-21	28-JAN-21	R5358917
Thallium (Tl)-Dissolved	0.000023		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-JAN-21	28-JAN-21	R5358917
Uranium (U)-Dissolved	0.00289		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-JAN-21	28-JAN-21	R5358917
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	27-JAN-21	28-JAN-21	R5358917
<b>Hardness</b>							
Hardness (as CaCO3)	609		0.50	mg/L		29-JAN-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-JAN-21	R5358917

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2551738-1 GH_MW-GHC-1A_WG_2021-01-04_NP							
Sampled By: AF/JF on 25-JAN-21 @ 14:10							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0835		0.0030	mg/L		28-JAN-21	R5358917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Arsenic (As)-Total	0.00019		0.00010	mg/L		28-JAN-21	R5358917
Barium (Ba)-Total	0.0877		0.00010	mg/L		28-JAN-21	R5358917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-JAN-21	R5358917
Boron (B)-Total	0.036		0.010	mg/L		28-JAN-21	R5358917
Cadmium (Cd)-Total	0.0235		0.0050	ug/L		28-JAN-21	R5358917
Calcium (Ca)-Total	159		0.050	mg/L		28-JAN-21	R5358917
Chromium (Cr)-Total	0.00088		0.00010	mg/L		28-JAN-21	R5358917
Cobalt (Co)-Total	<0.10		0.10	ug/L		28-JAN-21	R5358917
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-JAN-21	R5358917
Iron (Fe)-Total	0.274		0.010	mg/L		28-JAN-21	R5358917
Lead (Pb)-Total	0.000082		0.000050	mg/L		28-JAN-21	R5358917
Lithium (Li)-Total	0.0172		0.0010	mg/L		28-JAN-21	R5358917
Magnesium (Mg)-Total	54.6		0.10	mg/L		28-JAN-21	R5358917
Manganese (Mn)-Total	0.00275		0.00010	mg/L		28-JAN-21	R5358917
Molybdenum (Mo)-Total	0.000789		0.000050	mg/L		28-JAN-21	R5358917
Nickel (Ni)-Total	0.00119		0.00050	mg/L		28-JAN-21	R5358917
Potassium (K)-Total	1.46		0.050	mg/L		28-JAN-21	R5358917
Selenium (Se)-Total	4.26		0.050	ug/L		28-JAN-21	R5358917
Silicon (Si)-Total	5.23		0.10	mg/L		28-JAN-21	R5358917
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-JAN-21	R5358917
Sodium (Na)-Total	4.96		0.050	mg/L		28-JAN-21	R5358917
Strontium (Sr)-Total	0.454		0.00020	mg/L		28-JAN-21	R5358917
Thallium (Tl)-Total	0.000024		0.000010	mg/L		28-JAN-21	R5358917
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-JAN-21	R5358917
Uranium (U)-Total	0.00316		0.000010	mg/L		28-JAN-21	R5358917
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-JAN-21	R5358917
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-JAN-21	R5358917
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	11.2		1.0	mg/L		26-JAN-21	R5358592
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	304		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Total (as CaCO3)	304		1.0	mg/L		26-JAN-21	R5358633
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		26-JAN-21	R5358590
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		26-JAN-21	R5359574
<b>Chloride in Water by IC</b>							
Chloride (Cl)	1.86	DLHC	0.50	mg/L		26-JAN-21	R5359574
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	972		2.0	uS/cm		26-JAN-21	R5358633
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.53	DLHC	0.10	mg/L		26-JAN-21	R5359574
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.1			%		29-JAN-21	
Anion Sum	12.5			meq/L		29-JAN-21	
Cation Sum	12.4			meq/L		29-JAN-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2551738-1 GH_MW-GHC-1A_WG_2021-01-04_NP Sampled By: AF/JF on 25-JAN-21 @ 14:10 Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	99.7		-100	%		29-JAN-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.098	DLHC	0.025	mg/L		26-JAN-21	R5359574
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		26-JAN-21	R5359574
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0042		0.0010	mg/L		26-JAN-21	R5358139
<b>Oxidation redution potential by elect.</b>							
ORP	438		-1000	mV		02-FEB-21	R5360910
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0197		0.0020	mg/L		27-JAN-21	R5358370
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	303	DLHC	1.5	mg/L		26-JAN-21	R5359574
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	742	DLHC	20	mg/L		01-FEB-21	R5360400
<b>Total Suspended Solids</b>							
Total Suspended Solids	10.2		1.0	mg/L		01-FEB-21	R5360405
<b>Turbidity</b>							
Turbidity	6.66		0.10	NTU		26-JAN-21	R5358264
<b>pH</b>							
pH	7.87		0.10	pH		26-JAN-21	R5358633
L2551738-2 GH_MW-GHC-1B_WG_2021-01-04_NP Sampled By: AF/JF on 25-JAN-21 @ 13:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	331		5.0	mg/L		26-JAN-21	R5358633
Carbonate (CO3)	<5.0		5.0	mg/L		26-JAN-21	R5358633
Dissolved Organic Carbon	4.05		0.50	mg/L		02-FEB-21	R5361674
Hydroxide (OH)	<5.0		5.0	mg/L		26-JAN-21	R5358633
Total Kjeldahl Nitrogen	0.223		0.050	mg/L		29-JAN-21	R5359806
Mercury (Hg)-Total	0.00055		0.00050	ug/L		28-JAN-21	R5359283
Total Organic Carbon	4.06		0.50	mg/L		02-FEB-21	R5361674
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-JAN-21	28-JAN-21	R5358917
Dissolved Metals Filtration Location	FIELD					27-JAN-21	R5358666
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358860
Dissolved Mercury Filtration Location	FIELD					27-JAN-21	R5358712
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					27-JAN-21	R5358666
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-JAN-21	28-JAN-21	R5358917
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Arsenic (As)-Dissolved	0.00094		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Barium (Ba)-Dissolved	0.0281		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Boron (B)-Dissolved	0.039		0.010	mg/L	27-JAN-21	28-JAN-21	R5359711
Cadmium (Cd)-Dissolved	0.0246		0.0050	ug/L	27-JAN-21	28-JAN-21	R5358917
Calcium (Ca)-Dissolved	261		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Cobalt (Co)-Dissolved	0.58		0.10	ug/L	27-JAN-21	28-JAN-21	R5358917

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2551738-2 GH_MW-GHC-1B_WG_2021-01-04_NP							
Sampled By: AF/JF on 25-JAN-21 @ 13:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	0.00028		0.00020	mg/L	27-JAN-21	28-JAN-21	R5358917
Iron (Fe)-Dissolved	0.616		0.010	mg/L	27-JAN-21	28-JAN-21	R5358917
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Lithium (Li)-Dissolved	0.0209		0.0010	mg/L	27-JAN-21	28-JAN-21	R5358917
Magnesium (Mg)-Dissolved	61.2		0.10	mg/L	27-JAN-21	28-JAN-21	R5358917
Manganese (Mn)-Dissolved	0.298		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Molybdenum (Mo)-Dissolved	0.000951		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Nickel (Ni)-Dissolved	0.00175		0.00050	mg/L	27-JAN-21	28-JAN-21	R5358917
Potassium (K)-Dissolved	1.99		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	27-JAN-21	28-JAN-21	R5358917
Silicon (Si)-Dissolved	5.95		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Sodium (Na)-Dissolved	4.83		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Strontium (Sr)-Dissolved	0.669		0.00020	mg/L	27-JAN-21	28-JAN-21	R5358917
Thallium (Tl)-Dissolved	0.000013		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-JAN-21	28-JAN-21	R5358917
Uranium (U)-Dissolved	0.00205		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-JAN-21	28-JAN-21	R5358917
Zinc (Zn)-Dissolved	0.0055		0.0010	mg/L	27-JAN-21	28-JAN-21	R5358917
<b>Hardness</b>							
Hardness (as CaCO3)	903		0.50	mg/L		29-JAN-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-JAN-21	R5358917
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.132		0.0030	mg/L		28-JAN-21	R5358917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Arsenic (As)-Total	0.00104		0.00010	mg/L		28-JAN-21	R5358917
Barium (Ba)-Total	0.0303		0.00010	mg/L		28-JAN-21	R5358917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-JAN-21	R5358917
Boron (B)-Total	0.041		0.010	mg/L		28-JAN-21	R5358917
Cadmium (Cd)-Total	0.0284		0.0050	ug/L		28-JAN-21	R5358917
Calcium (Ca)-Total	255		0.050	mg/L		28-JAN-21	R5358917
Chromium (Cr)-Total	0.00117		0.00010	mg/L		28-JAN-21	R5358917
Cobalt (Co)-Total	0.67		0.10	ug/L		28-JAN-21	R5358917
Copper (Cu)-Total	0.00237		0.00050	mg/L		28-JAN-21	R5358917
Iron (Fe)-Total	0.907		0.010	mg/L		28-JAN-21	R5358917
Lead (Pb)-Total	0.000115		0.000050	mg/L		28-JAN-21	R5358917
Lithium (Li)-Total	0.0218		0.0010	mg/L		28-JAN-21	R5358917
Magnesium (Mg)-Total	63.0		0.10	mg/L		28-JAN-21	R5358917
Manganese (Mn)-Total	0.307		0.00010	mg/L		28-JAN-21	R5358917
Molybdenum (Mo)-Total	0.00105		0.000050	mg/L		28-JAN-21	R5358917
Nickel (Ni)-Total	0.00210		0.00050	mg/L		28-JAN-21	R5358917
Potassium (K)-Total	2.04		0.050	mg/L		28-JAN-21	R5358917
Selenium (Se)-Total	0.066		0.050	ug/L		28-JAN-21	R5358917
Silicon (Si)-Total	6.55		0.10	mg/L		28-JAN-21	R5358917
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-JAN-21	R5358917
Sodium (Na)-Total	4.98		0.050	mg/L		28-JAN-21	R5358917
Strontium (Sr)-Total	0.665		0.00020	mg/L		28-JAN-21	R5358917
Thallium (Tl)-Total	0.000018		0.000010	mg/L		28-JAN-21	R5358917
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2551738-2 GH_MW-GHC-1B_WG_2021-01-04_NP Sampled By: AF/JF on 25-JAN-21 @ 13:00 Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-JAN-21	R5358917
Uranium (U)-Total	0.00217		0.000010	mg/L		28-JAN-21	R5358917
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-JAN-21	R5358917
Zinc (Zn)-Total	0.0058		0.0030	mg/L		28-JAN-21	R5358917
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	11.1		1.0	mg/L		26-JAN-21	R5358592
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	271		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Total (as CaCO3)	271		1.0	mg/L		26-JAN-21	R5358633
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0228		0.0050	mg/L		26-JAN-21	R5358590
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		26-JAN-21	R5359574
<b>Chloride in Water by IC</b>							
Chloride (Cl)	10.4	DLHC	0.50	mg/L		26-JAN-21	R5359574
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1360		2.0	uS/cm		26-JAN-21	R5358633
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.18	DLHC	0.10	mg/L		26-JAN-21	R5359574
<b>Ion Balance Calculation</b>							
Ion Balance	98.7		-100	%		29-JAN-21	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.7			%		29-JAN-21	
Anion Sum	18.6			meq/L		29-JAN-21	
Cation Sum	18.4			meq/L		29-JAN-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		26-JAN-21	R5359574
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		26-JAN-21	R5359574
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-JAN-21	R5358139
<b>Oxidation redution potential by elect.</b>							
ORP	418		-1000	mV		02-FEB-21	R5360910
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0049		0.0020	mg/L		27-JAN-21	R5358370
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	618	DLHC	1.5	mg/L		26-JAN-21	R5359574
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1180	DLHC	20	mg/L		01-FEB-21	R5360400
<b>Total Suspended Solids</b>							
Total Suspended Solids	6.8		1.0	mg/L		01-FEB-21	R5360405
<b>Turbidity</b>							
Turbidity	8.06		0.10	NTU		26-JAN-21	R5358264
<b>pH</b>							
pH	7.84		0.10	pH		26-JAN-21	R5358633
L2551738-3 GH_JDW2_WG_2021-01-04_NP Sampled By: AF/JF on 25-JAN-21 @ 14:10 Matrix: WG							
<b>Miscellaneous Parameters</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2551738-3 GH_JDW2_WG_2021-01-04_NP							
Sampled By: AF/JF on 25-JAN-21 @ 14:10							
Matrix: WG							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		26-JAN-21	R5358633
Carbonate (CO3)	<5.0		5.0	mg/L		26-JAN-21	R5358633
Dissolved Organic Carbon	<0.50		0.50	mg/L		02-FEB-21	R5361674
Hydroxide (OH)	<5.0		5.0	mg/L		26-JAN-21	R5358633
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		29-JAN-21	R5359806
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-JAN-21	R5359283
Total Organic Carbon	1.80	RRV	0.50	mg/L		02-FEB-21	R5361674
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-JAN-21	28-JAN-21	R5358917
Dissolved Metals Filtration Location	FIELD					27-JAN-21	R5358666
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358860
Dissolved Mercury Filtration Location	FIELD					27-JAN-21	R5358712
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					27-JAN-21	R5358666
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-JAN-21	28-JAN-21	R5358917
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Boron (B)-Dissolved	<0.010		0.010	mg/L	27-JAN-21	28-JAN-21	R5358917
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	27-JAN-21	28-JAN-21	R5358917
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	27-JAN-21	28-JAN-21	R5358917
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	27-JAN-21	28-JAN-21	R5358917
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JAN-21	28-JAN-21	R5358917
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-JAN-21	28-JAN-21	R5358917
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	27-JAN-21	28-JAN-21	R5358917
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-JAN-21	28-JAN-21	R5358917
Potassium (K)-Dissolved	<0.050		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	27-JAN-21	28-JAN-21	R5358917
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	27-JAN-21	28-JAN-21	R5358917
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-JAN-21	28-JAN-21	R5358917
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-JAN-21	28-JAN-21	R5358917
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-JAN-21	28-JAN-21	R5358917
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		28-JAN-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-JAN-21	R5358917
<b>Total Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2551738-3 GH_JDW2_WG_2021-01-04_NP							
Sampled By: AF/JF on 25-JAN-21 @ 14:10							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-JAN-21	R5358917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Arsenic (As)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Barium (Ba)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-JAN-21	R5358917
Boron (B)-Total	<0.010		0.010	mg/L		28-JAN-21	R5358917
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		28-JAN-21	R5358917
Calcium (Ca)-Total	<0.050		0.050	mg/L		28-JAN-21	R5358917
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Cobalt (Co)-Total	<0.10		0.10	ug/L		28-JAN-21	R5358917
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-JAN-21	R5358917
Iron (Fe)-Total	<0.010		0.010	mg/L		28-JAN-21	R5358917
Lead (Pb)-Total	<0.000050		0.000050	mg/L		28-JAN-21	R5358917
Lithium (Li)-Total	<0.0010		0.0010	mg/L		28-JAN-21	R5358917
Magnesium (Mg)-Total	<0.10		0.10	mg/L		28-JAN-21	R5358917
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		28-JAN-21	R5358917
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		28-JAN-21	R5358917
Potassium (K)-Total	<0.050		0.050	mg/L		28-JAN-21	R5358917
Selenium (Se)-Total	<0.050		0.050	ug/L		28-JAN-21	R5358917
Silicon (Si)-Total	<0.10		0.10	mg/L		28-JAN-21	R5358917
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-JAN-21	R5358917
Sodium (Na)-Total	<0.050		0.050	mg/L		28-JAN-21	R5358917
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		28-JAN-21	R5358917
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		28-JAN-21	R5358917
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-JAN-21	R5358917
Uranium (U)-Total	<0.000010		0.000010	mg/L		28-JAN-21	R5358917
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-JAN-21	R5358917
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-JAN-21	R5358917
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.4		1.0	mg/L		26-JAN-21	R5358592
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		26-JAN-21	R5358633
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		26-JAN-21	R5358590
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		26-JAN-21	R5359574
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.10		0.10	mg/L		26-JAN-21	R5359574
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		26-JAN-21	R5358633
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		26-JAN-21	R5359574
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		29-JAN-21	
Anion Sum	<0.10			meq/L		29-JAN-21	
Cation Sum	<0.10			meq/L		29-JAN-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2551738-3 GH_JDW2_WG_2021-01-04_NP Sampled By: AF/JF on 25-JAN-21 @ 14:10 Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		29-JAN-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		26-JAN-21	R5359574
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		26-JAN-21	R5359574
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-JAN-21	R5358139
<b>Oxidation redution potential by elect.</b>							
ORP	439		-1000	mV		02-FEB-21	R5360910
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		27-JAN-21	R5358370
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		26-JAN-21	R5359574
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		01-FEB-21	R5360400
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		01-FEB-21	R5360405
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		26-JAN-21	R5358264
<b>pH</b>							
pH	5.40		0.10	pH		26-JAN-21	R5358633
L2551738-4 GH_FOX2_WG_2021-01-04_NP Sampled By: AF/JF on 25-JAN-21 @ 14:10 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	375		5.0	mg/L		26-JAN-21	R5358633
Carbonate (CO3)	<5.0		5.0	mg/L		26-JAN-21	R5358633
Dissolved Organic Carbon	3.37		0.50	mg/L		02-FEB-21	R5361674
Hydroxide (OH)	<5.0		5.0	mg/L		26-JAN-21	R5358633
Total Kjeldahl Nitrogen	0.151		0.050	mg/L		29-JAN-21	R5359806
Mercury (Hg)-Total	0.00050		0.00050	ug/L		28-JAN-21	R5359283
Total Organic Carbon	3.29		0.50	mg/L		02-FEB-21	R5361674
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-JAN-21	28-JAN-21	R5358917
Dissolved Metals Filtration Location	FIELD					27-JAN-21	R5358666
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	27-JAN-21	28-JAN-21	R5358860
Dissolved Mercury Filtration Location	FIELD					27-JAN-21	R5358712
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					27-JAN-21	R5358666
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-JAN-21	28-JAN-21	R5358917
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Barium (Ba)-Dissolved	0.0857		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Boron (B)-Dissolved	0.034		0.010	mg/L	27-JAN-21	28-JAN-21	R5359711
Cadmium (Cd)-Dissolved	0.0178		0.0050	ug/L	27-JAN-21	28-JAN-21	R5358917
Calcium (Ca)-Dissolved	157		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	27-JAN-21	28-JAN-21	R5358917

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2551738-4 GH_FOX2_WG_2021-01-04_NP							
Sampled By: AF/JF on 25-JAN-21 @ 14:10							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	0.00024		0.00020	mg/L	27-JAN-21	28-JAN-21	R5358917
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JAN-21	28-JAN-21	R5358917
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Lithium (Li)-Dissolved	0.0165		0.0010	mg/L	27-JAN-21	28-JAN-21	R5358917
Magnesium (Mg)-Dissolved	53.8		0.10	mg/L	27-JAN-21	28-JAN-21	R5358917
Manganese (Mn)-Dissolved	0.00027		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Molybdenum (Mo)-Dissolved	0.000692		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Nickel (Ni)-Dissolved	0.00098		0.00050	mg/L	27-JAN-21	28-JAN-21	R5358917
Potassium (K)-Dissolved	1.47		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Selenium (Se)-Dissolved	4.89		0.050	ug/L	27-JAN-21	28-JAN-21	R5358917
Silicon (Si)-Dissolved	4.54		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Sodium (Na)-Dissolved	4.88		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Strontium (Sr)-Dissolved	0.450		0.00020	mg/L	27-JAN-21	28-JAN-21	R5358917
Thallium (Tl)-Dissolved	0.000018		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-JAN-21	28-JAN-21	R5358917
Uranium (U)-Dissolved	0.00293		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-JAN-21	28-JAN-21	R5358917
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-JAN-21	28-JAN-21	R5358917
<b>Hardness</b>							
Hardness (as CaCO3)	614		0.50	mg/L		29-JAN-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-JAN-21	R5358917
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0922		0.0030	mg/L		28-JAN-21	R5358917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Arsenic (As)-Total	0.00015		0.00010	mg/L		28-JAN-21	R5358917
Barium (Ba)-Total	0.0888		0.00010	mg/L		28-JAN-21	R5358917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-JAN-21	R5358917
Boron (B)-Total	0.033		0.010	mg/L		28-JAN-21	R5358917
Cadmium (Cd)-Total	0.0217		0.0050	ug/L		28-JAN-21	R5358917
Calcium (Ca)-Total	152		0.050	mg/L		28-JAN-21	R5358917
Chromium (Cr)-Total	0.00097		0.00010	mg/L		28-JAN-21	R5358917
Cobalt (Co)-Total	<0.10		0.10	ug/L		28-JAN-21	R5358917
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-JAN-21	R5358917
Iron (Fe)-Total	0.263		0.010	mg/L		28-JAN-21	R5358917
Lead (Pb)-Total	0.000088		0.000050	mg/L		28-JAN-21	R5358917
Lithium (Li)-Total	0.0163		0.0010	mg/L		28-JAN-21	R5358917
Magnesium (Mg)-Total	52.7		0.10	mg/L		28-JAN-21	R5358917
Manganese (Mn)-Total	0.00295		0.00010	mg/L		28-JAN-21	R5358917
Molybdenum (Mo)-Total	0.000785		0.000050	mg/L		28-JAN-21	R5358917
Nickel (Ni)-Total	0.00118		0.00050	mg/L		28-JAN-21	R5358917
Potassium (K)-Total	1.44		0.050	mg/L		28-JAN-21	R5358917
Selenium (Se)-Total	4.13		0.050	ug/L		28-JAN-21	R5358917
Silicon (Si)-Total	4.87		0.10	mg/L		28-JAN-21	R5358917
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-JAN-21	R5358917
Sodium (Na)-Total	4.76		0.050	mg/L		28-JAN-21	R5358917
Strontium (Sr)-Total	0.445		0.00020	mg/L		28-JAN-21	R5358917
Thallium (Tl)-Total	0.000029		0.000010	mg/L		28-JAN-21	R5358917
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2551738-4 GH_FOX2_WG_2021-01-04_NP							
Sampled By: AF/JF on 25-JAN-21 @ 14:10							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-JAN-21	R5358917
Uranium (U)-Total	0.00305		0.000010	mg/L		28-JAN-21	R5358917
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-JAN-21	R5358917
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-JAN-21	R5358917
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	11.9		1.0	mg/L		26-JAN-21	R5358592
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	307		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Total (as CaCO3)	307		1.0	mg/L		26-JAN-21	R5358633
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		26-JAN-21	R5358590
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		26-JAN-21	R5359574
<b>Chloride in Water by IC</b>							
Chloride (Cl)	1.74		0.10	mg/L		26-JAN-21	R5359574
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	970		2.0	uS/cm		26-JAN-21	R5358633
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.518		0.020	mg/L		26-JAN-21	R5359574
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	1.4			%		29-JAN-21	
Anion Sum	12.2			meq/L		29-JAN-21	
Cation Sum	12.5			meq/L		29-JAN-21	
<b>Ion Balance Calculation</b>							
Ion Balance	103		-100	%		29-JAN-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0967		0.0050	mg/L		26-JAN-21	R5359574
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		26-JAN-21	R5359574
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0042		0.0010	mg/L		26-JAN-21	R5358139
<b>Oxidation redution potential by elect.</b>							
ORP	419		-1000	mV		02-FEB-21	R5360910
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0234		0.0020	mg/L		27-JAN-21	R5358370
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	287		0.30	mg/L		26-JAN-21	R5359574
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	725	DLHC	20	mg/L		01-FEB-21	R5360400
<b>Total Suspended Solids</b>							
Total Suspended Solids	38.5		1.0	mg/L		01-FEB-21	R5360405
<b>Turbidity</b>							
Turbidity	3.81		0.10	NTU		26-JAN-21	R5358264
<b>pH</b>							
pH	7.84		0.10	pH		26-JAN-21	R5358633
L2551738-5 GH_RDI2_WG_2021-01-04_NP							
Sampled By: AF/JF on 25-JAN-21 @ 15:00							
Matrix: WG							
<b>Miscellaneous Parameters</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2551738-5 GH_RDI2_WG_2021-01-04_NP							
Sampled By: AF/JF on 25-JAN-21 @ 15:00							
Matrix: WG							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		26-JAN-21	R5358633
Carbonate (CO3)	<5.0		5.0	mg/L		26-JAN-21	R5358633
Dissolved Organic Carbon	<0.50		0.50	mg/L		02-FEB-21	R5361674
Hydroxide (OH)	<5.0		5.0	mg/L		26-JAN-21	R5358633
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		30-JAN-21	R5359806
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-JAN-21	R5359283
Total Organic Carbon	<0.50		0.50	mg/L		02-FEB-21	R5361674
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-JAN-21	28-JAN-21	R5358917
Dissolved Metals Filtration Location	FIELD					27-JAN-21	R5358666
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358860
Dissolved Mercury Filtration Location	FIELD					27-JAN-21	R5358712
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					27-JAN-21	R5358666
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-JAN-21	28-JAN-21	R5358917
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Boron (B)-Dissolved	<0.010		0.010	mg/L	27-JAN-21	28-JAN-21	R5358917
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	27-JAN-21	28-JAN-21	R5358917
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	27-JAN-21	28-JAN-21	R5358917
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	27-JAN-21	28-JAN-21	R5358917
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JAN-21	28-JAN-21	R5358917
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-JAN-21	28-JAN-21	R5358917
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	27-JAN-21	28-JAN-21	R5358917
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-21	28-JAN-21	R5358917
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-JAN-21	28-JAN-21	R5358917
Potassium (K)-Dissolved	<0.050		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	27-JAN-21	28-JAN-21	R5358917
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	27-JAN-21	28-JAN-21	R5358917
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	27-JAN-21	28-JAN-21	R5358917
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-21	28-JAN-21	R5358917
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-JAN-21	28-JAN-21	R5358917
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	27-JAN-21	28-JAN-21	R5358917
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-JAN-21	28-JAN-21	R5358917
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-JAN-21	28-JAN-21	R5358917
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		28-JAN-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-JAN-21	R5358917
<b>Total Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2551738-5 GH_RDI2_WG_2021-01-04_NP							
Sampled By: AF/JF on 25-JAN-21 @ 15:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-JAN-21	R5358917
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Arsenic (As)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Barium (Ba)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-JAN-21	R5358917
Boron (B)-Total	<0.010		0.010	mg/L		28-JAN-21	R5358917
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		28-JAN-21	R5358917
Calcium (Ca)-Total	<0.050		0.050	mg/L		28-JAN-21	R5358917
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Cobalt (Co)-Total	<0.10		0.10	ug/L		28-JAN-21	R5358917
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-JAN-21	R5358917
Iron (Fe)-Total	<0.010		0.010	mg/L		28-JAN-21	R5358917
Lead (Pb)-Total	<0.000050		0.000050	mg/L		28-JAN-21	R5358917
Lithium (Li)-Total	<0.0010		0.0010	mg/L		28-JAN-21	R5358917
Magnesium (Mg)-Total	<0.10		0.10	mg/L		28-JAN-21	R5358917
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		28-JAN-21	R5358917
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		28-JAN-21	R5358917
Potassium (K)-Total	<0.050		0.050	mg/L		28-JAN-21	R5358917
Selenium (Se)-Total	<0.050		0.050	ug/L		28-JAN-21	R5358917
Silicon (Si)-Total	<0.10		0.10	mg/L		28-JAN-21	R5358917
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-JAN-21	R5358917
Sodium (Na)-Total	<0.050		0.050	mg/L		28-JAN-21	R5358917
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		28-JAN-21	R5358917
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		28-JAN-21	R5358917
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-JAN-21	R5358917
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-JAN-21	R5358917
Uranium (U)-Total	<0.000010		0.000010	mg/L		28-JAN-21	R5358917
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-JAN-21	R5358917
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-JAN-21	R5358917
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.5		1.0	mg/L		26-JAN-21	R5358592
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-JAN-21	R5358633
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		26-JAN-21	R5358633
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0476	RRV	0.0050	mg/L		27-JAN-21	R5358590
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		26-JAN-21	R5359574
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.10		0.10	mg/L		26-JAN-21	R5359574
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		26-JAN-21	R5358633
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		26-JAN-21	R5359574
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		05-FEB-21	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		05-FEB-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2551738-5 GH_RDI2_WG_2021-01-04_NP							
Sampled By: AF/JF on 25-JAN-21 @ 15:00							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	<0.10			meq/L		05-FEB-21	
Cation Sum	<0.10			meq/L		05-FEB-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		26-JAN-21	R5359574
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		26-JAN-21	R5359574
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-JAN-21	R5358139
<b>Oxidation redution potential by elect.</b>							
ORP	402		-1000	mV		02-FEB-21	R5360910
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		27-JAN-21	R5358370
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		26-JAN-21	R5359574
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		01-FEB-21	R5360400
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		01-FEB-21	R5360405
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		26-JAN-21	R5358264
<b>pH</b>							
pH	5.37		0.10	pH		26-JAN-21	R5358633

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
<p>This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.</p>			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
<p>This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.</p>			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

2020-01-25-WG

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 1 of 15

Client: TECK COAL LIMITED (GREENHILLS)  
 BOX 5000  
 Elkford BC V0B1H0

Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358592</b>							
<b>WG3479597-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			108.5		%		85-115	26-JAN-21
<b>WG3479597-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	26-JAN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358633</b>							
<b>WG3479637-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.2		%		85-115	26-JAN-21
<b>WG3479637-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-JAN-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358917</b>							
<b>WG3479598-3</b>	<b>DUP</b>	<b>L2551738-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	28-JAN-21
<b>WG3479598-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.2		%		80-120	28-JAN-21
<b>WG3479598-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-JAN-21
<b>WG3479598-4</b>	<b>MS</b>	<b>L2551738-2</b>						
Beryllium (Be)-Dissolved			94.5		%		70-130	28-JAN-21
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358917</b>							
<b>WG3479646-3</b>	<b>DUP</b>	<b>L2551738-1</b>						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	28-JAN-21
<b>WG3479646-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			100.6		%		80-120	28-JAN-21
<b>WG3479646-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	28-JAN-21
<b>WG3479646-4</b>	<b>MS</b>	<b>L2551738-2</b>						
Beryllium (Be)-Total			93.4		%		70-130	28-JAN-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358633</b>							
<b>WG3479637-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	26-JAN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 2 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5359574</b>							
<b>WG3480705-3</b>	<b>DUP</b>	<b>L2551738-3</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	26-JAN-21
<b>WG3480705-2</b>	<b>LCS</b>							
Bromide (Br)			102.3		%		85-115	26-JAN-21
<b>WG3480705-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	26-JAN-21
<b>WG3480705-4</b>	<b>MS</b>	<b>L2551738-3</b>						
Bromide (Br)			101.4		%		75-125	26-JAN-21
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5361674</b>							
<b>WG3483096-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			96.5		%		80-120	01-FEB-21
<b>WG3483096-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-FEB-21
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5361674</b>							
<b>WG3483096-2</b>	<b>LCS</b>							
Total Organic Carbon			104.9		%		80-120	01-FEB-21
<b>WG3483096-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	01-FEB-21
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5359574</b>							
<b>WG3480705-3</b>	<b>DUP</b>	<b>L2551738-3</b>						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	26-JAN-21
<b>WG3480705-2</b>	<b>LCS</b>							
Chloride (Cl)			101.9		%		85-115	26-JAN-21
<b>WG3480705-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	26-JAN-21
<b>WG3480705-4</b>	<b>MS</b>	<b>L2551738-3</b>						
Chloride (Cl)			113.8		%		75-125	26-JAN-21
<b>CO3-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5358633</b>							
<b>WG3479637-13</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	26-JAN-21
<b>EC-L-PCT-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 3 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Batch R5358633</b>								
<b>WG3479637-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			97.8		%		90-110	26-JAN-21
<b>WG3479637-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	26-JAN-21
<b>F-IC-N-CL</b>								
<b>Batch R5359574</b>								
<b>WG3480705-3</b>	<b>DUP</b>	<b>L2551738-3</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	26-JAN-21
<b>WG3480705-2</b>	<b>LCS</b>							
Fluoride (F)			107.7		%		90-110	26-JAN-21
<b>WG3480705-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	26-JAN-21
<b>WG3480705-4</b>	<b>MS</b>	<b>L2551738-3</b>						
Fluoride (F)			120.4		%		75-125	26-JAN-21
<b>HG-D-CVAA-VA</b>								
<b>Batch R5358860</b>								
<b>WG3479720-11</b>	<b>DUP</b>	<b>L2551738-2</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	28-JAN-21
<b>WG3479720-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			106.3		%		80-120	28-JAN-21
<b>WG3479720-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			105.6		%		80-120	28-JAN-21
<b>WG3479720-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	28-JAN-21
<b>WG3479720-9</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	28-JAN-21
<b>WG3479720-12</b>	<b>MS</b>	<b>L2551738-5</b>						
Mercury (Hg)-Dissolved			105.8		%		70-130	28-JAN-21
<b>HG-T-U-CVAF-VA</b>								
<b>Batch R5359283</b>								
<b>WG3480370-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			95.0		%		80-120	28-JAN-21
<b>WG3480370-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	28-JAN-21
<b>WG3480370-3</b>	<b>MS</b>	<b>L2551738-5</b>						
Mercury (Hg)-Total			90.8		%		70-130	28-JAN-21
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 4 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358917</b>							
<b>WG3479598-3</b>	<b>DUP</b>	<b>L2551738-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	28-JAN-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JAN-21
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JAN-21
Barium (Ba)-Dissolved		0.0816	0.0864		mg/L	5.7	20	28-JAN-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-JAN-21
Cadmium (Cd)-Dissolved		0.0000228	0.0000206		mg/L	10	20	28-JAN-21
Calcium (Ca)-Dissolved		153	159		mg/L	4.4	20	28-JAN-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JAN-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JAN-21
Copper (Cu)-Dissolved		0.00035	0.00035		mg/L	0.4	20	28-JAN-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	28-JAN-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-JAN-21
Lithium (Li)-Dissolved		0.0160	0.0162		mg/L	1.4	20	28-JAN-21
Magnesium (Mg)-Dissolved		55.3	53.9		mg/L	2.6	20	28-JAN-21
Manganese (Mn)-Dissolved		0.00015	0.00012	J	mg/L	0.00003	0.0002	28-JAN-21
Molybdenum (Mo)-Dissolved		0.000718	0.000687		mg/L	4.3	20	28-JAN-21
Nickel (Ni)-Dissolved		0.00091	0.00093		mg/L	1.8	20	28-JAN-21
Potassium (K)-Dissolved		1.46	1.45		mg/L	0.1	20	28-JAN-21
Selenium (Se)-Dissolved		0.00449	0.00477		mg/L	6.2	20	28-JAN-21
Silicon (Si)-Dissolved		4.48	4.47		mg/L	0.1	20	28-JAN-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	28-JAN-21
Sodium (Na)-Dissolved		5.05	4.79		mg/L	5.3	20	28-JAN-21
Strontium (Sr)-Dissolved		0.433	0.449		mg/L	3.5	20	28-JAN-21
Thallium (Tl)-Dissolved		0.000023	0.000021		mg/L	7.1	20	28-JAN-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JAN-21
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	28-JAN-21
Uranium (U)-Dissolved		0.00289	0.00295		mg/L	2.0	20	28-JAN-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	28-JAN-21
Zinc (Zn)-Dissolved		0.0022	0.0021		mg/L	4.6	20	28-JAN-21
<b>WG3479598-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.9		%		80-120	28-JAN-21
Antimony (Sb)-Dissolved			105.3		%		80-120	28-JAN-21
Arsenic (As)-Dissolved			104.7		%		80-120	28-JAN-21
Barium (Ba)-Dissolved			107.7		%		80-120	28-JAN-21



## Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 5 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358917</b>							
<b>WG3479598-2</b>	<b>LCS</b>							
Bismuth (Bi)-Dissolved			98.5		%		80-120	28-JAN-21
Boron (B)-Dissolved			90.2		%		80-120	28-JAN-21
Cadmium (Cd)-Dissolved			104.3		%		80-120	28-JAN-21
Calcium (Ca)-Dissolved			108.1		%		80-120	28-JAN-21
Chromium (Cr)-Dissolved			106.3		%		80-120	28-JAN-21
Cobalt (Co)-Dissolved			104.3		%		80-120	28-JAN-21
Copper (Cu)-Dissolved			103.4		%		80-120	28-JAN-21
Iron (Fe)-Dissolved			107.1		%		80-120	28-JAN-21
Lead (Pb)-Dissolved			97.7		%		80-120	28-JAN-21
Lithium (Li)-Dissolved			100.0		%		80-120	28-JAN-21
Magnesium (Mg)-Dissolved			99.6		%		80-120	28-JAN-21
Manganese (Mn)-Dissolved			104.8		%		80-120	28-JAN-21
Molybdenum (Mo)-Dissolved			105.2		%		80-120	28-JAN-21
Nickel (Ni)-Dissolved			101.2		%		80-120	28-JAN-21
Potassium (K)-Dissolved			99.4		%		80-120	28-JAN-21
Selenium (Se)-Dissolved			102.3		%		80-120	28-JAN-21
Silicon (Si)-Dissolved			97.8		%		60-140	28-JAN-21
Silver (Ag)-Dissolved			104.9		%		80-120	28-JAN-21
Sodium (Na)-Dissolved			101.9		%		80-120	28-JAN-21
Strontium (Sr)-Dissolved			105.1		%		80-120	28-JAN-21
Thallium (Tl)-Dissolved			97.6		%		80-120	28-JAN-21
Tin (Sn)-Dissolved			101.6		%		80-120	28-JAN-21
Titanium (Ti)-Dissolved			101.3		%		80-120	28-JAN-21
Uranium (U)-Dissolved			106.6		%		80-120	28-JAN-21
Vanadium (V)-Dissolved			103.1		%		80-120	28-JAN-21
Zinc (Zn)-Dissolved			103.8		%		80-120	28-JAN-21
<b>WG3479598-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-JAN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-JAN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-JAN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-JAN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-JAN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-JAN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-JAN-21



## Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 6 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358917</b>							
<b>WG3479598-1</b>	<b>MB</b>	<b>NP</b>						
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-JAN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-JAN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-JAN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-JAN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-JAN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-JAN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-JAN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-JAN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-JAN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-JAN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-JAN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-JAN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-JAN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-JAN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-JAN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-JAN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-JAN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-JAN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-JAN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-JAN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-JAN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-JAN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-JAN-21
<b>WG3479598-4</b>	<b>MS</b>	<b>L2551738-2</b>						
Aluminum (Al)-Dissolved			99.2		%		70-130	28-JAN-21
Antimony (Sb)-Dissolved			102.3		%		70-130	28-JAN-21
Arsenic (As)-Dissolved			105.9		%		70-130	28-JAN-21
Barium (Ba)-Dissolved			N/A	MS-B	%		-	28-JAN-21
Bismuth (Bi)-Dissolved			84.4		%		70-130	28-JAN-21
Boron (B)-Dissolved			121.1		%		70-130	28-JAN-21
Cadmium (Cd)-Dissolved			103.4		%		70-130	28-JAN-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	28-JAN-21
Chromium (Cr)-Dissolved			104.5		%		70-130	28-JAN-21
Cobalt (Co)-Dissolved			96.9		%		70-130	28-JAN-21



## Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 7 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5358917</b>							
<b>WG3479598-4</b>	<b>MS</b>	<b>L2551738-2</b>						
Copper (Cu)-Dissolved			94.8		%		70-130	28-JAN-21
Iron (Fe)-Dissolved			101.6		%		70-130	28-JAN-21
Lead (Pb)-Dissolved			89.3		%		70-130	28-JAN-21
Lithium (Li)-Dissolved			95.9		%		70-130	28-JAN-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	28-JAN-21
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	28-JAN-21
Molybdenum (Mo)-Dissolved			103.9		%		70-130	28-JAN-21
Nickel (Ni)-Dissolved			94.9		%		70-130	28-JAN-21
Potassium (K)-Dissolved			99.1		%		70-130	28-JAN-21
Selenium (Se)-Dissolved			114.8		%		70-130	28-JAN-21
Silicon (Si)-Dissolved			87.6		%		70-130	28-JAN-21
Silver (Ag)-Dissolved			97.8		%		70-130	28-JAN-21
Sodium (Na)-Dissolved			N/A	MS-B	%		-	28-JAN-21
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	28-JAN-21
Thallium (Tl)-Dissolved			90.9		%		70-130	28-JAN-21
Tin (Sn)-Dissolved			98.8		%		70-130	28-JAN-21
Titanium (Ti)-Dissolved			103.2		%		70-130	28-JAN-21
Uranium (U)-Dissolved			98.7		%		70-130	28-JAN-21
Vanadium (V)-Dissolved			105.8		%		70-130	28-JAN-21
Zinc (Zn)-Dissolved			96.2		%		70-130	28-JAN-21
<b>Batch</b>	<b>R5359711</b>							
<b>WG3479598-3</b>	<b>DUP</b>	<b>L2551738-1</b>						
Boron (B)-Dissolved		0.032	0.030		mg/L	6.7	20	28-JAN-21
<b>MET-T-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5358917</b>							
<b>WG3479646-3</b>	<b>DUP</b>	<b>L2551738-1</b>						
Aluminum (Al)-Total		0.0835	0.0898		mg/L	7.2	20	28-JAN-21
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JAN-21
Arsenic (As)-Total		0.00019	0.00015	J	mg/L	0.00004	0.0002	28-JAN-21
Barium (Ba)-Total		0.0877	0.0872		mg/L	0.6	20	28-JAN-21
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-JAN-21
Boron (B)-Total		0.036	0.038		mg/L	7.0	20	28-JAN-21
Cadmium (Cd)-Total		0.0000235	0.0000295	J	mg/L	0.000006	0.00001	28-JAN-21



## Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 8 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358917</b>							
<b>WG3479646-3</b>	<b>DUP</b>	<b>L2551738-1</b>						
Calcium (Ca)-Total		159	168		mg/L	5.5	20	28-JAN-21
Chromium (Cr)-Total		0.00088	0.00101		mg/L	14	20	28-JAN-21
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JAN-21
Copper (Cu)-Total		<0.00050	0.00050	RPD-NA	mg/L	N/A	20	28-JAN-21
Iron (Fe)-Total		0.274	0.254		mg/L	7.8	20	28-JAN-21
Lead (Pb)-Total		0.000082	0.000074		mg/L	11	20	28-JAN-21
Lithium (Li)-Total		0.0172	0.0180		mg/L	4.8	20	28-JAN-21
Magnesium (Mg)-Total		54.6	53.7		mg/L	1.6	20	28-JAN-21
Manganese (Mn)-Total		0.00275	0.00282		mg/L	2.6	20	28-JAN-21
Molybdenum (Mo)-Total		0.000789	0.000784		mg/L	0.5	20	28-JAN-21
Nickel (Ni)-Total		0.00119	0.00124		mg/L	4.5	20	28-JAN-21
Potassium (K)-Total		1.46	1.47		mg/L	0.8	20	28-JAN-21
Selenium (Se)-Total		0.00426	0.00407		mg/L	4.7	20	28-JAN-21
Silicon (Si)-Total		5.23	5.13		mg/L	2.0	20	28-JAN-21
Silver (Ag)-Total		<0.000010	0.000014	RPD-NA	mg/L	N/A	20	28-JAN-21
Sodium (Na)-Total		4.96	5.04		mg/L	1.6	20	28-JAN-21
Strontium (Sr)-Total		0.454	0.451		mg/L	0.7	20	28-JAN-21
Thallium (Tl)-Total		0.000024	0.000023		mg/L	0.3	20	28-JAN-21
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-JAN-21
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	28-JAN-21
Uranium (U)-Total		0.00316	0.00299		mg/L	5.7	20	28-JAN-21
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	28-JAN-21
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	28-JAN-21
<b>WG3479646-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			102.4		%		80-120	28-JAN-21
Antimony (Sb)-Total			107.4		%		80-120	28-JAN-21
Arsenic (As)-Total			102.5		%		80-120	28-JAN-21
Barium (Ba)-Total			104.1		%		80-120	28-JAN-21
Bismuth (Bi)-Total			101.6		%		80-120	28-JAN-21
Boron (B)-Total			99.2		%		80-120	28-JAN-21
Cadmium (Cd)-Total			103.9		%		80-120	28-JAN-21
Calcium (Ca)-Total			105.2		%		80-120	28-JAN-21
Chromium (Cr)-Total			105.7		%		80-120	28-JAN-21
Cobalt (Co)-Total			102.3		%		80-120	28-JAN-21



## Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 9 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358917</b>							
<b>WG3479646-2</b>	<b>LCS</b>							
Copper (Cu)-Total			101.6		%		80-120	28-JAN-21
Iron (Fe)-Total			107.1		%		80-120	28-JAN-21
Lead (Pb)-Total			101.9		%		80-120	28-JAN-21
Lithium (Li)-Total			102.6		%		80-120	28-JAN-21
Magnesium (Mg)-Total			100.6		%		80-120	28-JAN-21
Manganese (Mn)-Total			102.0		%		80-120	28-JAN-21
Molybdenum (Mo)-Total			108.5		%		80-120	28-JAN-21
Nickel (Ni)-Total			103.8		%		80-120	28-JAN-21
Potassium (K)-Total			102.7		%		80-120	28-JAN-21
Selenium (Se)-Total			103.8		%		80-120	28-JAN-21
Silicon (Si)-Total			102.5		%		80-120	28-JAN-21
Silver (Ag)-Total			106.9		%		80-120	28-JAN-21
Sodium (Na)-Total			104.9		%		80-120	28-JAN-21
Strontium (Sr)-Total			106.8		%		80-120	28-JAN-21
Thallium (Tl)-Total			103.0		%		80-120	28-JAN-21
Tin (Sn)-Total			103.6		%		80-120	28-JAN-21
Titanium (Ti)-Total			99.9		%		80-120	28-JAN-21
Uranium (U)-Total			111.4		%		80-120	28-JAN-21
Vanadium (V)-Total			104.6		%		80-120	28-JAN-21
Zinc (Zn)-Total			100.5		%		80-120	28-JAN-21
<b>WG3479646-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	28-JAN-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	28-JAN-21
Arsenic (As)-Total			<0.00010		mg/L		0.0001	28-JAN-21
Barium (Ba)-Total			<0.00010		mg/L		0.0001	28-JAN-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	28-JAN-21
Boron (B)-Total			<0.010		mg/L		0.01	28-JAN-21
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	28-JAN-21
Calcium (Ca)-Total			<0.050		mg/L		0.05	28-JAN-21
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	28-JAN-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	28-JAN-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	28-JAN-21
Iron (Fe)-Total			<0.010		mg/L		0.01	28-JAN-21
Lead (Pb)-Total			<0.000050		mg/L		0.00005	28-JAN-21





## Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 10 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358917</b>							
<b>WG3479646-1</b>	<b>MB</b>							
Lithium (Li)-Total			<0.0010		mg/L		0.001	28-JAN-21
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	28-JAN-21
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	28-JAN-21
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	28-JAN-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	28-JAN-21
Potassium (K)-Total			<0.050		mg/L		0.05	28-JAN-21
Selenium (Se)-Total			<0.000050		mg/L		0.00005	28-JAN-21
Silicon (Si)-Total			<0.10		mg/L		0.1	28-JAN-21
Silver (Ag)-Total			<0.000010		mg/L		0.00001	28-JAN-21
Sodium (Na)-Total			<0.050		mg/L		0.05	28-JAN-21
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	28-JAN-21
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	28-JAN-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	28-JAN-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	28-JAN-21
Uranium (U)-Total			<0.000010		mg/L		0.00001	28-JAN-21
Vanadium (V)-Total			<0.00050		mg/L		0.0005	28-JAN-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	28-JAN-21
<b>WG3479646-4</b>	<b>MS</b>	<b>L2551738-2</b>						
Aluminum (Al)-Total			91.7		%		70-130	28-JAN-21
Antimony (Sb)-Total			105.5		%		70-130	28-JAN-21
Arsenic (As)-Total			103.2		%		70-130	28-JAN-21
Barium (Ba)-Total			N/A	MS-B	%		-	28-JAN-21
Bismuth (Bi)-Total			96.3		%		70-130	28-JAN-21
Boron (B)-Total			91.4		%		70-130	28-JAN-21
Cadmium (Cd)-Total			103.1		%		70-130	28-JAN-21
Calcium (Ca)-Total			N/A	MS-B	%		-	28-JAN-21
Chromium (Cr)-Total			101.8		%		70-130	28-JAN-21
Cobalt (Co)-Total			96.0		%		70-130	28-JAN-21
Copper (Cu)-Total			87.1		%		70-130	28-JAN-21
Iron (Fe)-Total			98.9		%		70-130	28-JAN-21
Lead (Pb)-Total			92.2		%		70-130	28-JAN-21
Lithium (Li)-Total			100.1		%		70-130	28-JAN-21
Magnesium (Mg)-Total			N/A	MS-B	%		-	28-JAN-21
Manganese (Mn)-Total			N/A	MS-B	%		-	28-JAN-21



## Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 11 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358917</b>							
<b>WG3479646-4</b>	<b>MS</b>	<b>L2551738-2</b>						
Molybdenum (Mo)-Total			108.2		%		70-130	28-JAN-21
Nickel (Ni)-Total			94.3		%		70-130	28-JAN-21
Potassium (K)-Total			98.5		%		70-130	28-JAN-21
Selenium (Se)-Total			112.0		%		70-130	28-JAN-21
Silicon (Si)-Total			91.8		%		70-130	28-JAN-21
Silver (Ag)-Total			101.4		%		70-130	28-JAN-21
Sodium (Na)-Total			N/A	MS-B	%		-	28-JAN-21
Strontium (Sr)-Total			N/A	MS-B	%		-	28-JAN-21
Thallium (Tl)-Total			93.2		%		70-130	28-JAN-21
Tin (Sn)-Total			102.3		%		70-130	28-JAN-21
Titanium (Ti)-Total			99.9		%		70-130	28-JAN-21
Uranium (U)-Total			105.3		%		70-130	28-JAN-21
Vanadium (V)-Total			105.0		%		70-130	28-JAN-21
Zinc (Zn)-Total			94.4		%		70-130	28-JAN-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358590</b>							
<b>WG3479166-26</b>	<b>LCS</b>							
Ammonia as N			98.5		%		85-115	26-JAN-21
<b>WG3479166-25</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	26-JAN-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5359574</b>							
<b>WG3480705-3</b>	<b>DUP</b>	<b>L2551738-3</b>						
Nitrite (as N)			<0.0010	RPD-NA	mg/L	N/A	20	26-JAN-21
<b>WG3480705-2</b>	<b>LCS</b>							
Nitrite (as N)			99.5		%		90-110	26-JAN-21
<b>WG3480705-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	26-JAN-21
<b>WG3480705-4</b>	<b>MS</b>	<b>L2551738-3</b>						
Nitrite (as N)			108.1		%		75-125	26-JAN-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5359574</b>							
<b>WG3480705-3</b>	<b>DUP</b>	<b>L2551738-3</b>						
Nitrate (as N)			<0.0050	RPD-NA	mg/L	N/A	20	26-JAN-21
<b>WG3480705-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 12 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5359574							
<b>WG3480705-2</b>	<b>LCS</b>							
Nitrate (as N)			102.4		%		90-110	26-JAN-21
<b>WG3480705-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	26-JAN-21
<b>WG3480705-4</b>	<b>MS</b>	<b>L2551738-3</b>						
Nitrate (as N)			113.8		%		75-125	26-JAN-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5358633							
<b>WG3479637-13</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	26-JAN-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5360910							
<b>WG3482167-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	02-FEB-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5358370							
<b>WG3479369-5</b>	<b>LCS</b>							
Phosphorus (P)-Total			93.2		%		80-120	27-JAN-21
<b>WG3479369-4</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	27-JAN-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5358633							
<b>WG3479637-14</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	26-JAN-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5358139							
<b>WG3478987-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			97.3		%		80-120	26-JAN-21
<b>WG3478987-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-JAN-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 13 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5359574</b>							
<b>WG3480705-3</b>	<b>DUP</b>	<b>L2551738-3</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	26-JAN-21
<b>WG3480705-2</b>	<b>LCS</b>							
Sulfate (SO4)			105.4		%		90-110	26-JAN-21
<b>WG3480705-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	26-JAN-21
<b>WG3480705-4</b>	<b>MS</b>	<b>L2551738-3</b>						
Sulfate (SO4)			117.5		%		75-125	26-JAN-21
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5360400</b>							
<b>WG3481452-2</b>	<b>LCS</b>							
Total Dissolved Solids			87.3		%		85-115	01-FEB-21
<b>WG3481452-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	01-FEB-21
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5359806</b>							
<b>WG3480597-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.8		%		75-125	29-JAN-21
<b>WG3480597-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.7		%		75-125	29-JAN-21
<b>WG3480597-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-JAN-21
<b>WG3480597-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-JAN-21
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5360405</b>							
<b>WG3481341-4</b>	<b>LCS</b>							
Total Suspended Solids			95.2		%		85-115	01-FEB-21
<b>WG3481341-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	01-FEB-21
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5358264</b>							
<b>WG3479241-11</b>	<b>LCS</b>							
Turbidity			100.5		%		85-115	26-JAN-21
<b>WG3479241-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	26-JAN-21

# Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 14 of 15

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2551738

Report Date: 01-FEB-22

Page 15 of 15

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	25-JAN-21 14:10	02-FEB-21 07:10	0.25	185	hours	EHTR-FM
	2	25-JAN-21 13:00	02-FEB-21 07:10	0.25	186	hours	EHTR-FM
	3	25-JAN-21 14:10	02-FEB-21 07:10	0.25	185	hours	EHTR-FM
	4	25-JAN-21 14:10	02-FEB-21 07:10	0.25	185	hours	EHTR-FM
	5	25-JAN-21 15:00	02-FEB-21 07:10	0.25	184	hours	EHTR-FM
pH							
	1	25-JAN-21 14:10	26-JAN-21 14:00	0.25	24	hours	EHTR-FM
	2	25-JAN-21 13:00	26-JAN-21 14:00	0.25	25	hours	EHTR-FM
	3	25-JAN-21 14:10	26-JAN-21 14:00	0.25	24	hours	EHTR-FM
	4	25-JAN-21 14:10	26-JAN-21 14:00	0.25	24	hours	EHTR-FM
	5	25-JAN-21 15:00	26-JAN-21 14:00	0.25	23	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2551738 were received on 26-JAN-21 08:35.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **2020-01-25-WG**      TURNAROUND TIME: **NORMAL**      RUSH: **NO**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:	ashlee.fudge@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:	DL-Equis-6HO-Field@teck.com	X	X	X
								Email 7:	jeremy.enns@teck.com	X	X	X
								PO number	739453			

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**      Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2551738-COFC

Sample ID	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED								EPH	BOD/COLOUR	EPH/PAH
							ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC				
GH_MW-GHC-1A_WG_2021-01-04_NP	GH_MW-GHC-1A	WG	N	1/25/2021	14:10	G	7	1	1	1	1	1	1	1			
GH_MW-GHC-1B_WG_2021-01-04_NP	GH_MW-GHC-1B	WG	N	1/25/2021	13:00	G	7	1	1	1	1	1	1	1			
GH_JDW2_WG_2021-01-04_NP	GH_JDW2	WG	N	1/25/2021	14:10	G	7	1	1	1	1	1	1	1			
GH_FOX2_WG_2021-01-04_NP	GH_FOX2	WG	N	1/25/2021	14:10	G	7	1	1	1	1	1	1	1			
GH_RD12_WG_2021-01-04_NP	GH_RD12	WG	N	1/21/2021	15:00	G	7	1	1	1	1	1	1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	26/01 8:35

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	AF/JF	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS			
	Sampler's Signature	Date/Time	JAN 25 2021

60



SNC-Lavalin  
ATTN: Leslie Harker  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 03-MAR-21  
Report Date: 12-MAR-21 15:26 (MT)  
Version: FINAL

Client Phone: 250-505-6493

## Certificate of Analysis

Lab Work Order #: L2563393  
Project P.O. #: 666653  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers:  
Legal Site Desc:

Inayat Dhaliwal  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

12-MAR-21 15:26 (MT)

Version: FINAL

Sample ID Description Sampled Date Sampled Time Client ID		L2563393-1 WG 02-MAR-21 11:00 RG_MW_ER1A_W G_2021_03_02_NP	L2563393-2 WG 02-MAR-21 11:11 RG_MW_ER1B_W G_2021_03_02_NP	L2563393-3 WG 02-MAR-21 09:45 RG_MW_ER2A_W G_2021_03_02_NP	L2563393-4 WG 02-MAR-21 09:15 RG_MW_ER2B_W G_2021_03_02_NP	L2563393-5 WG 02-MAR-21 13:30 RG_MW_LCWC1_ WG_2021_03_02_ NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	401	412	407	385	916
	Hardness (as CaCO3) (mg/L)	216	229	226	214	544
	pH (pH)	8.32	8.31	8.31	8.32	7.91
	ORP (mV)	456	440	466	457	414
	Total Suspended Solids (mg/L)	<1.0	<1.0	7.9	<1.0	5.1
	Total Dissolved Solids (mg/L)	231 <sup>DLHC</sup>	247 <sup>DLHC</sup>	247 <sup>DLHC</sup>	245 <sup>DLHC</sup>	675 <sup>DLHC</sup>
	Turbidity (NTU)	0.20	1.39	6.87	0.14	10.2
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	7.6
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	153	156	158	150	218
	Alkalinity, Carbonate (as CaCO3) (mg/L)	6.6	6.4	7.0	7.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	159	162	165	157	218
	Ammonia as N (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	186	190	192	183	265 <sup>DLHC</sup>
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.25
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	0.53	0.64	0.55	0.55	8.95 <sup>DLHC</sup>
	Fluoride (F) (mg/L)	0.097	0.107	0.099	0.106	<0.10 <sup>DLHC</sup>
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	95.6	96.8	96.5	97.9	105
	Nitrate and Nitrite (as N) (mg/L)	1.42	1.58	1.08	1.13	14.9
	Nitrate (as N) (mg/L)	1.42	1.58	1.08	1.13	14.9 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)	<0.0010	<0.0010 <sup>DLM</sup>	0.0034	<0.0010	<0.0050 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)	0.560	3.0	0.924	0.966	0.390
	Total Nitrogen (mg/L)	1.98	4.5	2.01	2.09	15.3
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0015
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	0.0057	<0.0020	0.0087 <sup>DLHC</sup>
	Sulfate (SO4) (mg/L)	62.3	69.4	67.2	57.4	251
	Anion Sum (meq/L)	4.60	4.82	4.78	4.44	10.9
Cation Sum (meq/L)	4.40	4.67	4.62	4.35	11.4	
Cation - Anion Balance (%)	-2.2	-1.6	-1.8	-1.0	2.3	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	1.40
	Total Organic Carbon (mg/L)	<0.50	<0.50	0.63	<0.50	1.55
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	<0.0010	0.0012	<0.0010	0.0012

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2563393-6 WG 02-MAR-21 14:50 RG_MW_ER7A_W G_2021_03_02_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	488			
	Hardness (as CaCO3) (mg/L)	286			
	pH (pH)	8.33			
	ORP (mV)	278			
	Total Suspended Solids (mg/L)	4.6			
	Total Dissolved Solids (mg/L)	285	DLHC		
	Turbidity (NTU)	2.12			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	265			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	9.4			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	274			
	Ammonia as N (mg/L)	0.0656			
	Bicarbonate (HCO3) (mg/L)	323			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	5.6			
	Chloride (Cl) (mg/L)	0.42			
	Fluoride (F) (mg/L)	0.275			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	98.0			
	Nitrate and Nitrite (as N) (mg/L)	0.0136			
	Nitrate (as N) (mg/L)	0.0103			
	Nitrite (as N) (mg/L)	0.0033			
	Total Kjeldahl Nitrogen (mg/L)	0.480			
	Total Nitrogen (mg/L)	0.494			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0043			
	Sulfate (SO4) (mg/L)	26.2			
	Anion Sum (meq/L)	6.05			
	Cation Sum (meq/L)	5.93			
	Cation - Anion Balance (%)	-1.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.96			
	Total Organic Carbon (mg/L)	1.14			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0038			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

12-MAR-21 15:26 (MT)

Version: FINAL

Sample ID Description Sampled Date Sampled Time Client ID	L2563393-1 WG 02-MAR-21 11:00 RG_MW_ER1A_W G_2021_03_02_NP	L2563393-2 WG 02-MAR-21 11:11 RG_MW_ER1B_W G_2021_03_02_NP	L2563393-3 WG 02-MAR-21 09:45 RG_MW_ER2A_W G_2021_03_02_NP	L2563393-4 WG 02-MAR-21 09:15 RG_MW_ER2B_W G_2021_03_02_NP	L2563393-5 WG 02-MAR-21 13:30 RG_MW_LCWC1_ WG_2021_03_02_ NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00014	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00012
	Barium (Ba)-Dissolved (mg/L)	0.0696	0.0739	0.0742	0.0669	0.159
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	0.018
	Cadmium (Cd)-Dissolved (mg/L)	0.0000128	0.0000111	0.0000150	0.0000079	0.0000302
	Calcium (Ca)-Dissolved (mg/L)	57.0	60.5	60.2	57.6	146
	Chromium (Cr)-Dissolved (mg/L)	0.00028	0.00024	0.00016	0.00025	0.00023
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00201	<0.00020	0.00077	0.00143	0.00117
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	0.020	<0.010	0.015
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0050	0.0056	0.0044	0.0042	0.0274
	Magnesium (Mg)-Dissolved (mg/L)	17.9	19.1	18.4	17.1	43.7
	Manganese (Mn)-Dissolved (mg/L)	0.00022	<0.00010	0.00091	<0.00010	0.00176
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000962	0.000978	0.00228	0.000960	0.00109
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00126
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.45	0.46	0.51	0.44	1.47
	Selenium (Se)-Dissolved (mg/L)	0.00686	0.00848	0.00666	0.00621	0.0543
	Silicon (Si)-Dissolved (mg/L)	1.83	1.92	1.86	1.87	4.70
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.62	1.70	2.03	1.39	11.5
	Strontium (Sr)-Dissolved (mg/L)	0.231	0.246	0.240	0.228	0.475
	Sulfur (S)-Dissolved (mg/L)	24.3	27.7	26.2	22.8	95.0
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	0.000012
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000933	0.00102	0.00111	0.000953	0.00134
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0030	<0.0010	0.0022	0.0017	0.0047
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2563393-6 WG 02-MAR-21 14:50 RG_MW_ER7A_W G_2021_03_02_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	0.00043			
	Arsenic (As)-Dissolved (mg/L)	0.00062			
	Barium (Ba)-Dissolved (mg/L)	0.0438			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.028			
	Cadmium (Cd)-Dissolved (mg/L)	0.000213			
	Calcium (Ca)-Dissolved (mg/L)	58.6			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	0.00076			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0061			
	Magnesium (Mg)-Dissolved (mg/L)	33.8			
	Manganese (Mn)-Dissolved (mg/L)	0.0929			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00402			
	Nickel (Ni)-Dissolved (mg/L)	0.00104			
	Phosphorus (P)-Dissolved (mg/L)	<0.050			
	Potassium (K)-Dissolved (mg/L)	2.51			
	Selenium (Se)-Dissolved (mg/L)	0.000266			
	Silicon (Si)-Dissolved (mg/L)	6.04			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	3.55			
	Strontium (Sr)-Dissolved (mg/L)	0.245			
	Sulfur (S)-Dissolved (mg/L)	9.50			
	Thallium (Tl)-Dissolved (mg/L)	0.000026			
	Tin (Sn)-Dissolved (mg/L)	0.00063			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.00126			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0067			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2563393-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2563393-1, -2, -3, -4, -5, -6
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2563393-1, -2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2563393-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2563393-1, -2, -3, -4, -5, -6

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2563393

Report Date: 12-MAR-21

Page 1 of 9

Client: SNC-Lavalin  
 # 3 - 520 Lake Street  
 Nelson BC V1L 4C6  
 Contact: Leslie Harker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5399839</b>							
<b>WG3500757-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			111.4		%		85-115	10-MAR-21
<b>WG3500757-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			113.2		%		85-115	10-MAR-21
<b>WG3500757-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	10-MAR-21
<b>WG3500757-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	10-MAR-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5399826</b>							
<b>WG3500724-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.4		%		85-115	10-MAR-21
<b>WG3500724-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	10-MAR-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5397557</b>							
<b>WG3498124-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			89.6		%		80-120	06-MAR-21
<b>WG3498124-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-MAR-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5399826</b>							
<b>WG3500724-10</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	10-MAR-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5397236</b>							
<b>WG3497765-2</b>	<b>LCS</b>							
Bromide (Br)			94.8		%		85-115	04-MAR-21
<b>WG3497765-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	04-MAR-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5398703</b>							
<b>WG3499490-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.3		%		80-120	09-MAR-21
<b>WG3499490-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-MAR-21





## Quality Control Report

Workorder: L2563393

Report Date: 12-MAR-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						
Batch	R5399248							
<b>WG3500042-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			107.4		%		80-120	09-MAR-21
<b>WG3500042-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-MAR-21
<b>C-TOT-ORG-LOW-CL</b>		<b>Water</b>						
Batch	R5398703							
<b>WG3499490-2</b>	<b>LCS</b>							
Total Organic Carbon			101.9		%		80-120	09-MAR-21
<b>WG3499490-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	09-MAR-21
Batch	R5399248							
<b>WG3500042-6</b>	<b>LCS</b>							
Total Organic Carbon			106.3		%		80-120	09-MAR-21
<b>WG3500042-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	09-MAR-21
<b>CL-L-IC-N-CL</b>		<b>Water</b>						
Batch	R5397236							
<b>WG3497765-2</b>	<b>LCS</b>							
Chloride (Cl)			101.2		%		85-115	04-MAR-21
<b>WG3497765-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	04-MAR-21
<b>CO3-CL</b>		<b>Water</b>						
Batch	R5399826							
<b>WG3500724-10</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	10-MAR-21
<b>EC-L-PCT-CL</b>		<b>Water</b>						
Batch	R5399826							
<b>WG3500724-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			97.3		%		90-110	10-MAR-21
<b>WG3500724-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	10-MAR-21
<b>F-IC-N-CL</b>		<b>Water</b>						
Batch	R5397236							
<b>WG3497765-2</b>	<b>LCS</b>							
Fluoride (F)			94.4		%		90-110	04-MAR-21
<b>WG3497765-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2563393

Report Date: 12-MAR-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5397236</b>							
<b>WG3497765-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	04-MAR-21
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5398481</b>							
<b>WG3499044-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			89.7		%		80-120	09-MAR-21
<b>WG3499044-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-MAR-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5397557</b>							
<b>WG3498124-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			91.9		%		80-120	06-MAR-21
Antimony (Sb)-Dissolved			102.1		%		80-120	06-MAR-21
Arsenic (As)-Dissolved			92.6		%		80-120	06-MAR-21
Barium (Ba)-Dissolved			92.6		%		80-120	06-MAR-21
Bismuth (Bi)-Dissolved			92.4		%		80-120	06-MAR-21
Boron (B)-Dissolved			86.5		%		80-120	06-MAR-21
Cadmium (Cd)-Dissolved			94.2		%		80-120	06-MAR-21
Calcium (Ca)-Dissolved			86.7		%		80-120	06-MAR-21
Chromium (Cr)-Dissolved			90.2		%		80-120	06-MAR-21
Cobalt (Co)-Dissolved			90.8		%		80-120	06-MAR-21
Copper (Cu)-Dissolved			89.9		%		80-120	06-MAR-21
Iron (Fe)-Dissolved			93.3		%		80-120	06-MAR-21
Lead (Pb)-Dissolved			92.3		%		80-120	06-MAR-21
Lithium (Li)-Dissolved			88.3		%		80-120	06-MAR-21
Magnesium (Mg)-Dissolved			92.3		%		80-120	06-MAR-21
Manganese (Mn)-Dissolved			91.3		%		80-120	06-MAR-21
Molybdenum (Mo)-Dissolved			90.3		%		80-120	06-MAR-21
Nickel (Ni)-Dissolved			89.0		%		80-120	06-MAR-21
Phosphorus (P)-Dissolved			101.7		%		70-130	06-MAR-21
Potassium (K)-Dissolved			92.8		%		80-120	06-MAR-21
Selenium (Se)-Dissolved			94.4		%		80-120	06-MAR-21
Silicon (Si)-Dissolved			93.7		%		60-140	06-MAR-21
Silver (Ag)-Dissolved			98.5		%		80-120	06-MAR-21
Sodium (Na)-Dissolved			93.1		%		80-120	06-MAR-21



## Quality Control Report

Workorder: L2563393

Report Date: 12-MAR-21

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5397557</b>							
<b>WG3498124-6</b>	<b>LCS</b>	<b>TMRM</b>						
Strontium (Sr)-Dissolved			93.2		%		80-120	06-MAR-21
Sulfur (S)-Dissolved			101.9		%		80-120	06-MAR-21
Thallium (Tl)-Dissolved			91.7		%		80-120	06-MAR-21
Tin (Sn)-Dissolved			94.4		%		80-120	06-MAR-21
Titanium (Ti)-Dissolved			91.3		%		80-120	06-MAR-21
Uranium (U)-Dissolved			91.0		%		80-120	06-MAR-21
Vanadium (V)-Dissolved			91.5		%		80-120	06-MAR-21
Zinc (Zn)-Dissolved			88.3		%		80-120	06-MAR-21
Zirconium (Zr)-Dissolved			91.0		%		80-120	06-MAR-21
<b>WG3498124-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-MAR-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-MAR-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-MAR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-MAR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-MAR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-MAR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-MAR-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	06-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-MAR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-MAR-21



## Quality Control Report

Workorder: L2563393

Report Date: 12-MAR-21

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5397557</b>							
<b>WG3498124-5</b>	<b>MB</b>							
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	06-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-MAR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-MAR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-MAR-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	06-MAR-21
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5398393</b>							
<b>WG3498852-19</b>	<b>DUP</b>	<b>L2563393-6</b>						
Ammonia as N		0.0656	0.0678		mg/L	3.3	20	08-MAR-21
<b>WG3498852-18</b>	<b>LCS</b>							
Ammonia as N			101.2		%		85-115	08-MAR-21
<b>WG3498852-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	08-MAR-21
<b>WG3498852-20</b>	<b>MS</b>	<b>L2563393-6</b>						
Ammonia as N			108.7		%		75-125	08-MAR-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5397236</b>							
<b>WG3497765-2</b>	<b>LCS</b>							
Nitrite (as N)			100.6		%		90-110	04-MAR-21
<b>WG3497765-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	04-MAR-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5397236</b>							
<b>WG3497765-2</b>	<b>LCS</b>							
Nitrate (as N)			103.0		%		90-110	04-MAR-21
<b>WG3497765-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	04-MAR-21
<b>OH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5399826</b>							
<b>WG3500724-10</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	10-MAR-21



## Quality Control Report

Workorder: L2563393

Report Date: 12-MAR-21

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch R5398171								
WG3498574-22 LCS								
Phosphorus (P)-Total			92.6		%		80-120	08-MAR-21
WG3498574-21 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-MAR-21
<b>PH-CL</b>								
<b>Water</b>								
Batch R5399826								
WG3500724-11 LCS								
pH			6.98		pH		6.9-7.1	10-MAR-21
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch R5397167								
WG3497229-3 DUP								
Orthophosphate-Dissolved (as P)		L2563393-3	<0.0010	RPD-NA	mg/L	N/A	20	04-MAR-21
WG3497229-2 LCS								
Orthophosphate-Dissolved (as P)			94.3		%		80-120	04-MAR-21
WG3497229-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-MAR-21
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch R5397236								
WG3497765-2 LCS								
Sulfate (SO4)			102.2		%		90-110	04-MAR-21
WG3497765-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	04-MAR-21
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch R5399163								
WG3499328-9 DUP								
Total Dissolved Solids		L2563393-5	675		mg/L	0.1	20	09-MAR-21
WG3499328-8 LCS								
Total Dissolved Solids			94.9		%		85-115	09-MAR-21
WG3499328-7 MB								
Total Dissolved Solids			<10		mg/L		10	09-MAR-21
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch R5398788								
WG3499294-2 LCS								
Total Kjeldahl Nitrogen			101.0		%		75-125	09-MAR-21
WG3499294-6 LCS								
Total Kjeldahl Nitrogen			100.0		%		75-125	09-MAR-21



## Quality Control Report

Workorder: L2563393

Report Date: 12-MAR-21

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5398788</b>							
<b>WG3499294-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			102.0		%		75-125	09-MAR-21
<b>WG3499294-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-MAR-21
<b>WG3499294-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-MAR-21
<b>WG3499294-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-MAR-21
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5398729</b>							
<b>WG3499327-6</b>	<b>LCS</b>							
Total Suspended Solids			91.7		%		85-115	09-MAR-21
<b>WG3499327-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	09-MAR-21
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5396990</b>							
<b>WG3497259-18</b>	<b>DUP</b>	<b>L2563393-3</b>						
Turbidity		6.87	6.56		NTU	4.6	15	04-MAR-21
<b>WG3497259-17</b>	<b>LCS</b>							
Turbidity			101.5		%		85-115	04-MAR-21
<b>WG3497259-16</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	04-MAR-21

# Quality Control Report

Workorder: L2563393

Report Date: 12-MAR-21

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2563393

Report Date: 12-MAR-21

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	02-MAR-21 11:00	10-MAR-21 07:00	0.25	188	hours	EHTR-FM
	2	02-MAR-21 11:11	10-MAR-21 07:00	0.25	188	hours	EHTR-FM
	3	02-MAR-21 09:45	10-MAR-21 07:00	0.25	189	hours	EHTR-FM
	4	02-MAR-21 09:15	10-MAR-21 07:00	0.25	190	hours	EHTR-FM
	5	02-MAR-21 13:30	10-MAR-21 07:00	0.25	186	hours	EHTR-FM
	6	02-MAR-21 14:50	10-MAR-21 07:00	0.25	184	hours	EHTR-FM
pH							
	1	02-MAR-21 11:00	10-MAR-21 13:00	0.25	194	hours	EHTR-FM
	2	02-MAR-21 11:11	10-MAR-21 13:00	0.25	194	hours	EHTR-FM
	3	02-MAR-21 09:45	10-MAR-21 13:00	0.25	195	hours	EHTR-FM
	4	02-MAR-21 09:15	10-MAR-21 13:00	0.25	196	hours	EHTR-FM
	5	02-MAR-21 13:30	10-MAR-21 13:00	0.25	192	hours	EHTR-FM
	6	02-MAR-21 14:50	10-MAR-21 13:00	0.25	190	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2563393 were received on 03-MAR-21 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.







SNC-Lavalin  
ATTN: Leslie Harker  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 04-MAR-21  
Report Date: 15-MAR-21 13:05 (MT)  
Version: FINAL

Client Phone: 250-505-6493

## Certificate of Analysis

Lab Work Order #: L2563672  
Project P.O. #: 666653  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers:  
Legal Site Desc:

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

15-MAR-21 13:05 (MT)

Version: FINAL

Sample ID Description Sampled Date Sampled Time Client ID		L2563672-1 WG 03-MAR-21 10:30 RG_MW_LC3A_W G_2021_03_03_NP	L2563672-2 WG 03-MAR-21 11:15 RG_MW_LC3B_W G_2021_03_03_NP	L2563672-3 WG 03-MAR-21 13:00 RG_MW_WC2A_ WG_2021_03_03_ NP	L2563672-4 WG 03-MAR-21 12:50 RG_MW_WC2B_ WG_2021_03_03_ NP	L2563672-5 WG 03-MAR-21 12:50 RG_MW_MC10A_ WG_2021_03_03_ NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	761	620	834	1070	1080
	Hardness (as CaCO3) (mg/L)	458	361	510	656	669
	pH (pH)	8.25	8.22	7.99	8.24	8.24
	ORP (mV)	365	335	457	357	285
	Total Suspended Solids (mg/L)	11.2	427 <sup>DLHC</sup>	22.8	<1.0	1.9
	Total Dissolved Solids (mg/L)	517 <sup>DLHC</sup>	471 <sup>DLHC</sup>	564 <sup>DLHC</sup>	789 <sup>DLHC</sup>	840 <sup>DLHC</sup>
	Turbidity (NTU)	2.31	500	1.60	0.70	0.70
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	2.8	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	222	228	190	223	220
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	222	228	190	223	220
	Ammonia as N (mg/L)	<0.0050	0.0085	<0.0050	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	271	278	232	272	268
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	3.40	1.83	2.61 <sup>DLHC</sup>	3.00 <sup>DLHC</sup>	2.96 <sup>DLHC</sup>
	Fluoride (F) (mg/L)	0.179	0.230	0.12 <sup>DLHC</sup>	0.14 <sup>DLHC</sup>	0.14 <sup>DLHC</sup>
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	101	94.3	103	98.0	99.7
	Nitrate and Nitrite (as N) (mg/L)	5.55	3.59	9.86	14.1	14.3
	Nitrate (as N) (mg/L)	5.55	3.59	9.86 <sup>DLHC</sup>	14.1 <sup>DLHC</sup>	14.3 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)	0.0027	0.0015	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)	0.235	0.608	0.453	0.586	0.551
	Total Nitrogen (mg/L)	5.78	4.20	10.3	14.7	14.9
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	0.0014	0.0012	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0235	0.541 <sup>DLHC</sup>	0.0253	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	220	154	277 <sup>DLHC</sup>	402 <sup>DLHC</sup>	405 <sup>DLHC</sup>
	Anion Sum (meq/L)	9.52	8.07	10.3	13.9	13.9
	Cation Sum (meq/L)	9.62	7.61	10.7	13.6	13.9
Cation - Anion Balance (%)	0.5	-2.9	1.7	-1.0	-0.1	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.50	0.93	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	1.20	<5.0 <sup>DLM</sup>	<0.50	0.60	0.60
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0084	<0.0010	<0.0010	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2563672-6 WG 03-MAR-21 13:15 RG_MW_MC10B_ WG_2021_03_03_ NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50			
	pH (pH)	5.71			
	ORP (mV)	442			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	<10			
	Turbidity (NTU)	<0.10			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	<5.0			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	<0.10			
	Fluoride (F) (mg/L)	<0.020			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	0.0			
	Nitrate and Nitrite (as N) (mg/L)	<0.0051			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Total Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	<0.30			
	Anion Sum (meq/L)	<0.10			
	Cation Sum (meq/L)	<0.10			
	Cation - Anion Balance (%)	0.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0010			

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2563672-1 WG 03-MAR-21 10:30 RG_MW_LC3A_W G_2021_03_03_NP	L2563672-2 WG 03-MAR-21 11:15 RG_MW_LC3B_W G_2021_03_03_NP	L2563672-3 WG 03-MAR-21 13:00 RG_MW_WC2A_ WG_2021_03_03_ NP	L2563672-4 WG 03-MAR-21 12:50 RG_MW_WC2B_ WG_2021_03_03_ NP	L2563672-5 WG 03-MAR-21 12:50 RG_MW_MC10A_ WG_2021_03_03_ NP
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	0.00055	0.00153	0.00010	0.00056	0.00059
	Arsenic (As)-Dissolved (mg/L)	0.00014	0.00014	0.00016	0.00015	0.00013
	Barium (Ba)-Dissolved (mg/L)	0.0811	0.0541	0.0561	0.0842	0.0848
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.018	0.016	0.013	0.015	0.016
	Cadmium (Cd)-Dissolved (mg/L)	0.0000286	0.0000272	0.0000254	0.0000563	0.0000540
	Calcium (Ca)-Dissolved (mg/L)	97.3	70.8	124	134	139
	Chromium (Cr)-Dissolved (mg/L)	0.00020	0.00023	0.00015	0.00017	0.00020
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00072	0.00041	<0.00020	0.00022	0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0755	0.0716	0.0375	0.0779	0.0803
	Magnesium (Mg)-Dissolved (mg/L)	52.1	44.9	48.8	78.0	78.1
	Manganese (Mn)-Dissolved (mg/L)	0.00011	0.00066	0.00139	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00505	0.00859	0.00109	0.00297	0.00308
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00069	0.00067	0.00568	0.00561
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	2.27	3.01	1.36	2.48	2.49
	Selenium (Se)-Dissolved (mg/L)	0.0217	0.0146	0.0365	0.0529	0.0507
	Silicon (Si)-Dissolved (mg/L)	2.83	2.34	2.92	2.94	2.93
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	9.76	7.12	10.8	10.9	10.7
	Strontium (Sr)-Dissolved (mg/L)	0.303	0.243	0.360	0.391	0.413
	Sulfur (S)-Dissolved (mg/L)	78.5	54.9	97.0	142	141
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000018	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00013	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.00345	0.00324	0.00233	0.00443	0.00463
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0016	0.0011	<0.0010	0.0015	0.0015
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

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	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2563672-6 WG 03-MAR-21 13:15 RG_MW_MC10B_ WG_2021_03_03_ NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	<0.00010			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050			
	Calcium (Ca)-Dissolved (mg/L)	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	0.0097 <sup>RRV</sup>			
	Manganese (Mn)-Dissolved (mg/L)	0.00011 <sup>RRV</sup>			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Phosphorus (P)-Dissolved (mg/L)	<0.050			
	Potassium (K)-Dissolved (mg/L)	<0.10			
	Selenium (Se)-Dissolved (mg/L)	<0.000050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			
	Sulfur (S)-Dissolved (mg/L)	<0.50			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).		
RRV	Reported Result Verified By Repeat Analysis		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

## Reference Information

<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			



## Reference Information

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2563672

Report Date: 15-MAR-21

Page 1 of 12

Client: SNC-Lavalin  
 # 3 - 520 Lake Street  
 Nelson BC V1L 4C6  
 Contact: Leslie Harker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5400355</b>							
<b>WG3501363-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.4		%		85-115	11-MAR-21
<b>WG3501363-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	11-MAR-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5400839</b>							
<b>WG3501867-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.9		%		85-115	12-MAR-21
<b>WG3501867-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.6		%		85-115	12-MAR-21
<b>WG3501867-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-MAR-21
<b>WG3501867-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-MAR-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5398105</b>							
<b>WG3498891-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			96.0		%		80-120	08-MAR-21
<b>WG3498891-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			99.5		%		80-120	08-MAR-21
<b>WG3498891-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-MAR-21
<b>WG3498891-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-MAR-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5400839</b>							
<b>WG3501867-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	12-MAR-21
<b>WG3501867-4</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	12-MAR-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5400002</b>							
<b>WG3500945-3</b>	<b>DUP</b>	<b>L2563672-6</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	05-MAR-21
<b>WG3500945-2</b>	<b>LCS</b>							
Bromide (Br)			106.8		%		85-115	05-MAR-21
<b>WG3500945-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2563672

Report Date: 15-MAR-21

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
Batch R5400002								
WG3500945-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	05-MAR-21
WG3500945-4	MS	L2563672-6						
Bromide (Br)			117.4		%		75-125	05-MAR-21
<b>C-DIS-ORG-LOW-CL</b>								
Batch R5399209								
WG3500031-2	LCS							
Dissolved Organic Carbon			102.6		%		80-120	09-MAR-21
WG3500031-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-MAR-21
<b>C-TOT-ORG-LOW-CL</b>								
Batch R5399209								
WG3500031-2	LCS							
Total Organic Carbon			105.0		%		80-120	09-MAR-21
WG3500031-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	09-MAR-21
Batch R5400661								
WG3501723-10	LCS							
Total Organic Carbon			110.7		%		80-120	12-MAR-21
WG3501723-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	12-MAR-21
<b>CL-L-IC-N-CL</b>								
Batch R5400002								
WG3500945-3	DUP	L2563672-6						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	05-MAR-21
WG3500945-2	LCS							
Chloride (Cl)			101.1		%		85-115	05-MAR-21
WG3500945-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	05-MAR-21
WG3500945-4	MS	L2563672-6						
Chloride (Cl)			110.4		%		75-125	05-MAR-21
<b>CO3-CL</b>								
Batch R5400839								
WG3501867-1	MB							
Carbonate (CO3)			<5.0		mg/L		5	12-MAR-21
WG3501867-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	12-MAR-21



## Quality Control Report

Workorder: L2563672

Report Date: 15-MAR-21

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5400839</b>							
<b>WG3501867-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.5		%		90-110	12-MAR-21
<b>WG3501867-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			96.5		%		90-110	12-MAR-21
<b>WG3501867-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	12-MAR-21
<b>WG3501867-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	12-MAR-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5400002</b>							
<b>WG3500945-3</b>	<b>DUP</b>	<b>L2563672-6</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	05-MAR-21
<b>WG3500945-2</b>	<b>LCS</b>							
Fluoride (F)			103.1		%		90-110	05-MAR-21
<b>WG3500945-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	05-MAR-21
<b>WG3500945-4</b>	<b>MS</b>	<b>L2563672-6</b>						
Fluoride (F)			108.9		%		75-125	05-MAR-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5399290</b>							
<b>WG3499802-3</b>	<b>DUP</b>	<b>L2563672-6</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	10-MAR-21
<b>WG3499802-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			88.4		%		80-120	10-MAR-21
<b>WG3499802-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	10-MAR-21
<b>WG3499802-4</b>	<b>MS</b>	<b>L2563672-6</b>						
Mercury (Hg)-Dissolved			89.2		%		70-130	10-MAR-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5398105</b>							
<b>WG3498891-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			98.1		%		80-120	08-MAR-21
Antimony (Sb)-Dissolved			103.8		%		80-120	08-MAR-21
Arsenic (As)-Dissolved			102.2		%		80-120	08-MAR-21
Barium (Ba)-Dissolved			101.2		%		80-120	08-MAR-21
Bismuth (Bi)-Dissolved			95.8		%		80-120	08-MAR-21
Boron (B)-Dissolved			99.8		%		80-120	08-MAR-21



## Quality Control Report

Workorder: L2563672

Report Date: 15-MAR-21

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5398105</b>							
<b>WG3498891-2</b>	<b>LCS</b>	<b>TMRM</b>						
Cadmium (Cd)-Dissolved			96.6		%		80-120	08-MAR-21
Calcium (Ca)-Dissolved			95.6		%		80-120	08-MAR-21
Chromium (Cr)-Dissolved			100.5		%		80-120	08-MAR-21
Cobalt (Co)-Dissolved			96.2		%		80-120	08-MAR-21
Copper (Cu)-Dissolved			95.5		%		80-120	08-MAR-21
Iron (Fe)-Dissolved			94.9		%		80-120	08-MAR-21
Lead (Pb)-Dissolved			98.5		%		80-120	08-MAR-21
Lithium (Li)-Dissolved			95.6		%		80-120	08-MAR-21
Magnesium (Mg)-Dissolved			100.9		%		80-120	08-MAR-21
Manganese (Mn)-Dissolved			98.5		%		80-120	08-MAR-21
Molybdenum (Mo)-Dissolved			101.6		%		80-120	08-MAR-21
Nickel (Ni)-Dissolved			97.2		%		80-120	08-MAR-21
Phosphorus (P)-Dissolved			107.0		%		70-130	08-MAR-21
Potassium (K)-Dissolved			99.8		%		80-120	08-MAR-21
Selenium (Se)-Dissolved			103.4		%		80-120	08-MAR-21
Silicon (Si)-Dissolved			105.8		%		60-140	08-MAR-21
Silver (Ag)-Dissolved			96.4		%		80-120	08-MAR-21
Sodium (Na)-Dissolved			101.2		%		80-120	08-MAR-21
Strontium (Sr)-Dissolved			100.4		%		80-120	08-MAR-21
Sulfur (S)-Dissolved			100.2		%		80-120	08-MAR-21
Thallium (Tl)-Dissolved			96.9		%		80-120	08-MAR-21
Tin (Sn)-Dissolved			102.1		%		80-120	08-MAR-21
Titanium (Ti)-Dissolved			95.6		%		80-120	08-MAR-21
Uranium (U)-Dissolved			100.2		%		80-120	08-MAR-21
Vanadium (V)-Dissolved			95.5		%		80-120	08-MAR-21
Zinc (Zn)-Dissolved			98.6		%		80-120	08-MAR-21
Zirconium (Zr)-Dissolved			99.8		%		80-120	08-MAR-21
<b>WG3498891-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			102.5		%		80-120	08-MAR-21
Antimony (Sb)-Dissolved			111.6		%		80-120	08-MAR-21
Arsenic (As)-Dissolved			108.7		%		80-120	08-MAR-21
Barium (Ba)-Dissolved			106.5		%		80-120	08-MAR-21
Bismuth (Bi)-Dissolved			99.4		%		80-120	08-MAR-21
Boron (B)-Dissolved			105.6		%		80-120	08-MAR-21



## Quality Control Report

Workorder: L2563672

Report Date: 15-MAR-21

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5398105</b>							
<b>WG3498891-6</b>	<b>LCS</b>	<b>TMRM</b>						
Cadmium (Cd)-Dissolved			102.6		%		80-120	08-MAR-21
Calcium (Ca)-Dissolved			99.5		%		80-120	08-MAR-21
Chromium (Cr)-Dissolved			102.9		%		80-120	08-MAR-21
Cobalt (Co)-Dissolved			101.5		%		80-120	08-MAR-21
Copper (Cu)-Dissolved			101.8		%		80-120	08-MAR-21
Iron (Fe)-Dissolved			99.1		%		80-120	08-MAR-21
Lead (Pb)-Dissolved			102.2		%		80-120	08-MAR-21
Lithium (Li)-Dissolved			104.3		%		80-120	08-MAR-21
Magnesium (Mg)-Dissolved			113.6		%		80-120	08-MAR-21
Manganese (Mn)-Dissolved			102.6		%		80-120	08-MAR-21
Molybdenum (Mo)-Dissolved			106.5		%		80-120	08-MAR-21
Nickel (Ni)-Dissolved			99.9		%		80-120	08-MAR-21
Phosphorus (P)-Dissolved			113.5		%		70-130	08-MAR-21
Potassium (K)-Dissolved			106.0		%		80-120	08-MAR-21
Selenium (Se)-Dissolved			106.6		%		80-120	08-MAR-21
Silicon (Si)-Dissolved			109.3		%		60-140	08-MAR-21
Silver (Ag)-Dissolved			102.7		%		80-120	08-MAR-21
Sodium (Na)-Dissolved			106.3		%		80-120	08-MAR-21
Strontium (Sr)-Dissolved			104.9		%		80-120	08-MAR-21
Sulfur (S)-Dissolved			114.4		%		80-120	08-MAR-21
Thallium (Tl)-Dissolved			99.4		%		80-120	08-MAR-21
Tin (Sn)-Dissolved			108.1		%		80-120	08-MAR-21
Titanium (Ti)-Dissolved			107.0		%		80-120	08-MAR-21
Uranium (U)-Dissolved			105.6		%		80-120	08-MAR-21
Vanadium (V)-Dissolved			101.6		%		80-120	08-MAR-21
Zinc (Zn)-Dissolved			102.4		%		80-120	08-MAR-21
Zirconium (Zr)-Dissolved			105.7		%		80-120	08-MAR-21
<b>WG3498891-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-MAR-21



## Quality Control Report

Workorder: L2563672

Report Date: 15-MAR-21

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5398105</b>							
<b>WG3498891-1 MB</b>								
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-MAR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-MAR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-MAR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-MAR-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	08-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-MAR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-MAR-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-MAR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-MAR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-MAR-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-MAR-21
<b>WG3498891-5 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-MAR-21



## Quality Control Report

Workorder: L2563672

Report Date: 15-MAR-21

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5398105</b>							
<b>WG3498891-5</b>	<b>MB</b>							
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-MAR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-MAR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-MAR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-MAR-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	08-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-MAR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-MAR-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-MAR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-MAR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-MAR-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-MAR-21
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5399608</b>							
<b>WG3500196-2</b>	<b>LCS</b>							
Ammonia as N			106.2		%		85-115	10-MAR-21
<b>WG3500196-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	10-MAR-21
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						





## Quality Control Report

Workorder: L2563672

Report Date: 15-MAR-21

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5400002</b>							
<b>WG3500945-3</b>	<b>DUP</b>	<b>L2563672-6</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	05-MAR-21
<b>WG3500945-2</b>	<b>LCS</b>							
Nitrite (as N)			104.1		%		90-110	05-MAR-21
<b>WG3500945-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	05-MAR-21
<b>WG3500945-4</b>	<b>MS</b>	<b>L2563672-6</b>						
Nitrite (as N)			113.6		%		75-125	05-MAR-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5400002</b>							
<b>WG3500945-3</b>	<b>DUP</b>	<b>L2563672-6</b>						
Nitrate (as N)		<0.0050	0.0093	RPD-NA	mg/L	N/A	20	05-MAR-21
<b>WG3500945-2</b>	<b>LCS</b>							
Nitrate (as N)			101.8		%		90-110	05-MAR-21
<b>WG3500945-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	05-MAR-21
<b>WG3500945-4</b>	<b>MS</b>	<b>L2563672-6</b>						
Nitrate (as N)			110.7		%		75-125	05-MAR-21
<b>OH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5400839</b>							
<b>WG3501867-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	12-MAR-21
<b>WG3501867-4</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	12-MAR-21
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5400001</b>							
<b>WG3500937-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			219		mV		210-230	11-MAR-21
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5398562</b>							
<b>WG3499290-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			92.5		%		80-120	09-MAR-21
<b>WG3499290-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	09-MAR-21
<b>PH-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2563672

Report Date: 15-MAR-21

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>								
<b>Water</b>								
Batch R5400839								
WG3501867-2	LCS							
pH			6.97		pH		6.9-7.1	12-MAR-21
WG3501867-5	LCS							
pH			6.97		pH		6.9-7.1	12-MAR-21
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch R5397167								
WG3497229-6	LCS							
Orthophosphate-Dissolved (as P)			95.3		%		80-120	04-MAR-21
WG3497229-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-MAR-21
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch R5400002								
WG3500945-3	DUP	L2563672-6						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	05-MAR-21
WG3500945-2	LCS							
Sulfate (SO4)			102.2		%		90-110	05-MAR-21
WG3500945-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	05-MAR-21
WG3500945-4	MS	L2563672-6						
Sulfate (SO4)			111.1		%		75-125	05-MAR-21
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch R5399811								
WG3499779-2	LCS							
Total Dissolved Solids			90.4		%		85-115	10-MAR-21
WG3499779-5	LCS							
Total Dissolved Solids			94.8		%		85-115	10-MAR-21
WG3499779-1	MB							
Total Dissolved Solids			<10		mg/L		10	10-MAR-21
WG3499779-4	MB							
Total Dissolved Solids			<10		mg/L		10	10-MAR-21
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch R5399314								
WG3500049-10	LCS							
Total Kjeldahl Nitrogen			92.0		%		75-125	10-MAR-21
WG3500049-2	LCS							
Total Kjeldahl Nitrogen			93.1		%		75-125	10-MAR-21
WG3500049-6	LCS							



## Quality Control Report

Workorder: L2563672

Report Date: 15-MAR-21

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5399314</b>							
<b>WG3500049-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.0		%		75-125	10-MAR-21
<b>WG3500049-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.0		%		75-125	10-MAR-21
<b>WG3500049-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-MAR-21
<b>WG3500049-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-MAR-21
<b>WG3500049-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-MAR-21
<b>WG3500049-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-MAR-21
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5399742</b>							
<b>WG3499781-2</b>	<b>LCS</b>							
Total Suspended Solids			97.0		%		85-115	10-MAR-21
<b>WG3499781-4</b>	<b>LCS</b>							
Total Suspended Solids			96.4		%		85-115	10-MAR-21
<b>WG3499781-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	10-MAR-21
<b>WG3499781-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	10-MAR-21
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5397434</b>							
<b>WG3497890-2</b>	<b>LCS</b>							
Turbidity			101.0		%		85-115	05-MAR-21
<b>WG3497890-5</b>	<b>LCS</b>							
Turbidity			100.5		%		85-115	05-MAR-21
<b>WG3497890-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	05-MAR-21
<b>WG3497890-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	05-MAR-21

# Quality Control Report

Workorder: L2563672

Report Date: 15-MAR-21

Page 11 of 12

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2563672

Report Date: 15-MAR-21

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	03-MAR-21 10:30	11-MAR-21 11:00	0.25	192	hours	EHTR-FM
	2	03-MAR-21 11:15	11-MAR-21 11:00	0.25	192	hours	EHTR-FM
	3	03-MAR-21 13:00	11-MAR-21 11:00	0.25	190	hours	EHTR-FM
	4	03-MAR-21 12:50	11-MAR-21 11:00	0.25	190	hours	EHTR-FM
	5	03-MAR-21 12:50	11-MAR-21 11:00	0.25	190	hours	EHTR-FM
	6	03-MAR-21 13:15	11-MAR-21 11:00	0.25	190	hours	EHTR-FM
pH							
	1	03-MAR-21 10:30	12-MAR-21 14:30	0.25	220	hours	EHTR-FM
	2	03-MAR-21 11:15	12-MAR-21 14:30	0.25	219	hours	EHTR-FM
	3	03-MAR-21 13:00	12-MAR-21 14:30	0.25	217	hours	EHTR-FM
	4	03-MAR-21 12:50	12-MAR-21 14:30	0.25	218	hours	EHTR-FM
	5	03-MAR-21 12:50	12-MAR-21 14:30	0.25	218	hours	EHTR-FM
	6	03-MAR-21 13:15	12-MAR-21 14:30	0.25	217	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2563672 were received on 04-MAR-21 09:05.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.





Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2563672-COFC

COC Number: 21 -

Page 2 of 2

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report Company: SNC-Lavalin ~Nelson Contact: Leslie Harker Phone: 250-505-6493 Company address below will appear on the final report Street: 520 Lake Street City/Province: Nelson, BC Postal Code: V1L 4C6		<b>Report Format / Distribution</b> Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL) Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Emails: SNC - 'Leslie.Harker' 'Mia.Sakelariou' 'Alex.Heathcott' 'Vicky.Lipinski@snclavalin.com' Teck - 'Thais.Lamana@teck.com' 'Jessica.Mackie@teck.com' teck.lab.results@sharepoint.teck.com		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b> Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply PRIORITY (Business Days): 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/> EMERGENCY: 1 Business day [E1 - 100%] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/> Date and Time Required for all E&P TATs:																																																																																																																								
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO Company: Contact:		<b>Invoice Distribution</b> Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Emails: Leslie.Harker@snclavalin.com payables@snclavalin.com		<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below <table border="1"> <tr> <th>F/P</th> <th>P</th> <th>F/P</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>										F/P	P	F/P																																																																																																												
F/P	P	F/P																																																																																																																										
<b>Project Information</b> ALS Account # / Quote #: 666653 Job #: 666653 PO / AFE: 666653 LSD:		AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:		<b>ALS Lab Work Order # (lab use only):</b> ALS Contact: Inayat Dhaliwal 403-407-1784 Sampler: AH/MM																																																																																																																								
<b>ALS Sample # (lab use only)</b> Sample Identification &/or Coordinates (This description will appear on the report)		<b>Teck Sample Location (sys_loc_code)</b> (For Teck data upload to EQUIS database)		<b>Date</b> (dd-mmm-yy)		<b>Time</b> (hh:mm)		<b>Sample Type</b>		<table border="1"> <tr> <td>DOC (C-DIS-ORG-LOW-CL)</td> <td>TOC (C-TOT-ORG-LOW-CL)</td> <td>BCMDG D-Met.+Hg (MET-D-BCMDG-CL)</td> <td>Total N Calc. (N-T-CALC-CL)</td> <td>Nitrate + Nitrite Calc. (N2N3-CALC-CL)</td> <td>Teck Routine (TECKCOAL-ROUTINE-CL)</td> <td>TKN (TKN-L-F-CL)</td> <td>Bicarbonate (BIC-CL)</td> <td>Carbonate (CO3-CL)</td> <td>Hydroxide (OH-CL)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>										DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)												R	R	R	R	R	R	R	R	R	R												R	R	R	R	R	R	R	R	R	R												R	R	R	R	R	R	R	R	R	R												R	R	R	R	R	R	R	R	R	R											
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<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b> Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b> PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com Teck Facility Name: (please select the applicable Facility) REP-Regional Effects Program FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b> Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input type="checkbox"/> INITIAL COOLER TEMPERATURES °C: [Handwritten: 20] FINAL COOLER TEMPERATURES °C: [Handwritten: 20]																																																																																																																								
<b>SHIPMENT RELEASE (client use)</b> Released by: [Signature] Date: Mar 3 2021 Time: 1:00		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b> Received by: [Signature] Date: [Blank] Time: [Blank]		<b>FINAL SHIPMENT RECEPTION (lab use only)</b> Received by: [Signature] Date: 04/03 Time: 09:05																																																																																																																								



SNC-Lavalin  
ATTN: Leslie Harker  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 23-MAR-21  
Report Date: 05-APR-21 13:33 (MT)  
Version: FINAL

Client Phone: 250-505-6493

## Certificate of Analysis

Lab Work Order #: L2569685  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATION  
C of C Numbers:  
Legal Site Desc:

Inayat Dhaliwal  
Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2569685-1 WG 22-MAR-21 15:00 GH_MW-MC- 1D_WG_2021_03_ 22_NP	L2569685-2 WG 22-MAR-21 15:40 GH_MW-MC- 1S_WG_2021_03_ 22_NP	L2569685-3 WG 22-MAR-21 11:10 GH_MW_LC1- A_WG_2021_03_2 2_NP	L2569685-4 WG 22-MAR-21 12:15 GH_MW_LC1- B_WG_2021_03_2 2_NP	L2569685-5 WG 22-MAR-21 12:20 GH_MW_LC2- A_WG_2021_03_2 2_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	387	330	349	322	301
	Hardness (as CaCO3) (mg/L)	125	186	183	183	166
	pH (pH)	8.27	8.19	8.16	8.13	8.15
	ORP (mV)	263	298	275	320	284
	Total Suspended Solids (mg/L)	2.2	<1.0	23.3	<1.0	<1.0
	Total Dissolved Solids (mg/L)	234 <sup>DLHC</sup>	208 <sup>DLHC</sup>	218 <sup>DLHC</sup>	180 <sup>DLHC</sup>	181 <sup>DLHC</sup>
	Turbidity (NTU)	3.02	<0.10	38.2	<0.10	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	200	163	168	165	154
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	200	163	168	165	154
	Ammonia as N (mg/L)	0.0179	0.0066	0.0239	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	244	199	205	201	188
	Bromide (Br) (mg/L)	0.089	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	20.1	0.52	0.90	0.30	0.84
	Fluoride (F) (mg/L)	0.791	0.148	0.405	0.155	0.166
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	95.8	97.8	97.7	96.7	95.4
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	0.170	<0.0051	0.205	0.0993
	Nitrate (as N) (mg/L)	<0.0050	0.170	<0.0050	0.205	0.0993
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Total Nitrogen (mg/L)	<0.050	0.170	<0.050	0.205	0.099
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010 <sup>HTD</sup>	<0.0010	0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	0.0301	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	0.33	29.0	34.1	25.1	22.0
	Anion Sum (meq/L)	4.62	3.89	4.12	3.84	3.57
	Cation Sum (meq/L)	4.43	3.81	4.02	3.72	3.41
Cation - Anion Balance (%)	-2.1	-1.1	-1.2	-1.7	-2.4	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.71	0.90	1.15	<0.50	<0.50
	Total Organic Carbon (mg/L)	0.68	0.80	5.46	<0.50	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0021	0.0016	0.0016	0.0012	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2569685-6 WG 22-MAR-21 11:20 GH_MW_LC2- B_WG_2021_03_2 2_NP	L2569685-7 WG 22-MAR-21 12:15 GH_MW_MC10- A_WG_2021_03_2 2_NP		
<b>Grouping</b>	<b>Analyte</b>				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	333	320		
	Hardness (as CaCO3) (mg/L)	194	185		
	pH (pH)	8.13	8.11		
	ORP (mV)	317	305		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	192 <sup>DLHC</sup>	189 <sup>DLHC</sup>		
	Turbidity (NTU)	<0.10	<0.10		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	169	166		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	169	166		
	Ammonia as N (mg/L)	<0.0050	0.0050		
	Bicarbonate (HCO3) (mg/L)	206	203		
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	0.52	0.30		
	Fluoride (F) (mg/L)	0.149	0.152		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	98.8	96.9		
	Nitrate and Nitrite (as N) (mg/L)	0.433	0.205		
	Nitrate (as N) (mg/L)	0.433	0.205		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.056		
	Total Nitrogen (mg/L)	0.433	0.261		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0011		
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020		
	Sulfate (SO4) (mg/L)	26.9	25.0		
	Anion Sum (meq/L)	3.99	3.88		
	Cation Sum (meq/L)	3.95	3.75		
	Cation - Anion Balance (%)	-0.6	-1.6		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.50		
	Total Organic Carbon (mg/L)	<0.50	<0.50		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0011		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2569685-1 WG 22-MAR-21 15:00 GH_MW-MC- 1D_WG_2021_03_ 22_NP	L2569685-2 WG 22-MAR-21 15:40 GH_MW-MC- 1S_WG_2021_03_ 22_NP	L2569685-3 WG 22-MAR-21 11:10 GH_MW_LC1- A_WG_2021_03_2 2_NP	L2569685-4 WG 22-MAR-21 12:15 GH_MW_LC1- B_WG_2021_03_2 2_NP	L2569685-5 WG 22-MAR-21 12:20 GH_MW_LC2- A_WG_2021_03_2 2_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00038	0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00107	<0.00010	0.00080	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.891	0.0550	0.0920	0.0419	0.0688
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.075	<0.010	0.022	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	0.0000096	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	26.3	53.0	46.7	47.4	45.8
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00023	<0.00010	0.00024	0.00024
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	0.00012	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.165	<0.010	0.182	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0798	0.0022	0.0078	0.0065	0.0043
	Magnesium (Mg)-Dissolved (mg/L)	14.4	12.9	16.2	15.7	12.7
	Manganese (Mn)-Dissolved (mg/L)	0.125	<0.00010	0.223	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00648	0.000965	0.00329	0.00226	0.00147
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050 <sup>RRV</sup>	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	1.31	0.34	0.93	0.80	0.55
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.00157	<0.000050	0.00148	0.00107
	Silicon (Si)-Dissolved (mg/L)	3.31	1.80	4.38	1.73	1.90
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	43.3	2.10	7.43	0.885	1.49
	Strontium (Sr)-Dissolved (mg/L)	0.380	0.224	0.409	0.182	0.168
	Sulfur (S)-Dissolved (mg/L)	<0.50	9.45	10.8	8.09	6.99
	Thallium (Tl)-Dissolved (mg/L)	0.000032	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000062	0.000858	0.00109	0.00126	0.00101
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2569685-6 WG 22-MAR-21 11:20 GH_MW_LC2- B_WG_2021_03_2 2_NP	L2569685-7 WG 22-MAR-21 12:15 GH_MW_MC10- A_WG_2021_03_2 2_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	0.00044	0.00038		
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.0322	0.0431		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010		
	Cadmium (Cd)-Dissolved (mg/L)	0.0000118	0.0000096		
	Calcium (Ca)-Dissolved (mg/L)	51.1	47.8		
	Chromium (Cr)-Dissolved (mg/L)	0.00025	0.00041		
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0065	0.0065		
	Magnesium (Mg)-Dissolved (mg/L)	16.2	15.9		
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.00029		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00210	0.00224		
	Nickel (Ni)-Dissolved (mg/L)	0.00093	<0.00050		
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		
	Potassium (K)-Dissolved (mg/L)	0.90	0.80		
	Selenium (Se)-Dissolved (mg/L)	0.00213	0.00151		
	Silicon (Si)-Dissolved (mg/L)	1.78	1.75		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	0.951	0.891		
	Strontium (Sr)-Dissolved (mg/L)	0.168	0.181		
	Sulfur (S)-Dissolved (mg/L)	8.78	8.24		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030		
	Uranium (U)-Dissolved (mg/L)	0.00126	0.00124		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.		
RRV	Reported Result Verified By Repeat Analysis		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

## Reference Information

<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			

## Reference Information

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2569685

Report Date: 05-APR-21

Page 1 of 10

Client: SNC-Lavalin  
 # 3 - 520 Lake Street  
 Nelson BC V1L 4C6  
 Contact: Leslie Harker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418950</b>							
<b>WG3512589-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			110.2		%		85-115	02-APR-21
<b>WG3512589-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			113.6		%		85-115	02-APR-21
<b>WG3512589-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	02-APR-21
<b>WG3512589-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.1		mg/L		2	02-APR-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5416781</b>							
<b>WG3510160-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	28-MAR-21
<b>WG3510160-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-MAR-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415854</b>							
<b>WG3509171-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			94.2		%		80-120	26-MAR-21
<b>WG3509171-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-MAR-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5416781</b>							
<b>WG3510160-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	28-MAR-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415184</b>							
<b>WG3508431-7</b>	<b>DUP</b>	<b>L2569685-7</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-MAR-21
<b>WG3508431-2</b>	<b>LCS</b>							
Bromide (Br)			104.4		%		85-115	25-MAR-21
<b>WG3508431-6</b>	<b>LCS</b>							
Bromide (Br)			104.3		%		85-115	25-MAR-21
<b>WG3508431-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	25-MAR-21
<b>WG3508431-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	25-MAR-21
<b>WG3508431-8</b>	<b>MS</b>	<b>L2569685-7</b>						





## Quality Control Report

Workorder: L2569685

Report Date: 05-APR-21

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
	Water							
Batch	R5415184							
<b>WG3508431-8</b>	<b>MS</b>	<b>L2569685-7</b>						
Bromide (Br)			121.4		%		75-125	25-MAR-21
<b>C-DIS-ORG-LOW-CL</b>								
	Water							
Batch	R5416975							
<b>WG3510465-3</b>	<b>DUP</b>	<b>L2569685-1</b>						
Dissolved Organic Carbon		0.71	0.68		mg/L	3.9	20	29-MAR-21
<b>WG3510465-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			113.5		%		80-120	29-MAR-21
<b>WG3510465-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-MAR-21
<b>WG3510465-4</b>	<b>MS</b>	<b>L2569685-1</b>						
Dissolved Organic Carbon			99.8		%		70-130	29-MAR-21
<b>C-TOT-ORG-LOW-CL</b>								
	Water							
Batch	R5416975							
<b>WG3510465-3</b>	<b>DUP</b>	<b>L2569685-1</b>						
Total Organic Carbon		0.68	0.57		mg/L	18	20	29-MAR-21
<b>WG3510465-2</b>	<b>LCS</b>							
Total Organic Carbon			111.6		%		80-120	29-MAR-21
<b>WG3510465-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	29-MAR-21
<b>WG3510465-4</b>	<b>MS</b>	<b>L2569685-1</b>						
Total Organic Carbon			107.0		%		70-130	29-MAR-21
<b>CL-L-IC-N-CL</b>								
	Water							
Batch	R5415184							
<b>WG3508431-7</b>	<b>DUP</b>	<b>L2569685-7</b>						
Chloride (Cl)		0.30	0.30		mg/L	0.2	20	25-MAR-21
<b>WG3508431-2</b>	<b>LCS</b>							
Chloride (Cl)			100.2		%		85-115	25-MAR-21
<b>WG3508431-6</b>	<b>LCS</b>							
Chloride (Cl)			101.4		%		85-115	25-MAR-21
<b>WG3508431-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	25-MAR-21
<b>WG3508431-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	25-MAR-21
<b>WG3508431-8</b>	<b>MS</b>	<b>L2569685-7</b>						
Chloride (Cl)			106.7		%		75-125	25-MAR-21
<b>CO3-CL</b>	Water							



## Quality Control Report

Workorder: L2569685

Report Date: 05-APR-21

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5416781							
<b>WG3510160-13 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	28-MAR-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5416781							
<b>WG3510160-14 LCS</b>								
Conductivity (@ 25C)			99.0		%		90-110	28-MAR-21
<b>WG3510160-13 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	28-MAR-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5415184							
<b>WG3508431-7 DUP</b>		<b>L2569685-7</b>						
Fluoride (F)		0.152	0.146		mg/L	3.6	20	25-MAR-21
<b>WG3508431-2 LCS</b>								
Fluoride (F)			101.2		%		90-110	25-MAR-21
<b>WG3508431-6 LCS</b>								
Fluoride (F)			97.6		%		90-110	25-MAR-21
<b>WG3508431-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	25-MAR-21
<b>WG3508431-5 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	25-MAR-21
<b>WG3508431-8 MS</b>		<b>L2569685-7</b>						
Fluoride (F)			105.5		%		75-125	25-MAR-21
<b>HG-D-CVAA-CL</b>	<b>Water</b>							
Batch	R5417831							
<b>WG3510805-2 LCS</b>								
Mercury (Hg)-Dissolved			114.0		%		80-120	31-MAR-21
<b>WG3510805-1 MB</b>								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	31-MAR-21
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
Batch	R5415854							
<b>WG3509171-6 LCS</b>		<b>TMRM</b>						
Aluminum (Al)-Dissolved			103.1		%		80-120	26-MAR-21
Antimony (Sb)-Dissolved			102.4		%		80-120	26-MAR-21
Arsenic (As)-Dissolved			105.4		%		80-120	26-MAR-21
Barium (Ba)-Dissolved			102.0		%		80-120	26-MAR-21
Bismuth (Bi)-Dissolved			99.8		%		80-120	26-MAR-21



## Quality Control Report

Workorder: L2569685

Report Date: 05-APR-21

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415854</b>							
<b>WG3509171-6</b>	<b>LCS</b>	<b>TMRM</b>						
Boron (B)-Dissolved			95.6		%		80-120	26-MAR-21
Cadmium (Cd)-Dissolved			99.8		%		80-120	26-MAR-21
Calcium (Ca)-Dissolved			96.4		%		80-120	26-MAR-21
Chromium (Cr)-Dissolved			102.3		%		80-120	26-MAR-21
Cobalt (Co)-Dissolved			101.7		%		80-120	26-MAR-21
Copper (Cu)-Dissolved			100.4		%		80-120	26-MAR-21
Iron (Fe)-Dissolved			97.6		%		80-120	26-MAR-21
Lead (Pb)-Dissolved			101.9		%		80-120	26-MAR-21
Lithium (Li)-Dissolved			99.6		%		80-120	26-MAR-21
Magnesium (Mg)-Dissolved			111.9		%		80-120	26-MAR-21
Manganese (Mn)-Dissolved			101.5		%		80-120	26-MAR-21
Molybdenum (Mo)-Dissolved			100.2		%		80-120	26-MAR-21
Nickel (Ni)-Dissolved			102.6		%		80-120	26-MAR-21
Phosphorus (P)-Dissolved			106.7		%		70-130	26-MAR-21
Potassium (K)-Dissolved			103.3		%		80-120	26-MAR-21
Selenium (Se)-Dissolved			98.7		%		80-120	26-MAR-21
Silicon (Si)-Dissolved			101.2		%		60-140	26-MAR-21
Silver (Ag)-Dissolved			100.4		%		80-120	26-MAR-21
Sodium (Na)-Dissolved			104.9		%		80-120	26-MAR-21
Strontium (Sr)-Dissolved			102.0		%		80-120	26-MAR-21
Sulfur (S)-Dissolved			86.9		%		80-120	26-MAR-21
Thallium (Tl)-Dissolved			100.8		%		80-120	26-MAR-21
Tin (Sn)-Dissolved			99.5		%		80-120	26-MAR-21
Titanium (Ti)-Dissolved			100.3		%		80-120	26-MAR-21
Uranium (U)-Dissolved			100.5		%		80-120	26-MAR-21
Vanadium (V)-Dissolved			105.2		%		80-120	26-MAR-21
Zinc (Zn)-Dissolved			101.0		%		80-120	26-MAR-21
Zirconium (Zr)-Dissolved			96.5		%		80-120	26-MAR-21
<b>WG3509171-5 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-MAR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-MAR-21



## Quality Control Report

Workorder: L2569685

Report Date: 05-APR-21

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5415854</b>							
<b>WG3509171-5</b>	<b>MB</b>							
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-MAR-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-MAR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-MAR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-MAR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-MAR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-MAR-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	26-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-MAR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-MAR-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	26-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-MAR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-MAR-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-MAR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-MAR-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	26-MAR-21
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5417039</b>							
<b>WG3510368-10</b>	<b>LCS</b>							
Ammonia as N			97.7		%		85-115	29-MAR-21
<b>WG3510368-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-MAR-21



## Quality Control Report

Workorder: L2569685

Report Date: 05-APR-21

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415184</b>							
<b>WG3508431-7</b>	<b>DUP</b>	<b>L2569685-7</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-MAR-21
<b>WG3508431-2</b>	<b>LCS</b>							
Nitrite (as N)			101.7		%		90-110	25-MAR-21
<b>WG3508431-6</b>	<b>LCS</b>							
Nitrite (as N)			103.4		%		90-110	25-MAR-21
<b>WG3508431-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	25-MAR-21
<b>WG3508431-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	25-MAR-21
<b>WG3508431-8</b>	<b>MS</b>	<b>L2569685-7</b>						
Nitrite (as N)			109.3		%		75-125	25-MAR-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415184</b>							
<b>WG3508431-7</b>	<b>DUP</b>	<b>L2569685-7</b>						
Nitrate (as N)		0.205	0.206		mg/L	0.7	20	25-MAR-21
<b>WG3508431-2</b>	<b>LCS</b>							
Nitrate (as N)			100.0		%		90-110	25-MAR-21
<b>WG3508431-6</b>	<b>LCS</b>							
Nitrate (as N)			102.3		%		90-110	25-MAR-21
<b>WG3508431-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	25-MAR-21
<b>WG3508431-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	25-MAR-21
<b>WG3508431-8</b>	<b>MS</b>	<b>L2569685-7</b>						
Nitrate (as N)			106.1		%		75-125	25-MAR-21
<b>OH-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5416781</b>							
<b>WG3510160-13</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	28-MAR-21
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417081</b>							
<b>WG3510597-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	30-MAR-21
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2569685

Report Date: 05-APR-21

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b> <b>Water</b>								
Batch	R5416520							
<b>WG3509904-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			88.1		%		80-120	29-MAR-21
<b>WG3509904-18</b>	<b>LCS</b>							
Phosphorus (P)-Total			88.9		%		80-120	29-MAR-21
<b>WG3509904-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	29-MAR-21
<b>WG3509904-17</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	29-MAR-21
<b>PH-CL</b> <b>Water</b>								
Batch	R5416781							
<b>WG3510160-14</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	28-MAR-21
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R5413456							
<b>WG3507699-3</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			98.8		%		80-120	24-MAR-21
<b>WG3507699-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-MAR-21
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R5415184							
<b>WG3508431-7</b>	<b>DUP</b>	<b>L2569685-7</b>						
Sulfate (SO4)		25.0	24.8		mg/L	0.7	20	25-MAR-21
<b>WG3508431-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.8		%		90-110	25-MAR-21
<b>WG3508431-6</b>	<b>LCS</b>							
Sulfate (SO4)			102.2		%		90-110	25-MAR-21
<b>WG3508431-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	25-MAR-21
<b>WG3508431-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	25-MAR-21
<b>WG3508431-8</b>	<b>MS</b>	<b>L2569685-7</b>						
Sulfate (SO4)			105.9		%		75-125	25-MAR-21
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R5417099							
<b>WG3509883-2</b>	<b>LCS</b>							
Total Dissolved Solids			101.3		%		85-115	29-MAR-21
<b>WG3509883-5</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2569685

Report Date: 05-APR-21

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417099</b>							
<b>WG3509883-5</b>	<b>LCS</b>							
Total Dissolved Solids			98.4		%		85-115	29-MAR-21
<b>WG3509883-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	29-MAR-21
<b>WG3509883-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	29-MAR-21
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417789</b>							
<b>WG3510627-8</b>	<b>DUP</b>	<b>L2569685-1</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-MAR-21
<b>WG3510627-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			85.0		%		75-125	30-MAR-21
<b>WG3510627-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-MAR-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5416976</b>							
<b>WG3509882-2</b>	<b>LCS</b>							
Total Suspended Solids			90.5		%		85-115	29-MAR-21
<b>WG3509882-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	29-MAR-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5413256</b>							
<b>WG3507774-2</b>	<b>LCS</b>							
Turbidity			101.0		%		85-115	24-MAR-21
<b>WG3507774-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	24-MAR-21

# Quality Control Report

Workorder: L2569685

Report Date: 05-APR-21

Page 9 of 10

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2569685

Report Date: 05-APR-21

Page 10 of 10

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	22-MAR-21 15:00	30-MAR-21 08:00	0.25	185	hours	EHTR-FM
	2	22-MAR-21 15:40	30-MAR-21 08:00	0.25	184	hours	EHTR-FM
	3	22-MAR-21 11:10	30-MAR-21 08:00	0.25	189	hours	EHTR-FM
	4	22-MAR-21 12:15	30-MAR-21 08:00	0.25	188	hours	EHTR-FM
	5	22-MAR-21 12:20	30-MAR-21 08:00	0.25	188	hours	EHTR-FM
	6	22-MAR-21 11:20	30-MAR-21 08:00	0.25	189	hours	EHTR-FM
	7	22-MAR-21 12:15	30-MAR-21 08:00	0.25	188	hours	EHTR-FM
pH							
	1	22-MAR-21 15:00	28-MAR-21 14:00	0.25	143	hours	EHTR-FM
	2	22-MAR-21 15:40	28-MAR-21 14:00	0.25	142	hours	EHTR-FM
	3	22-MAR-21 11:10	28-MAR-21 14:00	0.25	147	hours	EHTR-FM
	4	22-MAR-21 12:15	28-MAR-21 14:00	0.25	146	hours	EHTR-FM
	5	22-MAR-21 12:20	28-MAR-21 14:00	0.25	146	hours	EHTR-FM
	6	22-MAR-21 11:20	28-MAR-21 14:00	0.25	147	hours	EHTR-FM
	7	22-MAR-21 12:15	28-MAR-21 14:00	0.25	146	hours	EHTR-FM

**Anions and Nutrients**

Orthophosphate-Dissolved (as P)

3	22-MAR-21 11:10	30-MAR-21 09:00	3	8	days	EHT
---	-----------------	-----------------	---	---	------	-----

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2569685 were received on 23-MAR-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytica Request Form



COC Number:

Canada Toll Free: 1 800 668 9878

L2569685-COFC

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>	
Company:	SNC-Lavalin	Select Report Format:	<input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)	<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply	
Contact:	Genevieve Pomerleau	Quality Control (QC) Report with Report	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<b>PRIORITY (business days)</b>	<b>EMERGENCY</b>
Phone:	Tel.: 250-354-1664 Cell.: 250-505-2847	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			
Company address below will appear on the final report		Select Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	3 day [P3-25%] <input type="checkbox"/>	Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>
Street:	520 Lake Street	Emails: SNC - 'genevieve.pomerleau', and vicky.lipinski@snclavalin.com		2 day [P2-50%] <input type="checkbox"/>	
City/Province:	Nelson, BC	Teck - crystal.sabel@teck.com		<b>Date and Time Required for all E&amp;P TATs:</b>	
Postal Code:	V1L 4C6	<b>Invoice Distribution</b>		For tests that can not be performed according to the service level selected, you will be contacted.	
Invoice To	Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Select Invoice Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	<b>Analysis Request</b>	
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: genevieve.pomerleau@snclavalin.com payables@snclavalin.com		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>		SAMPLES ON HOLD	
ALS Account # / Quote #:	MOR125 / Q72340	AFE/Cost Center:	PO#	SAMPLE IS HAZARDOUS (please provide further detail)	
Job #:	Greenhills Operations	Major/Minor Code:	Routing Code:	NUMBER OF CONTAINERS	
PO / AFE:	658004	Requisitioner:			
LSD:		Location:			
ALS Lab Work Order # (lab use only):		ALS Contact:	Inayat Dhaliwal 403-407-1784	Sampler:	
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type
	GH_MW-MC-1S_WG_2021_03_22_NP	GH_MW-MC-1S	22-Mar-21	15:00	WG
	GH_MW-MC-1D_WG_2021_03_22_NP	GH_MW-MC-1D	22-Mar-21	15:40	WG
	GH_MW-MC-2S_WG_2021_03_22_NP	GH_MW-MC-2S			WG
	GH_MW-MC-2D_WG_2021_03_22_NP	GH_MW-MC-2D			WG
	GH_MW-Willow-1S_WG_2021_03_22_NP	GH_MW-Willow-1S			WG
	GH_MW-Willow-1D_WG_2021_03_22_NP	GH_MW-Willow-1D			WG
	GH_MW-Willow-2S_WG_2021_03_22_NP	GH_MW-Willow-2S			WG
	GH_MW-Willow-2D_WG_2021_03_22_NP	GH_MW-Willow-2D			WG
	GH_MW-Willow-3S_WG_2021_03_22_NP	GH_MW-Willow-3S			WG
	GH_MW-Willow-3D_WG_2021_03_22_NP	GH_MW-Willow-3D			WG
	GH_MW-Woif-1S_WG_2021_03_22_NP	GH_MW-Woif-1S			WG
	GH_MW-Woif-1D_WG_2021_03_22_NP	GH_MW-Woif-1D			WG
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>	
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>	
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input checked="" type="checkbox"/>	
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>		<b>FINAL SHIPMENT RECEPTION (lab use only)</b>	
Released by:	Date:	Received by:	Date:	Received by:	Date:
MARC BEPTON	Mar 22 / 2021		17:00		

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FROFC

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.







SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 24-MAR-21  
Report Date: 01-APR-21 16:12 (MT)  
Version: DRAFT

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2569990  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

DRAFT

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Inayat Dhaliwal  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2569990-1 WG 23-MAR-21 11:00 GH_MW-MC- 2D_WG_2021_03_ 23_NP	L2569990-2 WG 23-MAR-21 11:40 GH_MW-MC- 2S_WG_2021_03_ 23_NP	L2569990-3 WG 23-MAR-21 14:35 GH_MW-WILLOW- 3S_WG_2021_03_ 23_NP	L2569990-4 WG 23-MAR-21 15:15 GH_MW-WILLOW- 3D_WG_2021_03_ 23_NP	L2569990-5 WG 23-MAR-21 15:00 GH_MW-MC10- A_WG_2021_03_2 3_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1870	590	380	426	385
	Hardness (as CaCO3) (mg/L)	21.4	306	213	193	221
	pH (pH)	9.04	7.60	7.78	7.99	7.82
	ORP (mV)	23.9	397	439	453	321
	Total Suspended Solids (mg/L)	5.3	2.0	<1.0	234	5.4
	Total Dissolved Solids (mg/L)	1210 <sup>DLHC</sup>	359 <sup>DLHC</sup>	236 <sup>DLHC</sup>	280 <sup>DLHC</sup>	235 <sup>DLHC</sup>
	Turbidity (NTU)	26.4	3.07	3.37	104	3.15
<b>Anions and Nutrients</b>	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	498	299	234	267	229
	Alkalinity, Carbonate (as CaCO3) (mg/L)	91.6	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	590	299	234	267	229
	Ammonia as N (mg/L)	0.567 <sup>DLM</sup>	0.0083	<0.0050	0.245	<0.0050
	Bicarbonate (HCO3) (mg/L)	608 <sup>DLHC</sup>	365	285	325	280
	Bromide (Br) (mg/L)	0.59 <sup>DLHC</sup>	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	55.0 <sup>DLHC</sup>	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	244 <sup>DLHC</sup>	8.07	0.83	0.47	0.49
	Fluoride (F) (mg/L)	2.90 <sup>DLHC</sup>	0.222	0.138	0.232	0.176
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Nitrate and Nitrite (as N) (mg/L)	0.040	0.416	0.184	0.0236	0.133
	Nitrate (as N) (mg/L)	0.040 <sup>DLHC</sup>	0.414	0.184	0.0236	0.133
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	0.0014	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.834	0.344	<0.050	0.407	<0.050
	Total Nitrogen (mg/L)	0.874	0.760	0.184	0.431	0.133
	Orthophosphate-Dissolved (as P) (mg/L)	0.0830	0.0052	0.0055	0.0088	0.0054
	Phosphorus (P)-Total (mg/L)	0.371 <sup>DLHC</sup>	0.0075	0.0072	0.215 <sup>DLHC</sup>	0.0083
Sulfate (SO4) (mg/L)	16.6 <sup>DLHC</sup>	61.7	12.6	3.91	7.84	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0197 <sup>DLM</sup>	0.0045	0.0024	0.0034	0.0014
	Antimony (Sb)-Dissolved (mg/L)	<0.00050 <sup>DLM</sup>	0.00011	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00159 <sup>DLM</sup>	0.00022	0.00011	0.00208	0.00011
	Barium (Ba)-Dissolved (mg/L)	0.112 <sup>DLM</sup>	0.108	0.198	0.501	0.193
	Beryllium (Be)-Dissolved (mg/L)	<0.00010 <sup>DLM</sup>	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.00025 <sup>DLM</sup>	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.792 <sup>DLM</sup>	0.033	<0.010	0.121	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.000025 <sup>DLM</sup>	0.0000425	0.0000168	<0.0000050	0.0000136
	Calcium (Ca)-Dissolved (mg/L)	3.74 <sup>DLM</sup>	81.0	54.0	40.0	57.7

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2569990-1	L2569990-2	L2569990-3	L2569990-4	L2569990-5
					WG	WG	WG	WG	WG
		23-MAR-21	11:00		23-MAR-21	23-MAR-21	23-MAR-21	23-MAR-21	23-MAR-21
					11:00	11:40	14:35	15:15	15:00
					GH_MW-MC-2D_WG_2021_03_23_NP	GH_MW-MC-2S_WG_2021_03_23_NP	GH_MW-WILLOW-3S_WG_2021_03_23_NP	GH_MW-WILLOW-3D_WG_2021_03_23_NP	GH_MW-MC10-A_WG_2021_03_23_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Chromium (Cr)-Dissolved (mg/L)				<0.00050 <sup>DLM</sup>	0.00014	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)				<0.00050 <sup>DLM</sup>	<0.00010	<0.00010	0.00038	<0.00010
	Copper (Cu)-Dissolved (mg/L)				<0.0010 <sup>DLM</sup>	0.00038	0.00038	<0.00020	0.00025
	Iron (Fe)-Dissolved (mg/L)				<0.050 <sup>DLM</sup>	<0.010	<0.010	0.444	<0.010
	Lead (Pb)-Dissolved (mg/L)				<0.00025 <sup>DLM</sup>	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)				1.03 <sup>DLM</sup>	0.0255	0.0055	0.0626	0.0056
	Magnesium (Mg)-Dissolved (mg/L)				2.92 <sup>DLM</sup>	25.2	18.9	22.7	18.7
	Manganese (Mn)-Dissolved (mg/L)				0.0391 <sup>DLM</sup>	0.0216	0.00038	0.132	0.00037
	Mercury (Hg)-Dissolved (mg/L)				<0.0000050 <sup>DLM</sup>	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)				0.00085 <sup>DLM</sup>	0.00125	0.000445	0.00486	0.000477
	Nickel (Ni)-Dissolved (mg/L)				<0.0025 <sup>DLM</sup>	0.00081	0.00052	0.00082	<0.00050
	Phosphorus (P)-Dissolved (mg/L)				0.30 <sup>DLM</sup>	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)				1.89 <sup>DLM</sup>	1.31	0.83	1.77	0.83
	Selenium (Se)-Dissolved (mg/L)				0.0885 <sup>DLM</sup>	0.00265	0.000592	<0.000050	0.000537
	Silicon (Si)-Dissolved (mg/L)				3.17 <sup>DLM</sup>	4.14	4.08	4.49	4.10
	Silver (Ag)-Dissolved (mg/L)				<0.000050 <sup>DLM</sup>	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)				420 <sup>DLM</sup>	16.3	2.71	28.4	2.66
	Strontium (Sr)-Dissolved (mg/L)				0.221 <sup>DLM</sup>	0.273	0.103	0.739	0.108
	Sulfur (S)-Dissolved (mg/L)				365 <sup>DLM</sup>	20.1	2.67	2.64	2.68
	Thallium (Tl)-Dissolved (mg/L)				<0.000050 <sup>DLM</sup>	0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)				<0.00050 <sup>DLM</sup>	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)				<0.0015 <sup>DLM</sup>	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)				0.000859 <sup>DLM</sup>	0.00115	0.000323	0.00145	0.000334
	Vanadium (V)-Dissolved (mg/L)				<0.0025 <sup>DLM</sup>	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)				<0.0050 <sup>DLM</sup>	0.0011	0.0016	0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)				<0.0010 <sup>DLM</sup>	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)



## Reference Information

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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## Quality Control Report

Workorder: L2569990

Report Date: 01-APR-21

Page 1 of 9

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418043</b>							
<b>WG3511647-3</b>	<b>DUP</b>	<b>L2569990-4</b>						
Alkalinity, Total (as CaCO3)		267	267		mg/L	0.1	20	31-MAR-21
<b>WG3511647-2</b>	<b>LCS</b>		102.5		%		85-115	31-MAR-21
Alkalinity, Total (as CaCO3)								
<b>WG3511647-1</b>	<b>MB</b>		<1.0		mg/L		1	31-MAR-21
Alkalinity, Total (as CaCO3)								
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415854</b>							
<b>WG3509171-6</b>	<b>LCS</b>	<b>TMRM</b>	94.2		%		80-120	26-MAR-21
Beryllium (Be)-Dissolved								
<b>WG3509171-5</b>	<b>MB</b>		<0.000020		mg/L		0.00002	26-MAR-21
Beryllium (Be)-Dissolved								
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418043</b>							
<b>WG3511647-3</b>	<b>DUP</b>	<b>L2569990-4</b>						
Bicarbonate (HCO3)		325	326		mg/L	0.1	20	31-MAR-21
<b>WG3511647-1</b>	<b>MB</b>		<5.0		mg/L		5	31-MAR-21
Bicarbonate (HCO3)								
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415184</b>							
<b>WG3508431-2</b>	<b>LCS</b>		104.4		%		85-115	25-MAR-21
Bromide (Br)								
<b>WG3508431-6</b>	<b>LCS</b>		104.3		%		85-115	25-MAR-21
Bromide (Br)								
<b>WG3508431-1</b>	<b>MB</b>		<0.050		mg/L		0.05	25-MAR-21
Bromide (Br)								
<b>WG3508431-5</b>	<b>MB</b>		<0.050		mg/L		0.05	25-MAR-21
Bromide (Br)								
<b>CL-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415184</b>							
<b>WG3508431-2</b>	<b>LCS</b>		100.2		%		85-115	25-MAR-21
Chloride (Cl)								
<b>WG3508431-6</b>	<b>LCS</b>		101.4		%		85-115	25-MAR-21
Chloride (Cl)								
<b>WG3508431-1</b>	<b>MB</b>		<0.10		mg/L		0.1	25-MAR-21
Chloride (Cl)								
<b>WG3508431-5</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2569990

Report Date: 01-APR-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417831</b>							
<b>WG3510805-5 MB</b>								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	31-MAR-21
<b>WG3510805-8 MS</b>		<b>L2569990-5</b>						
Mercury (Hg)-Dissolved			91.0		%		70-130	31-MAR-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415854</b>							
<b>WG3509171-6 LCS</b>		<b>TMRM</b>						
Aluminum (Al)-Dissolved			103.1		%		80-120	26-MAR-21
Antimony (Sb)-Dissolved			102.4		%		80-120	26-MAR-21
Arsenic (As)-Dissolved			105.4		%		80-120	26-MAR-21
Barium (Ba)-Dissolved			102.0		%		80-120	26-MAR-21
Bismuth (Bi)-Dissolved			99.8		%		80-120	26-MAR-21
Boron (B)-Dissolved			95.6		%		80-120	26-MAR-21
Cadmium (Cd)-Dissolved			99.8		%		80-120	26-MAR-21
Calcium (Ca)-Dissolved			96.4		%		80-120	26-MAR-21
Chromium (Cr)-Dissolved			102.3		%		80-120	26-MAR-21
Cobalt (Co)-Dissolved			101.7		%		80-120	26-MAR-21
Copper (Cu)-Dissolved			100.4		%		80-120	26-MAR-21
Iron (Fe)-Dissolved			97.6		%		80-120	26-MAR-21
Lead (Pb)-Dissolved			101.9		%		80-120	26-MAR-21
Lithium (Li)-Dissolved			99.6		%		80-120	26-MAR-21
Magnesium (Mg)-Dissolved			111.9		%		80-120	26-MAR-21
Manganese (Mn)-Dissolved			101.5		%		80-120	26-MAR-21
Molybdenum (Mo)-Dissolved			100.2		%		80-120	26-MAR-21
Nickel (Ni)-Dissolved			102.6		%		80-120	26-MAR-21
Phosphorus (P)-Dissolved			106.7		%		70-130	26-MAR-21
Potassium (K)-Dissolved			103.3		%		80-120	26-MAR-21
Selenium (Se)-Dissolved			98.7		%		80-120	26-MAR-21
Silicon (Si)-Dissolved			101.2		%		60-140	26-MAR-21
Silver (Ag)-Dissolved			100.4		%		80-120	26-MAR-21
Sodium (Na)-Dissolved			104.9		%		80-120	26-MAR-21
Strontium (Sr)-Dissolved			102.0		%		80-120	26-MAR-21
Sulfur (S)-Dissolved			86.9		%		80-120	26-MAR-21
Thallium (Tl)-Dissolved			100.8		%		80-120	26-MAR-21
Tin (Sn)-Dissolved			99.5		%		80-120	26-MAR-21



## Quality Control Report

Workorder: L2569990

Report Date: 01-APR-21

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415854</b>							
<b>WG3509171-6</b>	<b>LCS</b>	<b>TMRM</b>						
Titanium (Ti)-Dissolved			100.3		%		80-120	26-MAR-21
Uranium (U)-Dissolved			100.5		%		80-120	26-MAR-21
Vanadium (V)-Dissolved			105.2		%		80-120	26-MAR-21
Zinc (Zn)-Dissolved			101.0		%		80-120	26-MAR-21
Zirconium (Zr)-Dissolved			96.5		%		80-120	26-MAR-21
<b>WG3509171-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-MAR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-MAR-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-MAR-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-MAR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-MAR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-MAR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-MAR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-MAR-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	26-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-MAR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-MAR-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	26-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-MAR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-MAR-21



## Quality Control Report

Workorder: L2569990

Report Date: 01-APR-21

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
Batch	R5415854							
<b>WG3509171-5</b>	<b>MB</b>							
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-MAR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-MAR-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	26-MAR-21
<b>NH3-L-F-CL</b>		<b>Water</b>						
Batch	R5417039							
<b>WG3510368-14</b>	<b>LCS</b>							
Ammonia as N			95.9		%		85-115	29-MAR-21
<b>WG3510368-18</b>	<b>LCS</b>							
Ammonia as N			98.4		%		85-115	29-MAR-21
<b>WG3510368-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-MAR-21
<b>WG3510368-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-MAR-21
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
Batch	R5415184							
<b>WG3508431-2</b>	<b>LCS</b>							
Nitrite (as N)			101.7		%		90-110	25-MAR-21
<b>WG3508431-6</b>	<b>LCS</b>							
Nitrite (as N)			103.4		%		90-110	25-MAR-21
<b>WG3508431-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	25-MAR-21
<b>WG3508431-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	25-MAR-21
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
Batch	R5415184							
<b>WG3508431-2</b>	<b>LCS</b>							
Nitrate (as N)			100.0		%		90-110	25-MAR-21
<b>WG3508431-6</b>	<b>LCS</b>							
Nitrate (as N)			102.3		%		90-110	25-MAR-21
<b>WG3508431-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	25-MAR-21
<b>WG3508431-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	25-MAR-21
<b>OH-CL</b>	<b>Water</b>							

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## Quality Control Report

Workorder: L2569990

Report Date: 01-APR-21

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>OH-CL</b>	<b>Water</b>							
Batch	R5418043							
<b>WG3511647-3</b>	<b>DUP</b>	<b>L2569990-4</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	31-MAR-21
<b>WG3511647-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	31-MAR-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5417702							
<b>WG3511262-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			222		mV		210-230	31-MAR-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5417885							
<b>WG3511353-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			88.5		%		80-120	31-MAR-21
<b>WG3511353-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	31-MAR-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5418043							
<b>WG3511647-3</b>	<b>DUP</b>	<b>L2569990-4</b>						
pH		7.99	8.01	J	pH	0.02	0.2	31-MAR-21
<b>WG3511647-2</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	31-MAR-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5415343							
<b>WG3508579-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.4		%		80-120	25-MAR-21
<b>WG3508579-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	25-MAR-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5415184							
<b>WG3508431-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.8		%		90-110	25-MAR-21
<b>WG3508431-6</b>	<b>LCS</b>							
Sulfate (SO4)			102.2		%		90-110	25-MAR-21
<b>WG3508431-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	25-MAR-21
<b>WG3508431-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	25-MAR-21

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## Quality Control Report

Workorder: L2569990

Report Date: 01-APR-21

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417784</b>							
<b>WG3510629-3</b>	<b>DUP</b>	<b>L2569990-1</b>						
Total Dissolved Solids		1210	1120		mg/L	7.6	20	30-MAR-21
<b>WG3510629-2</b>	<b>LCS</b>							
Total Dissolved Solids			92.2		%		85-115	30-MAR-21
<b>WG3510629-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	30-MAR-21
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418376</b>							
<b>WG3511381-5</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			78.0		%		75-125	31-MAR-21
<b>WG3511381-6</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-MAR-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417623</b>							
<b>WG3510628-2</b>	<b>LCS</b>							
Total Suspended Solids			90.8		%		85-115	30-MAR-21
<b>WG3510628-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	30-MAR-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415445</b>							
<b>WG3508276-2</b>	<b>LCS</b>							
Turbidity			99.5		%		85-115	25-MAR-21
<b>WG3508276-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	25-MAR-21

DRAFT

# Quality Control Report

Workorder: L2569990

Report Date: 01-APR-21

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2569990

Report Date: 01-APR-21

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	23-MAR-21 11:00	31-MAR-21 06:40	0.25	188	hours	EHTR-FM
	2	23-MAR-21 11:40	31-MAR-21 06:40	0.25	187	hours	EHTR-FM
	3	23-MAR-21 14:35	31-MAR-21 06:40	0.25	184	hours	EHTR-FM
	4	23-MAR-21 15:15	31-MAR-21 06:40	0.25	183	hours	EHTR-FM
	5	23-MAR-21 15:00	31-MAR-21 06:40	0.25	184	hours	EHTR-FM
pH							
	1	23-MAR-21 11:00	31-MAR-21 10:00	0.25	191	hours	EHTR-FM
	2	23-MAR-21 11:40	31-MAR-21 10:00	0.25	190	hours	EHTR-FM
	3	23-MAR-21 14:35	31-MAR-21 10:00	0.25	187	hours	EHTR-FM
	4	23-MAR-21 15:15	31-MAR-21 10:00	0.25	187	hours	EHTR-FM
	5	23-MAR-21 15:00	31-MAR-21 10:00	0.25	187	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2569990 were received on 24-MAR-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2569990-COFC

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>				<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>															
Company: SNC-Lavalin - Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)				<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply															
Contact: Genevieve Pomerleau		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO				<b>Priority (Business Days)</b>			<b>EMERGENCY</b>												
Phone: Tel.:250-505-2847		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked				4 day [P4-20%] <input type="checkbox"/>			1 Business day [E1 - 100%]												
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				3 day [P3-25%] <input type="checkbox"/>			Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]												
Street: 520 Lake Street		Emails: SNC - 'Genevieve.Pomerleau'				Date and Time Required for all E&P TATs:															
City/Province: Nelson, BC		'Vicky.Lipinski' @snclavalin.com				For tests that can not be performed according to the service level selected, you will be contacted.															
Postal Code: V1L 4C6		Teck: 'crystal.sabel' @teck.com, teckcoal@equisonline.com				<b>Analysis Request</b>															
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>Invoice Distribution</b>				Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below															
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input checked="" type="checkbox"/> FAX				F/P P F/P P															
Company: SNC-Lavalin		Emails: Genevieve.Pomerleau@snclavalin.com				DOC (C-DIS-ORG-LOW-CL) TOC (C-TOT-ORG-LOW-CL) BC MDG D-Met. + Hg (MET-D-BCMDG-CL) Total N Calc. (N-T-CALC-CL) Nitrate + Nitrite Calc. (N2N3-CALC-CL) Teck Routine (TECKCOAL-ROUTINE-CL) TKN (TKN-L-F-CL) Bicarbonate (BIC-CL) Carbonate (CO3-CL) Hydroxide (OH-CL)															
Contact: SNC-Lavalin		payables@snclavalin.com																			
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>				<b>SAMPLES ON HOLD</b> Sample is hazardous (please provide further detail) <b>NUMBER OF CONTAINERS</b>															
ALS Account # / Quote #: MOR125 / Q78198		AFE/Cost Center:		PO#																	
Job #: GHO- Greenhills Operations		Major/Minor Code:		Routing Code:																	
PO / AFE: 658004		Requisitioner:		Location:																	
LSD:		ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784												Sampler: MTB					
<b>ALS Sample # (lab use only)</b>		<b>Sample Identification &amp;/or Coordinates</b> (This description will appear on the report)		<b>Teck Sample Location (sys_loc_code)</b> (For Teck data upload to EQUIS database)		<b>Date</b> (dd-mmm-yy)		<b>Time</b> (hh:mm)		<b>Sample Type</b>											
		GH_MW-MC-2D_WG_2021_03_23_NP		GH_MW-MC-2D		23-Mar-21		11:00		WG		R R R R R R R R R R R R R R R R R R R R R									
		GH_MW-MC-2S_WG_2021_03_23_NP		GH_MW-MC-2S		23-Mar-21		11:40		WG		R R R R R R R R R R R R R R R R R R R R R									
		GH_MW-Willow-3S_WG_2021_03_23_NP		GH_MW-Willow-3S		23-Mar-21		14:35		WG		R R R R R R R R R R R R R R R R R R R R R									
		GH_MW-Willow-3D_WG_2021_03_23_NP		GH_MW-Willow-3S		23-Mar-21		15:15		WG		R R R R R R R R R R R R R R R R R R R R R									
		GH_MW_MC10-A_WG_2021_03_23_NP		GH_MW_MC10-A		23-Mar-21		15:00		WG		R R R R R R R R R R R R R R R R R R R R R									
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>				<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>															
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility) REP-Regional FRO-FORDING RIVER OPERATION GHO-GREENHILLS OPERATIONS				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>															
Are samples for human consumption/ use? <input type="checkbox"/> NO						Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>															
						Cooling Initiated <input type="checkbox"/>															
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)				FINAL SHIPMENT RECEPTION (lab use only)															
Released by: Marc Beaton		Date: 2021-03-23		Time: 17:00		Received by:		Date:		Time:		Received by:		Date: 3/24		Time: ORSO					



SNC-Lavalin  
ATTN: Tyler Gale  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 30-MAR-21  
Report Date: 02-NOV-21 16:44 (MT)  
Version: FINAL REV. 2

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2571851  
Project P.O. #: 681309  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Inayat Dhaliwal  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2571851-1 WG 29-MAR-21 12:00 GH_MW_GHC_2A _WG_2021_03_29 _NP	L2571851-2 WG 29-MAR-21 12:45 GH_MW_GHC_2B _WG_2021_03_29 _NP	L2571851-3 WG 29-MAR-21 10:10 GH_MW_GHC_4B _WG_2021_03_29 _NP	L2571851-4 WG 29-MAR-21 16:00 GH_MW_FC2_WG _2021_03_29_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1240	639	1030	548
	Hardness (as CaCO3) (mg/L)	629	310	536	206
	pH (pH)	7.56	7.93	7.74	8.03
	ORP (mV)	343	400	357	402
	Total Suspended Solids (mg/L)	15.1	1.7	1.1	78.5
	Total Dissolved Solids (mg/L)	934 <sup>DLHC</sup>	402 <sup>DLHC</sup>	730 <sup>DLHC</sup>	339 <sup>DLHC</sup>
	Turbidity (NTU)	10.0	24.3	1.14	64.6
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	20.7	6.4	11.9	4.3
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	357	290	290	273
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	357	290	290	273
	Ammonia as N (mg/L)	0.235	<0.0050	0.0121	0.344
	Bicarbonate (HCO3) (mg/L)	436 <sup>DLHC</sup>	354	354	333
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0 <sup>DLHC</sup>	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	<0.50 <sup>DLHC</sup>	1.16	8.14	3.62
	Fluoride (F) (mg/L)	<0.10 <sup>DLHC</sup>	0.068	0.073	0.132
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	101	89.5	96.6	92.9
	Nitrate and Nitrite (as N) (mg/L)	<0.025 <sup>DLHC</sup>	0.0356	0.708	0.0253
	Nitrate (as N) (mg/L)	<0.025 <sup>DLHC</sup>	0.0356	0.708	0.0217
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0010	0.0036
	Total Kjeldahl Nitrogen (mg/L)	0.232	0.140	0.309	0.446
	Total Nitrogen (mg/L)	0.232	0.176	1.02	0.471
	Orthophosphate-Dissolved (as P) (mg/L)	0.0024	0.0022	0.0044	0.0017
	Phosphorus (P)-Total (mg/L)	0.0133 <sup>DLHC</sup>	0.0111	0.0055	0.0314
	Sulfate (SO4) (mg/L)	343	71.9	255	28.4
	Anion Sum (meq/L)	14.3	7.33	11.4	6.15
	Cation Sum (meq/L)	14.4	6.56	11.0	5.72
Cation - Anion Balance (%)	0.2	-5.5	-1.7	-3.7	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	1.96	2.19	1.62
	Total Organic Carbon (mg/L)	<0.50	2.36	1.89	2.83
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.156	<0.0010	0.0131

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2571851-1	L2571851-2	L2571851-3	L2571851-4
		Description	WG	WG	WG	WG
		Sampled Date	29-MAR-21	29-MAR-21	29-MAR-21	29-MAR-21
		Sampled Time	12:00	12:45	10:10	16:00
		Client ID	GH_MW_GHC_2A _WG_2021_03_29 _NP	GH_MW_GHC_2B _WG_2021_03_29 _NP	GH_MW_GHC_4B _WG_2021_03_29 _NP	GH_MW_FC2_WG _2021_03_29_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	0.00022
	Arsenic (As)-Dissolved (mg/L)		0.00019	0.00013	0.00013	0.00019
	Barium (Ba)-Dissolved (mg/L)		0.00950	0.0572	0.0578	0.0778
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.229	0.040	0.017	0.191
	Cadmium (Cd)-Dissolved (mg/L)		0.0000106	0.0000157	0.0000403	0.0000109
	Calcium (Ca)-Dissolved (mg/L)		194	89.8	131	50.7
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	0.00021	0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00022	<0.00010	<0.00010	0.00028
	Copper (Cu)-Dissolved (mg/L)		<0.00020	0.00029	0.00025	<0.00020
	Iron (Fe)-Dissolved (mg/L)		0.012	0.068	<0.010	0.018
	Lead (Pb)-Dissolved (mg/L)		0.000120	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0514	0.0138	0.0095	0.0330
	Magnesium (Mg)-Dissolved (mg/L)		35.0	20.8	50.4	19.2
	Manganese (Mn)-Dissolved (mg/L)		1.27	0.00202	0.00030	0.0996
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000271	0.000343	0.000413	0.00210
	Nickel (Ni)-Dissolved (mg/L)		0.00103	<0.00050	0.00062	0.00090
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		3.55	1.11	1.49	1.59
	Selenium (Se)-Dissolved (mg/L)		0.000163	0.000411	0.0130	0.000179
	Silicon (Si)-Dissolved (mg/L)		6.95	4.68	4.56	4.32
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		37.3	7.49	5.90	35.3
	Strontium (Sr)-Dissolved (mg/L)		0.759	0.233	0.293	1.73
	Sulfur (S)-Dissolved (mg/L)		162	32.0	118	13.7
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	0.00272	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.000271	0.000413	0.00138	0.00128
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0019	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E



## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

## Reference Information

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric  
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer  
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

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### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2571851

Report Date: 02-NOV-21

Page 1 of 9

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Tyler Gale

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5420941</b>							
<b>WG3514946-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			110.7		%		85-115	01-APR-21
<b>WG3514946-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	01-APR-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5420522</b>							
<b>WG3514448-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.9		%		85-115	06-APR-21
<b>WG3514448-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-APR-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418526</b>							
<b>WG3512134-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			97.1		%		80-120	01-APR-21
<b>WG3512134-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-APR-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5420522</b>							
<b>WG3514448-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	06-APR-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418891</b>							
<b>WG3512512-2</b>	<b>LCS</b>							
Bromide (Br)			109.3		%		85-115	31-MAR-21
<b>WG3512512-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	31-MAR-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5420607</b>							
<b>WG3514570-3</b>	<b>DUP</b>	<b>L2571851-1</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-APR-21
<b>WG3514570-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.0		%		80-120	07-APR-21
<b>WG3514570-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.8		%		80-120	07-APR-21
<b>WG3514570-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-APR-21



## Quality Control Report

Workorder: L2571851

Report Date: 02-NOV-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5420607							
<b>WG3514570-5 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-APR-21
<b>WG3514570-4 MS</b>		<b>L2571851-1</b>						
Dissolved Organic Carbon			96.0		%		70-130	07-APR-21
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5420607							
<b>WG3514570-3 DUP</b>		<b>L2571851-1</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-APR-21
<b>WG3514570-2 LCS</b>								
Total Organic Carbon			106.7		%		80-120	07-APR-21
<b>WG3514570-6 LCS</b>								
Total Organic Carbon			106.2		%		80-120	07-APR-21
<b>WG3514570-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	07-APR-21
<b>WG3514570-5 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	07-APR-21
<b>WG3514570-4 MS</b>		<b>L2571851-1</b>						
Total Organic Carbon			101.3		%		70-130	07-APR-21
<b>CL-L-IC-N-CL</b> <b>Water</b>								
Batch	R5418891							
<b>WG3512512-2 LCS</b>								
Chloride (Cl)			105.0		%		85-115	31-MAR-21
<b>WG3512512-1 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	31-MAR-21
<b>CO3-CL</b> <b>Water</b>								
Batch	R5420522							
<b>WG3514448-1 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	06-APR-21
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R5420522							
<b>WG3514448-2 LCS</b>								
Conductivity (@ 25C)			102.1		%		90-110	06-APR-21
<b>WG3514448-1 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	06-APR-21
<b>F-IC-N-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2571851

Report Date: 02-NOV-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418891</b>							
<b>WG3512512-2</b>	<b>LCS</b>							
Fluoride (F)			106.7		%		90-110	31-MAR-21
<b>WG3512512-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	31-MAR-21
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5419855</b>							
<b>WG3513518-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			104.0		%		80-120	06-APR-21
<b>WG3513518-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	06-APR-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418526</b>							
<b>WG3512134-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			99.8		%		80-120	01-APR-21
Antimony (Sb)-Dissolved			103.4		%		80-120	01-APR-21
Arsenic (As)-Dissolved			100.2		%		80-120	01-APR-21
Barium (Ba)-Dissolved			100.3		%		80-120	01-APR-21
Bismuth (Bi)-Dissolved			95.8		%		80-120	01-APR-21
Boron (B)-Dissolved			101.0		%		80-120	01-APR-21
Cadmium (Cd)-Dissolved			100.7		%		80-120	01-APR-21
Calcium (Ca)-Dissolved			92.3		%		80-120	01-APR-21
Chromium (Cr)-Dissolved			99.3		%		80-120	01-APR-21
Cobalt (Co)-Dissolved			97.3		%		80-120	01-APR-21
Copper (Cu)-Dissolved			97.3		%		80-120	01-APR-21
Iron (Fe)-Dissolved			103.0		%		80-120	01-APR-21
Lead (Pb)-Dissolved			99.0		%		80-120	01-APR-21
Lithium (Li)-Dissolved			96.7		%		80-120	01-APR-21
Magnesium (Mg)-Dissolved			97.0		%		80-120	01-APR-21
Manganese (Mn)-Dissolved			100.1		%		80-120	01-APR-21
Molybdenum (Mo)-Dissolved			99.9		%		80-120	01-APR-21
Nickel (Ni)-Dissolved			99.5		%		80-120	01-APR-21
Phosphorus (P)-Dissolved			100.2		%		70-130	01-APR-21
Potassium (K)-Dissolved			101.5		%		80-120	01-APR-21
Selenium (Se)-Dissolved			97.0		%		80-120	01-APR-21
Silicon (Si)-Dissolved			98.6		%		60-140	01-APR-21
Silver (Ag)-Dissolved			98.9		%		80-120	01-APR-21



## Quality Control Report

Workorder: L2571851

Report Date: 02-NOV-21

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5418526</b>							
<b>WG3512134-2</b>	<b>LCS</b>	<b>TMRM</b>						
Sodium (Na)-Dissolved			96.2		%		80-120	01-APR-21
Strontium (Sr)-Dissolved			100.4		%		80-120	01-APR-21
Sulfur (S)-Dissolved			115.8		%		80-120	01-APR-21
Thallium (Tl)-Dissolved			96.8		%		80-120	01-APR-21
Tin (Sn)-Dissolved			100.2		%		80-120	01-APR-21
Titanium (Ti)-Dissolved			97.7		%		80-120	01-APR-21
Uranium (U)-Dissolved			91.8		%		80-120	01-APR-21
Vanadium (V)-Dissolved			101.9		%		80-120	01-APR-21
Zinc (Zn)-Dissolved			101.8		%		80-120	01-APR-21
Zirconium (Zr)-Dissolved			95.0		%		80-120	01-APR-21
<b>WG3512134-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-APR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-APR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-APR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-APR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-APR-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-APR-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-APR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-APR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-APR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-APR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-APR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-APR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-APR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-APR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-APR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-APR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-APR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-APR-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	01-APR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-APR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-APR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-APR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-APR-21



## Quality Control Report

Workorder: L2571851

Report Date: 02-NOV-21

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418526</b>							
<b>WG3512134-1</b>	<b>MB</b>							
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-APR-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-APR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	01-APR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-APR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-APR-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-APR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-APR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-APR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-APR-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	01-APR-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5420991</b>							
<b>WG3514736-3</b>	<b>DUP</b>	<b>L2571851-1</b>						
Ammonia as N		0.235	0.245		mg/L	4.5	20	06-APR-21
<b>WG3514736-2</b>	<b>LCS</b>							
Ammonia as N			110.9		%		85-115	06-APR-21
<b>WG3514736-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	06-APR-21
<b>WG3514736-4</b>	<b>MS</b>	<b>L2571851-2</b>						
Ammonia as N			108.1		%		75-125	06-APR-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418891</b>							
<b>WG3512512-2</b>	<b>LCS</b>							
Nitrite (as N)			107.0		%		90-110	31-MAR-21
<b>WG3512512-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	31-MAR-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418891</b>							
<b>WG3512512-2</b>	<b>LCS</b>							
Nitrate (as N)			104.8		%		90-110	31-MAR-21
<b>WG3512512-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	31-MAR-21
<b>OH-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2571851

Report Date: 02-NOV-21

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>OH-CL</b>	<b>Water</b>							
Batch	R5420522							
<b>WG3514448-1 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	06-APR-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5418942							
<b>WG3512581-1 CRM</b>		<b>CL-ORP</b>						
ORP			219		mV		210-230	04-APR-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5419791							
<b>WG3513305-6 LCS</b>								
Phosphorus (P)-Total			96.5		%		80-120	06-APR-21
<b>WG3513305-5 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	06-APR-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5420522							
<b>WG3514448-2 LCS</b>								
pH			7.00		pH		6.9-7.1	06-APR-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5417681							
<b>WG3511171-3 DUP</b>		<b>L2571851-4</b>						
Orthophosphate-Dissolved (as P)		0.0017	0.0022	J	mg/L	0.0005	0.002	31-MAR-21
<b>WG3511171-2 LCS</b>								
Orthophosphate-Dissolved (as P)			98.4		%		80-120	31-MAR-21
<b>WG3511171-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	31-MAR-21
<b>WG3511171-4 MS</b>		<b>L2571851-4</b>						
Orthophosphate-Dissolved (as P)			105.4		%		70-130	31-MAR-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5418891							
<b>WG3512512-2 LCS</b>								
Sulfate (SO4)			103.9		%		90-110	31-MAR-21
<b>WG3512512-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	31-MAR-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2571851

Report Date: 02-NOV-21

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418768</b>							
<b>WG3511782-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.5		%		85-115	01-APR-21
<b>WG3511782-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	01-APR-21
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5420523</b>							
<b>WG3514376-1</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.0		%		75-125	07-APR-21
<b>WG3514376-2</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-APR-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418739</b>							
<b>WG3511781-2</b>	<b>LCS</b>							
Total Suspended Solids			89.6		%		85-115	01-APR-21
<b>WG3511781-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	01-APR-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5418241</b>							
<b>WG3511254-3</b>	<b>DUP</b>	<b>L2571851-2</b>						
Turbidity		24.3	24.6		NTU	1.2	15	31-MAR-21
<b>WG3511254-2</b>	<b>LCS</b>							
Turbidity			100.5		%		85-115	31-MAR-21
<b>WG3511254-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	31-MAR-21

# Quality Control Report

Workorder: L2571851

Report Date: 02-NOV-21

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2571851

Report Date: 02-NOV-21

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	29-MAR-21 12:00	04-APR-21 09:26	0.25	141	hours	EHTR-FM
	2	29-MAR-21 12:45	04-APR-21 09:26	0.25	141	hours	EHTR-FM
	3	29-MAR-21 10:10	04-APR-21 09:26	0.25	143	hours	EHTR-FM
	4	29-MAR-21 16:00	04-APR-21 09:26	0.25	138	hours	EHTR-FM
pH							
	1	29-MAR-21 12:00	07-APR-21 09:00	0.25	213	hours	EHTR-FM
	2	29-MAR-21 12:45	07-APR-21 09:00	0.25	212	hours	EHTR-FM
	3	29-MAR-21 10:10	07-APR-21 09:00	0.25	215	hours	EHTR-FM
	4	29-MAR-21 16:00	07-APR-21 09:00	0.25	209	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2571851 were received on 30-MAR-21 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																
Contact: Tyler Gale		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			PRIORITY (Business Days)		EMERGENCY			1 Business day [E1 - 100%]											
Phone: Tel.:250-464-5672		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			4 day [P4-20%] <input type="checkbox"/>					Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>											
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			3 day [P3-25%] <input type="checkbox"/>																
Street: 4500 Mennie Rd		Emails: SNC - 'Tyler.Gale'			2 day [P2-50%] <input type="checkbox"/>																
City/Province: Cranbrook, BC		Stefan.Humphries, Vicky.Lipinski, mia.sakelariou			Date and Time Required for all E&P TATs:																
Postal Code: V1C 4J6		Teck: Crystal.Sabel@teck.com			For tests that can not be performed according to the service level selected, you will be contacted.																
<b>Invoice To</b>		<b>Invoice Distribution</b>			<b>Analysis Request</b>																
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																
Copy of invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: Tyler.Gale@snc-lavalin.com			F/P P F/P																
Company:		payables@snc-lavalin.com			DOC (C-DIS-ORG-LOW-CL)																
Contact:		Oil and Gas Required Fields (client use)			TOC (C-TOT-ORG-LOW-CL)																
<b>Project Information</b>		<b>ALS Account # / Quote #</b> MOR125 / Q78198			BC MDG D-Met. + Hg (TECKCOAL-MET-D)																
Job #: 674842 Greenhills operations		AFE/Cost Center: PO#			Total N Calc. (N-T-CALC-CL)																
PO / AFE: 674842		Major/Minor Code: Routing Code:			Nitrate + Nitrite Calc. (N2N3-CALC-CL)																
LSD:		Requisitioner:			Teck Routine (TECKCOAL-ROUTINE-CL)																
ALS Lab Work Order # (lab use only):		Location:			TKN (TKN-L-F-CL)																
ALS Contact: Inayat Dhaliwal 403-407-1784		Sampler: MTS / JVG			Bicarbonate (BIC-CL)																
ALS Sample # (lab use only)		Sample Identification &/or Coordinates		Teck Sample Location (sys_loc_code)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type		Carbonate (CO3-CL)									
This description will appear on the report		For Teck data upload to EQUIS database										Hydroxide (OH-CL)									
GH_MW_GHC_2A_WG_2021_03_29_NP		GH_MW_GHC_2A		29-Mar-21		12:00		WG		R		SAMPLES ON HOLD									
GH_MW_GHC_2B_WG_2021_03_29_NP		GH_MW_GHC_2B		29-Mar-21		12:45		WG		R		Sample is hazardous (please provide further detail)									
<del>GH_MW_GHC_3B_WG_2021_03_29_NP</del>		<del>GH_MW_GHC_3B</del>		<del>29-Mar-21</del>		<del>10:10</del>		<del>WG</del>		<del>R</del>		NUMBER OF CONTAINERS									
GH_MW_GHC_4B_WG_2021_03_29_NP		GH_MW_GHC_4B		29-Mar-21		10:10		WG		R		5									
<del>GH_MW_GAC_1_WG_2021_NP</del>		<del>GH_MW_GAC_1</del>		<del>29-Mar-21</del>		<del>10:10</del>		<del>WG</del>		<del>R</del>		3									
<del>GH_MW_GAC_2_WG_2021_NP</del>		<del>GH_MW_GAC_2</del>		<del>29-Mar-21</del>		<del>10:10</del>		<del>WG</del>		<del>R</del>		3									
<del>GH_MW_F1_WG_2021_NP</del>		<del>GH_MW_F1_1A</del>		<del>29-Mar-21</del>		<del>10:10</del>		<del>WG</del>		<del>R</del>		5									
<del>GH_MW_FC_1_WG_2021_NP</del>		<del>GH_MW_FC_1</del>		<del>29-Mar-21</del>		<del>10:10</del>		<del>WG</del>		<del>R</del>		5									
<del>GH_MW_FC1_WG_2021_NP</del>		<del>GH_MW_FC1</del>		<del>29-Mar-21</del>		<del>10:10</del>		<del>WG</del>		<del>R</del>		5									
GH_MW_FC2_WG_2021_03_29_NP		GH_MW_FC2		29-Mar-21		16:00		WG		R		5									
<del>GH_MW_FC_3_WG_2021_NP</del>		<del>GH_MW_FC_3</del>		<del>29-Mar-21</del>		<del>10:10</del>		<del>WG</del>		<del>R</del>		5									
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		Please upload to Teck Equis			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																
Are samples for human consumption/ use? <input type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)			Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																
LVL NO		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Cooling Initiated <input type="checkbox"/>																
SHIPPING RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)			30 INITIAL COOLER TEMPERATURES °C																
Released by: Marc Beaton		Received by: MK			30 FINAL COOLER TEMPERATURES °C																
Date: 2021-03-29		Date: 3/30			Time: 0945																



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101890**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : Regional Effects Program  
**PO** : VPO00762695  
**C-O-C number** : 01-03\_Q2-2021  
**Sampler** : MB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Jun-2021 08:45  
**Date Analysis Commenced** : 09-Jun-2021  
**Issue Date** : 07-Dec-2021 18:22

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-01-03_	----	----	----	----
(Matrix: Water)						WP_Q2-2021_N				
					Client sampling date / time	08-Jun-2021	---	---	---	---
						09:33				
Analyte	CAS Number	Method	LOR	Unit	CG2101890-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	157	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	157	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	369	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	212	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	457	---	---	---	---	---
pH	---	E108	0.10	pH units	8.28	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	238	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	---	---	---	---	---
turbidity	---	E121	0.10	NTU	0.16	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	192	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.83	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.147	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.357	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.969	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	47.5	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	<0.50	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	0.67	---	---	---	---	---





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-01-03_ WP_Q2-2021_N P	----	----	----	----
Client sampling date / time					08-Jun-2021 09:33	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101890-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.23	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	4.31	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	102	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.937	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0808	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0072	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	56.1	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00027	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00133	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000067	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0026	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	14.8	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000986	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	0.442	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	4.36	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.21	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	1.47	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.210	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-01-03_ WP_Q2-2021_N P	----	----	----	----
Client sampling date / time					08-Jun-2021 09:33	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101890-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	17.4	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000844	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0044	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0013	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0842	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0097	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	57.9	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00025	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00149	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000081	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0027	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	16.3	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000990	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.498	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	4.40	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.19	----	----	----	----	



**Analytical Results**

Sub-Matrix: <b>Water</b> (Matrix: <b>Water</b> )					Client sample ID	RG_DW-01-03_ WP_Q2-2021_N P	----	----	----	----
					Client sampling date / time	08-Jun-2021 09:33	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2101890-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.52	----	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.227	----	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	15.3	----	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000887	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0079	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101890</b>	Page	: 1 of 10
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Spanwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: Regional Effects Program	Date Samples Received	: 09-Jun-2021 08:45
PO	: VPO00762695	Issue Date	: 07-Dec-2021 18:23
C-O-C number	: 01-03_Q2-2021		
Sampler	: MB		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-03_WP_Q2-2021_NP	E298	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-01-03_WP_Q2-2021_NP	E235.Br-L	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-01-03_WP_Q2-2021_NP	E235.Cl-L	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> RG_DW-01-03_WP_Q2-2021_NP	E378-U	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> RG_DW-01-03_WP_Q2-2021_NP	E235.F	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-01-03_WP_Q2-2021_NP	E235.NO3-L	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-01-03_WP_Q2-2021_NP	E235.NO2-L	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Container / Client Sample ID(s)				Rec	Actual					
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> RG_DW-01-03_WP_Q2-2021_NP	E235.SO4	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-03_WP_Q2-2021_NP	E318	08-Jun-2021	14-Jun-2021	----	----		14-Jun-2021	28 days	6 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-03_WP_Q2-2021_NP	E372-U	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> RG_DW-01-03_WP_Q2-2021_NP	E421.Cr-L	08-Jun-2021	10-Jun-2021	----	----		11-Jun-2021	180 days	3 days	✓
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> RG_DW-01-03_WP_Q2-2021_NP	E421	08-Jun-2021	10-Jun-2021	----	----		11-Jun-2021	180 days	3 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-01-03_WP_Q2-2021_NP	E358-L	08-Jun-2021	15-Jun-2021	----	----		17-Jun-2021	28 days	9 days	✓
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-03_WP_Q2-2021_NP	E355-L	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> RG_DW-01-03_WP_Q2-2021_NP	E283	08-Jun-2021	----	----	----		15-Jun-2021	14 days	7 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> RG_DW-01-03_WP_Q2-2021_NP	E290	08-Jun-2021	----	----	----		15-Jun-2021	14 days	7 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
	Rec	Actual		Rec	Actual						
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_DW-01-03_WP_Q2-2021_NP	E100	08-Jun-2021	----	----	----		15-Jun-2021	28 days	7 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-01-03_WP_Q2-2021_NP	E125	08-Jun-2021	----	----	----		15-Jun-2021	0.25 hrs	174 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-01-03_WP_Q2-2021_NP	E108	08-Jun-2021	----	----	----		15-Jun-2021	0.25 hrs	164 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-01-03_WP_Q2-2021_NP	E162	08-Jun-2021	----	----	----		14-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE RG_DW-01-03_WP_Q2-2021_NP	E160-L	08-Jun-2021	----	----	----		14-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE RG_DW-01-03_WP_Q2-2021_NP	E121	08-Jun-2021	----	----	----		10-Jun-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) RG_DW-01-03_WP_Q2-2021_NP	E420.Cr-L	08-Jun-2021	----	----	----		11-Jun-2021	180 days	3 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
HDPE total (nitric acid) RG_DW-01-03_WP_Q2-2021_NP	E420	08-Jun-2021	----	----	----		11-Jun-2021	180 days	3 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	221066	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	221036	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	221169	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	217030	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	217031	1	17	5.8	5.0	✓
Conductivity in Water	E100	221034	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218299	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	218298	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	221223	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	217079	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	217028	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	217032	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	217033	1	17	5.8	5.0	✓
ORP by Electrode	E125	220502	1	20	5.0	5.0	✓
pH by Meter	E108	221035	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	217029	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	220389	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	218419	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	220044	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	218418	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	221227	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	221093	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	217859	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	221066	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	221036	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	221169	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	217030	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	217031	1	17	5.8	5.0	✓
Conductivity in Water	E100	221034	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218299	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	218298	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	221223	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	217079	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	217028	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	217032	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	217033	1	17	5.8	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	220502	1	20	5.0	5.0	✓
pH by Meter	E108	221035	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	217029	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	220389	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	218419	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	220044	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	218418	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	221227	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	221093	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	220379	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	217859	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	221066	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	221036	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	221169	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	217030	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	217031	1	17	5.8	5.0	✓
Conductivity in Water	E100	221034	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218299	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	218298	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	221223	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	217079	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	217028	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	217032	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	217033	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	217029	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	220389	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	218419	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	220044	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	218418	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	221227	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	221093	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	220379	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	217859	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	221169	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	217030	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	217031	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218299	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	218298	1	19	5.2	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	221223	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	217079	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	217028	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	217032	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	217033	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	217029	1	17	5.8	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	218419	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	220044	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	218418	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	221227	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	221093	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2101890**

**Page** : 1 of 17

**Amendment** : **1**

**Client** : Teck Coal Limited  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : Regional Effects Program  
**PO** : VPO00762695  
**C-O-C number** : 01-03\_Q2-2021  
**Sampler** : MB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Jun-2021 08:45  
**Date Analysis Commenced** : 09-Jun-2021  
**Issue Date** : 07-Dec-2021 18:22

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
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Naeun Kim	Analyst	Inorganics, Calgary, Alberta
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Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 217859)</b>											
CG2101881-013	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 220389)</b>											
CG2101881-011	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1560	1660	5.77%	20%	----
<b>Physical Tests (QC Lot: 220502)</b>											
CG2101881-011	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	449	445	0.783%	15%	----
<b>Physical Tests (QC Lot: 221034)</b>											
CG2101873-002	Anonymous	conductivity	----	E100	2.0	µS/cm	645	644	0.155%	10%	----
<b>Physical Tests (QC Lot: 221035)</b>											
CG2101873-002	Anonymous	pH	----	E108	0.10	pH units	8.30	8.33	0.361%	4%	----
<b>Physical Tests (QC Lot: 221036)</b>											
CG2101873-002	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	176	180	2.47%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	1.8	<1.0	0.8	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	178	166	6.62%	20%	----
<b>Physical Tests (QC Lot: 221066)</b>											
CG2101873-002	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 217028)</b>											
CG2101875-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.306	0.308	0.0009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 217029)</b>											
CG2101875-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	1290	1300	0.534%	20%	----
<b>Anions and Nutrients (QC Lot: 217030)</b>											
CG2101875-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 217031)</b>											
CG2101875-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	5.90	5.89	0.0859%	20%	----
<b>Anions and Nutrients (QC Lot: 217032)</b>											
CG2101875-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	22.5	22.6	0.255%	20%	----
<b>Anions and Nutrients (QC Lot: 217033)</b>											
CG2101875-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 217079)</b>											
CG2101883-009	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0012	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 220044)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 220044) - continued</b>											
CG2101879-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.453	0.486	0.032	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 221093)</b>											
CG2101887-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 221169)</b>											
CG2101888-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 221223)</b>											
CG2101887-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.22	1.32	0.09	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 221227)</b>											
CG2101887-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.35	1.34	0.01	Diff <2x LOR	----
<b>Total Metals (QC Lot: 218418)</b>											
CG2101875-003	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	0.000036	0.000038	0.000002	Diff <2x LOR	----
CG2101875-003	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0185	0.0159	0.0026	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00038	0.00038	0.000003	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00018	0.00020	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0257	0.0251	2.22%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.050	0.050	0.0001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.449 µg/L	0.000432	3.88%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	159	157	1.33%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	7.73 µg/L	0.00768	0.618%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.038	0.031	0.006	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0308	0.0297	3.57%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	79.9	78.6	1.71%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0415	0.0414	0.433%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00142	0.00143	0.474%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0538	0.0530	1.36%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.86	2.85	0.0974%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	20.9 µg/L	0.0203	2.88%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.89	1.84	2.56%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	18.7	18.2	2.45%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.502	0.505	0.511%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 218418) - continued</b>											
CG2101875-003	Anonymous	sulfur, total	7704-34-9	E420	0.50	mg/L	189	184	2.84%	20%	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00459	0.00451	1.78%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0348	0.0342	1.80%	20%	----
<b>Total Metals (QC Lot: 218419)</b>											
CG2101875-003	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00014	0.00003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 218298)</b>											
CG2101875-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0028	0.0027	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00039	0.00041	0.00002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00017	0.00020	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0244	0.0252	3.01%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.045	0.044	0.0008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.426 µg/L	0.000460	7.67%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	156	153	1.58%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	6.97 µg/L	0.00717	2.82%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00027	0.00030	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0283	0.0275	2.79%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	77.6	77.8	0.245%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0368	0.0378	2.85%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00139	0.00142	2.74%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0504	0.0522	3.36%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.79	2.85	2.07%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	21.9 µg/L	0.0237	7.97%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.75	1.79	2.33%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	17.4	17.5	0.794%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.516	0.547	5.75%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	156	164	4.94%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000035	0.000036	0.0000003	Diff <2x LOR	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 218298) - continued</b>											
CG2101875-003	Anonymous	tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00451	0.00464	2.82%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0326	0.0328	0.464%	20%	----
<b>Dissolved Metals (QC Lot: 218299)</b>											
CG2101875-003	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00011	0.00011	0.000002	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 217859)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 220379)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 220389)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 221034)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 221036)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 221066)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 217028)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 217029)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 217030)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 217031)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 217032)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 217033)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 217079)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 220044)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 221093)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 221169)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 221169) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 221223)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 221227)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 218418)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	MBRR
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	MBRR
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	MBRR
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 218418) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 218419)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	MBRR
<b>Dissolved Metals (QCLot: 218298)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	---
<b>Dissolved Metals (QCLot: 218299)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 218299) - continued</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----

**Qualifiers**

Qualifier	Description
MBRR	<i>Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (&gt;5x initial MB level) and non-detect results were reported and are defensible</i>



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 217859)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 220379)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	86.2	85.0	115	---
<b>Physical Tests (QCLot: 220389)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.2	85.0	115	---
<b>Physical Tests (QCLot: 220502)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.3	95.4	104	---
<b>Physical Tests (QCLot: 221034)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 221035)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 221036)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 221066)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Anions and Nutrients (QCLot: 217028)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 217029)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 217030)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	96.5	85.0	115	---
<b>Anions and Nutrients (QCLot: 217031)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 217032)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 217033)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 217079)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 220044)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	75.1	75.0	125	---
<b>Anions and Nutrients (QCLot: 221093)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 221093) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	95.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 221169)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	110	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 221223)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 221227)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Total Metals (QCLot: 218418)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	98.4	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.6	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 218418) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	102	80.0	120	----
<b>Total Metals (QCLot: 218419)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 218298)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.5	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.7	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	105	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	110	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	119	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	107	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 218298) - continued</b>									
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.3	80.0	120	----
<b>Dissolved Metals (QCLot: 218299)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.3	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 217028)</b>										
CG2101875-009	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 217029)</b>										
CG2101875-009	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 217030)</b>										
CG2101875-009	Anonymous	bromide	24959-67-9	E235.Br-L	0.504 mg/L	0.5 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 217031)</b>										
CG2101875-009	Anonymous	chloride	16887-00-6	E235.Cl-L	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 217032)</b>										
CG2101875-009	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.62 mg/L	2.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 217033)</b>										
CG2101875-009	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.516 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 217079)</b>										
CG2101883-010	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0511 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 220044)</b>										
CG2101879-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.86 mg/L	2.5 mg/L	74.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 221093)</b>										
CG2101888-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0577 mg/L	0.0676 mg/L	85.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 221169)</b>										
CG2101921-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 221223)</b>										
CG2101887-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.1 mg/L	23.9 mg/L	105	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 221227)</b>										
CG2101887-001	Anonymous	carbon, total organic [TOC]	----	E355-L	27.0 mg/L	23.9 mg/L	113	70.0	130	----
<b>Total Metals (QCLot: 218418)</b>										
CG2101875-003	Anonymous	thallium, total	7440-28-0	E420	0.00373 mg/L	0.004 mg/L	93.2	70.0	130	----
CG2101875-003	Anonymous	aluminum, total	7429-90-5	E420	0.178 mg/L	0.2 mg/L	88.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 218418) - continued</b>										
CG2101875-003	Anonymous	barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0356 mg/L	0.04 mg/L	88.9	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00830 mg/L	0.01 mg/L	83.0	70.0	130	----
		boron, total	7440-42-8	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00358 mg/L	0.004 mg/L	89.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0172 mg/L	0.02 mg/L	86.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0172 mg/L	0.02 mg/L	86.0	70.0	130	----
		iron, total	7439-89-6	E420	1.77 mg/L	2 mg/L	88.3	70.0	130	----
		lead, total	7439-92-1	E420	0.0168 mg/L	0.02 mg/L	84.2	70.0	130	----
		lithium, total	7439-93-2	E420	0.0870 mg/L	0.1 mg/L	87.0	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	3.54 mg/L	4 mg/L	88.6	70.0	130	----
		selenium, total	7782-49-2	E420	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		silicon, total	7440-21-3	E420	9.24 mg/L	10 mg/L	92.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00350 mg/L	0.004 mg/L	87.6	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		tin, total	7440-31-5	E420	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		titanium, total	7440-32-6	E420	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0942 mg/L	0.1 mg/L	94.2	70.0	130	----
		zinc, total	7440-66-6	E420	0.337 mg/L	0.4 mg/L	84.2	70.0	130	----
<b>Total Metals (QCLot: 218419)</b>										
CG2101875-003	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
<b>Dissolved Metals (QCLot: 218298)</b>										
CG2101875-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.189 mg/L	0.2 mg/L	94.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0230 mg/L	0.02 mg/L	115	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0361 mg/L	0.04 mg/L	90.3	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00881 mg/L	0.01 mg/L	88.1	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 218298) - continued</b>										
CG2101875-003	Anonymous	boron, dissolved	7440-42-8	E421	0.097 mg/L	0.1 mg/L	97.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00387 mg/L	0.004 mg/L	96.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0177 mg/L	0.02 mg/L	88.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0910 mg/L	0.1 mg/L	91.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0230 mg/L	0.02 mg/L	115	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.65 mg/L	4 mg/L	91.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.92 mg/L	10 mg/L	99.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0410 mg/L	0.04 mg/L	103	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0952 mg/L	0.1 mg/L	95.2	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.364 mg/L	0.4 mg/L	91.1	70.0	130	----
<b>Dissolved Metals (QCLot: 218299)</b>										
CG2101875-003	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----

EOC ID: **01-03\_Q2-2021** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job# Drinking Water Sample Analysis - 2021 Q2				Lab Name ALS Calgary				Report Format / Distribution				
Project Manager Cam Jaeger				Lab Contact Lyudmyla Shvets				Email 1: cam.jaeger@teck.com		Excel	PDF	EDD
Email cam.jaeger@teck.com				Email lyudmyla.shvets@alsglobal.com				Email 2: monica.bartha@teck.com		X	X	X
Address 421 Pinc Ave				Address 2559 29 st NE				Email 3: teckcoal@equisonline.com		X	X	X
City Sparwood Province BC				City Calgary Province AB				Email 4: tecklab.results@sharepoint		X	X	
Postal Code V0B 2G0 Country Canada				Postal Code T1Y 7B5 Country Canada				Email 5:				
Phone Number 250-425-9449				Phone Number 403-407-1800				PO number		VPO00762695		

Environmental Division  
Calgary  
Work Order Reference  
**CG2101890**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TRN/TOC	HG-D-CYAF-VA	HG-T-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	F	N	F	N	F	N	N	
RG_DW-01-03_WP_Q2-2021_NP	RG_DW-01-03	WP	N	8-Jun-21	0933	G	5	1	1			1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
		8:45	GT	June 9

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Date/Time
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Monica Bartha	250-425-4784	June 8, 2021

80C

## CERTIFICATE OF ANALYSIS

**Work Order : CG2101024**
**Page : 1 of 7**
**Amendment : 1**
**Client : Teck Coal Limited**
**Laboratory : Calgary - Environmental**
**Contact : Jeremy Enns**
**Account Manager : Justine Buma-a**
**Address : Greenhills Operations BOX 5000  
Elkford BC Canada V0B1H0**
**Address : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5**
**Telephone : 250 865 3305**
**Telephone : +1 403 407 1800**
**Project : GREENHILLS OPERATION**
**Date Samples Received : 24-Apr-2021 08:30**
**PO : VPO00739453**
**Date Analysis Commenced : 24-Apr-2021**
**C-O-C number : 2021-04-23-WG**
**Issue Date : 10-Nov-2021 14:38**
**Sampler : AF/HS/JM/EO**
**Site : ---**
**Quote number : Teck Coal Master Quote**
**No. of samples received : 1**
**No. of samples analysed : 1**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sunil Palak		Microbiology, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
MPN/100mL	most probable number per 100 mL
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					GH_GA-MW-2_2 021-04-05_NP	----	----	----	----
Client sampling date / time					23-Apr-2021 12:00	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2101024-001	-----	-----	-----	-----
					Result	----	----	----	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	11.1	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	214	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	214	----	----	----	----
conductivity	----	E100	2.0	µS/cm	1280	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	745	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	408	----	----	----	----
pH	----	E108	0.10	pH units	7.55	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	978	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	----	----	----	----
turbidity	----	E121	0.10	NTU	<0.10	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	261	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	5.68	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLHC</sup>	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	12.4	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0795	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	504	----	----	----	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.99	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.92	----	----	----	----
<b>Bacteriological Tests</b>									



## Analytical Results

Sub-Matrix: Water					Client sample ID	GH_GA-MW-2_2	----	----	----	----
(Matrix: Water)						021-04-05_NP				
Client sampling date / time					23-Apr-2021 12:00	----	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2101024-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Bacteriological Tests</b>										
coliforms, total	----	E010	1	MPN/100mL	<1	----	----	----	----	----
coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	15.8	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	15.4	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	97.5	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	1.28	----	----	----	----	----
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00192	----	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00023	----	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0317	----	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.021	----	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0764	----	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	197	----	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	0.44	----	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00360	----	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	----	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0227	----	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	59.2	----	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0763	----	----	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	----	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0252	----	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00711	----	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	1.49	----	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	36.8	----	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	3.72	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					GH_GA-MW-2_2 021-04-05_NP	----	----	----	----
Client sampling date / time					23-Apr-2021 12:00	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2101024-001	-----	-----	-----	-----
					Result	---	---	---	---
<b>Total Metals</b>									
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	10.9	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.731	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	188	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000016	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.0103	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0107	----	----	----	----
<b>Dissolved Metals</b>									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00184	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00022	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0323	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.020	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0787	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	201	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.41	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00140	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0216	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	59.1	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0743	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0249	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00686	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_GA-MW-2_2 021-04-05_NP	----	----	----	----
Client sampling date / time					23-Apr-2021 12:00	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101024-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Dissolved Metals</b>										
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.53	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	36.5	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.62	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	11.1	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.744	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	176	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000016	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00903	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0106	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>CG2101163</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : <b>Jeremy Enns</b> <b>Address</b> : <b>Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0</b> <b>Telephone</b> : <b>250 865 3305</b> <b>Project</b> : <b>GREENHILLS OPERATION</b> <b>PO</b> : <b>VPO00739453</b> <b>C-O-C number</b> : <b>2021-03-12-WG</b> <b>Sampler</b> : <b>---</b> <b>Site</b> : <b>---</b> <b>Quote number</b> : <b>Teck Coal Master Quote</b> <b>No. of samples received</b> : <b>5</b> <b>No. of samples analysed</b> : <b>5</b>	<b>Page</b> : 1 of 7  <b>Laboratory</b> : <b>Calgary - Environmental</b> <b>Account Manager</b> : <b>Justine Buma-a</b> <b>Address</b> : <b>2559 29th Street NE Calgary AB Canada T1Y 7B5</b> <b>Telephone</b> : <b>+1 403 407 1800</b> <b>Date Samples Received</b> : <b>01-May-2021 09:17</b> <b>Date Analysis Commenced</b> : <b>01-May-2021</b> <b>Issue Date</b> : <b>10-Nov-2021 14:44</b>
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sunil Palak		Microbiology, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
MPN/100mL	most probable number per 100 mL
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

Sample	Client Id	Comment
CG2101163-005	GH_RD12_WG_2021-04-05_ NP	Bacteriological bottle received .Sample was analyzed for Total Coliform and E.coli.

## Qualifiers

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-BG1A_ WG_2021-04-0 5_NP	GH_MW-BG1B_ WG_2021-04-0 5_NP	GH_MW-BG1C_ WG_2021-04-0 5_NP	GH_FOX3_WG_ 2021-04-05_NP	GH_RD12_WG_ 2021-04-05_NP
Client sampling date / time					30-Apr-2021 10:00	30-Apr-2021 11:15	30-Apr-2021 12:15	30-Apr-2021 12:30	30-Apr-2021 13:00	
Analyte	CAS Number	Method	LOR	Unit	CG2101163-001 Result	CG2101163-002 Result	CG2101163-003 Result	CG2101163-004 Result	CG2101163-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	3.2	<2.0	2.4	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	321	289	307	297	<1.0	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	321	289	307	297	<1.0	
conductivity	----	E100	2.0	µS/cm	579	492	504	508	<2.0	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	308	290	281	286	<0.50	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	262	292	300	284	454	
pH	----	E108	0.10	pH units	8.14	8.17	8.12	8.15	5.41	
solids, total dissolved [TDS]	----	E162	10	mg/L	338	289	295	313	<10	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	13.4	13.5	17.7	17.0	<1.0	
turbidity	----	E121	0.10	NTU	13.8	50.7	37.5	39.5	<0.10	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	391	353	374	363	<1.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0926	0.148	0.149	0.167	<0.0050	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.07	0.41	0.36	0.36	<0.10	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.195	0.427	0.406	0.403	<0.020	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.136	0.119	0.209	0.226	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0141	0.0055	0.0063	0.0082	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	23.3	4.70	7.45	7.50	<0.30	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.44	2.41	2.48	2.74	<0.50	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.56	2.56	2.81	2.88	<0.50	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-BG1A_WG_2021-04-05_NP	GH_MW-BG1B_WG_2021-04-05_NP	GH_MW-BG1C_WG_2021-04-05_NP	GH_FOX3_WG_2021-04-05_NP	GH_RD12_WG_2021-04-05_NP
Client sampling date / time					30-Apr-2021 10:00	30-Apr-2021 11:15	30-Apr-2021 12:15	30-Apr-2021 12:30	30-Apr-2021 13:00	
Analyte	CAS Number	Method	LOR	Unit	CG2101163-001	CG2101163-002	CG2101163-003	CG2101163-004	CG2101163-005	
					Result	Result	Result	Result	Result	
<b>Bacteriological Tests</b>										
coliforms, total	----	E010	1	MPN/100mL	----	----	----	----	<1	
coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	----	----	----	----	<1	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.97	5.91	6.32	6.12	<0.10	
cation sum	----	EC101	0.10	meq/L	6.95	6.13	6.10	6.22	<0.10	
ion balance (cations/anions ratio)	----	EC101	0.010	%	99.7	104	96.5	102	100	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.144	1.83	1.77	0.810	<0.010	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0741	0.0350	0.104	0.104	<0.0030	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00010	0.00026	0.00203	0.00182	<0.00010	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00210	0.00345	0.00172	0.00183	<0.00010	
barium, total	7440-39-3	E420	0.00010	mg/L	0.192	0.262	0.208	0.223	<0.00010	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	0.028	0.013	0.013	0.014	<0.010	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0442	<0.0150 <sup>DLM</sup>	<0.0250 <sup>DLM</sup>	0.0278	<0.0050	
calcium, total	7440-70-2	E420	0.050	mg/L	75.7	79.2	74.9	78.9	<0.050	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00024	0.00030	0.00027	0.00027	<0.00010	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.64	2.77	1.87	2.02	<0.10	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00103	0.00192	0.00080	0.00078	<0.00050	
iron, total	7439-89-6	E420	0.010	mg/L	0.993	4.58	4.23	4.42	<0.010	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000237	0.000361	0.000282	0.000304	<0.000050	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0184	0.0041	0.0042	0.0046	<0.0010	
magnesium, total	7439-95-4	E420	0.0050	mg/L	32.0	25.6	25.4	26.3	<0.0050	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.402	0.159	0.157	0.166	<0.00010	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00752	0.00624	0.00335	0.00360	<0.000050	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00209	0.00559	0.00446	0.00464	<0.00050	
potassium, total	7440-09-7	E420	0.050	mg/L	3.18	1.38	1.29	1.37	<0.050	
selenium, total	7782-49-2	E420	0.050	µg/L	0.161	0.052	0.064	<0.050	<0.050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-BG1A_WG_2021-04-05_NP	GH_MW-BG1B_WG_2021-04-05_NP	GH_MW-BG1C_WG_2021-04-05_NP	GH_FOX3_WG_2021-04-05_NP	GH_RD12_WG_2021-04-05_NP
Client sampling date / time					30-Apr-2021 10:00	30-Apr-2021 11:15	30-Apr-2021 12:15	30-Apr-2021 12:30	30-Apr-2021 13:00	
Analyte	CAS Number	Method	LOR	Unit	CG2101163-001	CG2101163-002	CG2101163-003	CG2101163-004	CG2101163-005	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
silicon, total	7440-21-3	E420	0.10	mg/L	3.83	3.67	3.68	3.79	<0.10	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	0.000012	0.000044	0.000034	<0.000010	
sodium, total	17341-25-2	E420	0.050	mg/L	18.0	3.37	8.16	8.74	<0.050	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.112	0.113	0.184	0.196	<0.00020	
sulfur, total	7704-34-9	E420	0.50	mg/L	8.86	2.36	3.32	3.29	<0.50	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000013	0.000039	<0.000010	<0.000010	<0.000010	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00040	0.00040	0.00026	0.00027	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00198	<0.00090 <sup>DLM</sup>	0.00186	0.00206	<0.00030	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00234	0.000212	0.000634	0.000653	<0.000010	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00121	0.00064	0.00085	0.00080	<0.00050	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0047	0.0033	<0.0030	<0.0030	<0.0030	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00203	0.00076	0.00105	0.00103	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.198	0.246	0.202	0.207	<0.00010	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.027	0.012	0.012	0.013	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	71.4	75.3	71.5	74.0	<0.050	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.55	2.62	1.82	1.82	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.852	3.25	3.12	3.14	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0183	0.0042	0.0044	0.0045	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	31.4	24.9	24.8	24.7	<0.0050	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.404	0.152	0.153	0.154	<0.00010	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-BG1A_WG_2021-04-05_NP	GH_MW-BG1B_WG_2021-04-05_NP	GH_MW-BG1C_WG_2021-04-05_NP	GH_FOX3_WG_2021-04-05_NP	GH_RD12_WG_2021-04-05_NP
Client sampling date / time					30-Apr-2021 10:00	30-Apr-2021 11:15	30-Apr-2021 12:15	30-Apr-2021 12:30	30-Apr-2021 13:00	
Analyte	CAS Number	Method	LOR	Unit	CG2101163-001	CG2101163-002	CG2101163-003	CG2101163-004	CG2101163-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00693	0.00495	0.00322	0.00334	<0.000050	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00182	0.00522	0.00392	0.00400	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.11	1.35	1.28	1.29	<0.050	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.49	3.31	3.32	3.36	<0.050	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	15.4	3.72	7.65	7.77	<0.050	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.104	0.106	0.182	0.185	<0.00020	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	7.47	2.17	2.81	2.95	<0.50	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000038	<0.000010	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00226	0.000218	0.000586	0.000620	<0.000010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0013	0.0016	<0.0010	<0.0010	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: 2021-03-12-WG

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Burma-a			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	eric.culsen@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:	jennifer.manojlovic@teck.com	X	X	X
				Phone Number	403 407 1794			Email 6:	DL.Equis.GHO-Field@teck.com	X	X	X
								Email 7:	jeremy.enns@teck.com	X	X	X
								PO number	739453			

Environmental Division  
Calgary  
Work Order Reference  
**CG2101163**



Telephone: +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED											
ALS Package	Property	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N		
ALS Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-TKN/TOC	EPH/PAH/LEPH/IEPH	SULPHIDE	BOD	COD	Phenols	VOC/PH/BTEX	Sodium bisulphate	ZN acetate, NaOH	H2SO4	H2SO4	Sodium bisulphate		
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package	Property	Y	Y	N	Y	N	N	N	N	N	N		
GH_MW-EE1A_WG_2021-04-05_NP	GH_MW-EE1A	WG	N	4/29/2021		G	7	1	1	1	1	1	1	1	1	1	1		
GH_MW-EE1B_WG_2021-04-05_NP	GH_MW-EE1B	WG	N	4/29/2021		G	7	1	1	1	1	1	1	1	1	1	1		
GH_MW-BG1A_WG_2021-04-05_NP	GH_MW-BG1A	WG	N	4/29/2021	10:00	G	7	1	1	1	1	1	1	1	1	1	1		
GH_MW-BG1B_WG_2021-04-05_NP	GH_MW-BG1B	WG	N	4/29/2021	11:15	G	7	1	1	1	1	1	1	1	1	1	1		
GH_MW-BG1C_WG_2021-04-05_NP	GH_MW-BG1C	WG	N	4/29/2021	12:15	G	7	1	1	1	1	1	1	1	1	1	1		
GH_Fox3_WG_2021-04-05_NP	GH_Fox3	WG	N	4/30/2021	12:30	G	7	1	1	1	1	1	1	1	1	1	1		
GH_RD12_WG_2021-04-05_NP	GH_RD12	WG	N	4/30/2021	13:00	G	7	1	1	1	1	1	1	1	1	1	1		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	MARC BEATON SNC-Lawatin	Apr 29/21 15:00	<i>[Signature]</i>	05/01/21 14:17

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	MARC BEATON	250 777 7860	<i>[Signature]</i>	April 29, 2021

0.7

30



## CERTIFICATE OF ANALYSIS

Work Order : **CG2101302**

Amendment : **1**

Client : **Teck Coal Limited**

Contact : Jeremy Enns

Address : Greenhills Operations BOX 5000  
Elkford BC Canada V0B1H0

Telephone : 250 865 3305

Project : GREENHILLS OPERATION

PO : VPO00739453

C-O-C number : 2021-05-07-WG

Sampler : RG/HS

Site : ---

Quote number : Teck Coal Master Quote

No. of samples received : 4

No. of samples analysed : 4

Page : 1 of 7

Laboratory : Calgary - Environmental

Account Manager : Justine Buma-a

Address : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5

Telephone : +1 403 407 1800

Date Samples Received : 08-May-2021 09:15

Date Analysis Commenced : 08-May-2021

Issue Date : 10-Nov-2021 14:51

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					GH_POTW17_WG_2021-05-03_NP	GH_POTW9_WG_2021-05-03_NP	GH_POTW10_WG_2021-05-03_NP	GH_POT_15_WG_2021-05-03-NP	----
Client sampling date / time					07-May-2021 12:09	07-May-2021 12:31	07-May-2021 12:43	07-May-2021 12:49	----
Analyte	CAS Number	Method	LOR	Unit	CG2101302-001	CG2101302-002	CG2101302-003	CG2101302-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	8.5	6.3	4.8	8.5	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	256	258	210	236	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	2.0	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	256	258	212	236	----
conductivity	----	E100	2.0	µS/cm	1190	768	748	956	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	714	431	420	535	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	500	399	366	383	----
pH	----	E108	0.10	pH units	8.09	8.30	8.31	8.23	----
solids, total dissolved [TDS]	----	E162	10	mg/L	906	512	592	671	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	1.0	1.5	----
turbidity	----	E121	0.10	NTU	1.34	1.08	6.02	10.4	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	312	314	256	288	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	1.2	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0096	0.0329	0.0671	0.0516	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.050	<0.050	<0.250 <sup>DLHC</sup>	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	15.8	7.44	7.98	35.7	----
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLHC</sup>	0.710	0.735	0.116	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0.067	<0.050	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.205	0.0250	1.04	0.0309	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	0.0016	0.0214	0.0082	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	437	184	204	275	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.65	<0.50	<0.50	0.93	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.69	<0.50	<0.50	1.00	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_POTW17_WG_2021-05-03_NP	GH_POTW9_WG_2021-05-03_NP	GH_POTW10_WG_2021-05-03_NP	GH_POT_15_WG_2021-05-03-NP	----
Client sampling date / time					07-May-2021 12:09	07-May-2021 12:31	07-May-2021 12:43	07-May-2021 12:49	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101302-001	CG2101302-002	CG2101302-003	CG2101302-004	-----	
					Result	Result	Result	Result	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	14.7	9.24	8.82	11.4	----	
cation sum	----	EC101	0.10	meq/L	14.7	9.01	8.69	11.3	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	97.5	98.5	99.1	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	1.26	0.742	0.440	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0035	<0.0030	<0.0030	<0.0030	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00017	0.00053	0.00122	0.00147	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0238	0.0326	0.0181	0.0201	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.029	0.020	0.039	0.021	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0300	0.0079	0.0128	0.0163	----	
calcium, total	7440-70-2	E420	0.050	mg/L	180	103	102	141	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.11	0.19	0.14	0.22	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00068	0.00160	<0.00050	<0.00050	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.155	0.168	0.714	0.731	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000314	0.000081	0.000271	0.000166	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0135	0.0113	0.0160	0.0149	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	68.2	42.0	40.2	44.2	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0478	0.176	0.0434	0.188	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00117	0.00244	0.00292	0.00257	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00447	0.00203	0.00103	0.00088	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.74	1.62	1.67	1.58	----	
selenium, total	7782-49-2	E420	0.050	µg/L	5.30	1.63	5.63	0.132	----	
silicon, total	7440-21-3	E420	0.10	mg/L	4.53	4.53	4.86	4.25	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, total	17341-25-2	E420	0.050	mg/L	8.41	7.35	4.84	10.8	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_POTW17_WG_2021-05-03_NP	GH_POTW9_WG_2021-05-03_NP	GH_POTW10_WG_2021-05-03_NP	GH_POT_15_WG_2021-05-03-NP	----
Client sampling date / time					07-May-2021 12:09	07-May-2021 12:31	07-May-2021 12:43	07-May-2021 12:49	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101302-001	CG2101302-002	CG2101302-003	CG2101302-004	-----	
					Result	Result	Result	Result	----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.498	0.331	0.560	0.397	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	163	64.9	78.3	102	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000013	0.000015	<0.000010	0.000017	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00200	0.00228	0.000720	0.00148	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	0.0109	<0.0030	<0.0030	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00053	0.00109	0.00155	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0239	0.0356	0.0190	0.0229	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.024	0.019	0.038	0.020	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0348	0.0098	0.0089	0.0124	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	173	102	96.6	133	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.11	0.18	0.14	0.22	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00111	<0.00020	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.052	0.163	0.469	0.775	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000200	<0.000050	0.000186	0.000135	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0137	0.0117	0.0170	0.0150	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	68.5	42.9	43.5	49.3	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0525	0.192	0.0487	0.217	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00110	0.00240	0.00296	0.00244	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00390	0.00188	0.00103	0.00090	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.75	1.65	1.72	1.67	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_POTW17_WG_2021-05-03_NP	GH_POTW9_WG_2021-05-03_NP	GH_POTW10_WG_2021-05-03_NP	GH_POT_15_WG_2021-05-03-NP	----
Client sampling date / time					07-May-2021 12:09	07-May-2021 12:31	07-May-2021 12:43	07-May-2021 12:49	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101302-001	CG2101302-002	CG2101302-003	CG2101302-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	5.80	2.03	5.81	0.123	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.60	4.70	4.72	4.18	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	8.76	7.64	5.24	12.0	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.517	0.358	0.578	0.404	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	162	67.4	75.1	98.4	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000016	<0.000010	0.000016	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00188	0.00226	0.000672	0.00136	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0019	0.0065	0.0013	0.0016	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: **2021-05-07-WG** RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF		EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	teckcoal@equisonline.com	X	X		X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	DL-Equils-GHO-Field@teck.com	X	X		X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:					X
								Email 4:		X	X		X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 5:		X	X		X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 6:		X	X		X
Phone Number	250.865.3048			Phone Number	403 407 1794			Email 7:		X	X		X
								PO number	<b>739453</b>				

Environmental Division  
Calgary  
Work Order Reference  
**CG2101302**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED													
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	Preserv.	Y	Y	N	Y	N	N	N	N	Sodium bisulphate	ZN acetate, NaOH	H2SO4	H2SO4	Sodium bisulphate	
						ALS_Package-DOC	H2SO4														
						HG-D-CVAF-VA	HCL														
						HG-T-U-CVAF-VA	NONE														
						TECKCOAL-MET-D-VA	HNO3														
						TECKCOAL-MET-T-VA	HNO3														
						TECKCOAL-ROUTINE-VA	NONE														
						ALS_Package-TKN/TOC	H2SO4														
						EPH/PAH/LEPH/HEPH															
						SULPHIDE															
						BOD															
						COD															
						Phenols															
						VOC/PH/BTEX															

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>JK</i>	5/8 0915

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	RG/HS	Mobile #	Date/Time	
Sampler's Signature			May 7, 2021	

*pe*



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101421**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000  
Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-05-13-WG**  
**Sampler** : **AH**  
**Site** : **---**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **2**  
**No. of samples analysed** : **2**

**Page** : **1 of 7**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE  
Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **14-May-2021 09:00**  
**Date Analysis Commenced** : **14-May-2021**  
**Issue Date** : **10-Nov-2021 14:54**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					GH_MW_EF1A_WG_2021-04-05_NP	GH_MW_EF1B_WG_2021-04-05_NP	----	----	----
Client sampling date / time					13-May-2021 12:30	13-May-2021 12:20	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2101421-001	CG2101421-002	-----	-----	-----
					Result	Result	---	---	---
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	163	171	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	163	171	----	----	----
conductivity	----	E100	2.0	µS/cm	360	343	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	192	181	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	313	417	----	----	----
pH	----	E108	0.10	pH units	8.07	8.15	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	294	183	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	----	----	----
turbidity	----	E121	0.10	NTU	<0.10	<0.10	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	199	209	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0160	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.050	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.23	0.61	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.103	0.126	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.292	0.203	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.812	0.378	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0010	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	42.3	31.9	----	----	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.04	0.98	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.96	1.00	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW_EF1A_WG_2021-04-05_NP	GH_MW_EF1B_WG_2021-04-05_NP	---	---	---
Client sampling date / time					13-May-2021 12:30	13-May-2021 12:20	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2101421-001	CG2101421-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.24	4.13	---	---	---	
cation sum	----	EC101	0.10	meq/L	3.90	3.69	---	---	---	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.0	89.3	---	---	---	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.18	5.63	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	0.00010	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0631	0.0544	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0058	0.0054	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	54.8	52.3	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00026	0.00021	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0037	0.0036	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	13.5	13.4	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000933	0.00106	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	0.396	0.390	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	3.43	2.43	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	2.01	1.97	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	1.36	1.20	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW_EF1A_WG_2021-04-05_NP	GH_MW_EF1B_WG_2021-04-05_NP	---	---	---
Client sampling date / time					13-May-2021 12:30	13-May-2021 12:20	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2101421-001 Result	CG2101421-002 Result	-----	-----	-----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.225	0.211	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	15.2	11.5	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000840	0.000886	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0014	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0635	0.0533	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0069	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	54.6	51.4	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00025	0.00022	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0031	0.0032	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	13.5	12.9	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000969	0.00108	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.404	0.396	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW_EF1A_WG_2021-04-05_NP	GH_MW_EF1B_WG_2021-04-05_NP	----	----	----
Client sampling date / time					13-May-2021 12:30	13-May-2021 12:20	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101421-001 Result	CG2101421-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	3.62	2.75	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.95	1.91	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.38	1.19	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.224	0.215	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	15.1	11.0	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000837	0.000886	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101842**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000  
Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-06-04-WG**  
**Sampler** : **Jennifer Manojlovic, sylvie simkova**  
**Site** : **---**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **2**  
**No. of samples analysed** : **2**

**Page** : **1 of 7**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE  
Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **05-Jun-2021 09:00**  
**Date Analysis Commenced** : **05-Jun-2021**  
**Issue Date** : **10-Nov-2021 15:02**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Shirley Li		Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTS	Dissolved Sulfur concentration exceeds total. Negative bias on Total Sulfur suspected due to presence of volatile sulfur species lost during digestion.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_GA-MW-4_ WG_2021-04-0 5_NP	GH_GA-MW-3_ WG_2021-04-0 5_NP	----	----	----
Client sampling date / time					04-Jun-2021 11:30	04-Jun-2021 13:15	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101842-001 Result	CG2101842-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	5.1	3.6	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	276	183	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	276	183	----	----	----	
conductivity	----	E100	2.0	µS/cm	780	393	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	364	205	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	438	454	----	----	----	
pH	----	E108	0.10	pH units	7.84	7.73	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	518	220	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	9.8	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	46.1	<0.10	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	336	224	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0375	0.0064	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	7.52	2.76	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.531	0.151	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.293	0.110	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.935	0.470	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0421	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0014	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0171	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	156	30.9	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.35	1.53	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.19	1.41	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_GA-MW-4_ WG_2021-04-0 5_NP	GH_GA-MW-3_ WG_2021-04-0 5_NP	---	---	---
Client sampling date / time					04-Jun-2021 11:30	04-Jun-2021 13:15	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2101842-001 Result	CG2101842-002 Result	----- ---	----- ---	----- ---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.07	4.42	----	----	----	
cation sum	----	EC101	0.10	meq/L	8.81	4.40	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	97.1	99.5	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.45	0.227	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0344	0.0031	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	0.00013	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00023	0.00010	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0701	0.0777	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.245	0.012	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0281	0.0055	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	76.6	50.6	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00045	0.00023	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00308	<0.00050	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.100	<0.010	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000065	<0.000050	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0781	0.0146	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	44.0	17.0	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00960	0.00025	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00054	<0.00050	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000148	0.00149	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00085	<0.00050	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.47	0.963	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	11.6	2.89	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	4.93	2.38	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000043	<0.000010	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	33.3	6.84	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_GA-MW-4_ WG_2021-04-0 5_NP	GH_GA-MW-3_ WG_2021-04-0 5_NP	---	---	---
Client sampling date / time					04-Jun-2021 11:30	04-Jun-2021 13:15	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2101842-001 Result	CG2101842-002 Result	-----	-----	-----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	1.94	0.179	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	64.9	11.8	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00090 <sup>DLM</sup>	<0.00030	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000424	0.00136	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0018	<0.0010	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00012	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00021	<0.00010	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0684	0.0822	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.220	0.012	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	74.5	53.0	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00024	0.00018	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00026	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.022	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0776	0.0145	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	43.2	17.6	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00880	<0.00010	---	---	---	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000500 <sup>DLM</sup>	<0.000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000094	0.00151	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.52	0.943	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_GA-MW-4_ WG_2021-04-0 5_NP	GH_GA-MW-3_ WG_2021-04-0 5_NP	----	----	----
Client sampling date / time					04-Jun-2021 11:30	04-Jun-2021 13:15	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101842-001 Result	CG2101842-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	14.4	3.02	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.67	2.26	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	33.9	6.60	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	2.06	0.176	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	162 <sup>DTS</sup>	11.7	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000440	0.00129	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: 2021-06-04-WG

RUSH: **YES**

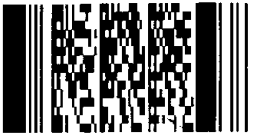
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	teckcoal@teckonline.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	DL-fnuis-GHO-Field@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:				X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:		X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:		X	X	X
Environmental Division Calgary				Phone Number	403 407 1794			Email 6:		X	X	X
Work Order Reference <b>CG2101842</b>				PO number	739453			Email 7:		X	X	X

LE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH/PAH/LEPH/HEPH	SULPHIDE	BOD	COD	Phenols	VOC/PH/TEX
GH_GA-MW-4_WG_2021-04-05_NP	GH_GA-MW-4	WG	N	6/4/2021	11:30	G	7											
GH_GA-MW-3_WG_2021-04-05_NP	GH_GA-MW-3	WG	N	6/4/2021	13:35	G	7											



Telephone : +1 403 407 1600

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
<b>Please rush to maintain hold times</b>			<i>[Signature]</i>	6/5/2021

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	JM/SS	Mobile #	Date/Time
Regular (default)				250-910-8493	
Priority (2-3 business days) - 50% surcharge					
Emergency (1 Business Day) - 100% surcharge <b>X</b>		<i>[Signature]</i>			June 4, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS					



## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>CG2101956</b>	<b>Page</b>	: 1 of 7
<b>Amendment</b>	: <b>1</b>	<b>Laboratory</b>	: Calgary - Environmental
<b>Client</b>	: <b>Teck Coal Limited</b>	<b>Account Manager</b>	: Justine Buma-a
<b>Contact</b>	: Jeremy Enns	<b>Address</b>	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
<b>Address</b>	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	<b>Telephone</b>	: +1 403 407 1800
<b>Telephone</b>	: 250 865 3305	<b>Date Samples Received</b>	: 11-Jun-2021 08:30
<b>Project</b>	: GREENHILLS OPERATION	<b>Date Analysis Commenced</b>	: 11-Jun-2021
<b>PO</b>	: VPO00739453	<b>Issue Date</b>	: 10-Nov-2021 15:05
<b>C-O-C number</b>	: 2021-10-09-WG		
<b>Sampler</b>	: RG		
<b>Site</b>	: ---		
<b>Quote number</b>	: Teck Coal Master Quote		
<b>No. of samples received</b>	: 2		
<b>No. of samples analysed</b>	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### **Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Shirley Li		Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.



## Analytical Results

Sub-Matrix: Water					Client sample ID						
(Matrix: Water)					GH_MW-ESRC-1_WG_2021-04-05_NP		GH_MW-GHC-1_B_WG_2021-04-05_NP		----	----	----
Client sampling date / time					10-Jun-2021 12:00	10-Jun-2021 15:15	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101956-001	CG2101956-002	-----	-----	-----	-----	
					Result	Result	---	---	---	---	
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	7.7	----	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	182	242	----	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	182	242	----	----	----	----	
conductivity	----	E100	2.0	µS/cm	405	1330	----	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	243	924	----	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	479	460	----	----	----	----	
pH	----	E108	0.10	pH units	8.27	7.86	----	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	237	1080	----	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.3	85.9	----	----	----	----	
turbidity	----	E121	0.10	NTU	0.32	60.0	----	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	222	295	----	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0064	0.0194	----	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.250 <sup>DLDS</sup>	----	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.24	12.1	----	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.180	0.202	----	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.303	0.130	----	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.872	<0.0250 <sup>DLDS</sup>	----	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0100	----	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0033	<0.0010	----	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0030	0.839	----	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	49.3	591	----	----	----	----	
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	5.03	7.05	----	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.64	7.72	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-ESRC-1_WG_2021-04-05_NP	GH_MW-GHC-1_B_WG_2021-04-05_NP	---	---	---
Client sampling date / time					10-Jun-2021 12:00	10-Jun-2021 15:15	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2101956-001	CG2101956-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.77	17.5	---	---	---	
cation sum	----	EC101	0.10	meq/L	5.00	18.8	---	---	---	
ion balance (cations/anions ratio)	----	EC101	0.010	%	105	107	---	---	---	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.35	3.58	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.534	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00013	0.00026	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00014	0.0135	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0614	0.0581	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	0.115	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	0.040	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0163	0.266	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	51.4	256	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00028	0.00120	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	3.02	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00208	0.00956	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	24.9	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000098	0.00311	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0085	0.0215	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	21.3	63.9	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00342	0.732	---	---	---	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	0.0284	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00160	0.000868	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00072	0.00506	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	0.682	2.16	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	5.33	0.996	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	2.49	8.09	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000047	0.000382	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	2.70	4.70	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-ESRC-1_WG_2021-04-05_NP	GH_MW-GHC-1_B_WG_2021-04-05_NP	---	---	---
Client sampling date / time					10-Jun-2021 12:00	10-Jun-2021 15:15	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2101956-001 Result	CG2101956-002 Result	-----	-----	-----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.202	0.782	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	18.6	228	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	0.000054	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	0.00398	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00103	0.00211	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	0.00273	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0045	0.0440	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0016	<0.0010	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00013	0.00074	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0699	0.0330	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.010	0.038	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0117	0.0235	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	60.2	267	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00026	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.32	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00110	0.00030	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.378	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0101	0.0226	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	22.5	62.4	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00422	0.144	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00161	0.000900	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00158	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.775	2.14	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-ESRC-1_WG_2021-04-05_NP	GH_MW-GHC-1_B_WG_2021-04-05_NP	----	----	----
Client sampling date / time					10-Jun-2021 12:00	10-Jun-2021 15:15	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101956-001 Result	CG2101956-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	5.82	0.389	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.60	6.10	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.96	5.10	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.198	0.721	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	17.6	208	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000013	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00107	0.00183	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0035	0.0099	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.











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µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					GH_MW-GHC-1 A_WG_2021-04 -05_NP	----	----	----	----
Client sampling date / time					11-Jun-2021 13:40	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2101974-001	-----	-----	-----	-----
					Result	---	---	---	---
<b>Physical Tests</b>									
acidity (as CaCO3)	---	E283	2.0	mg/L	10.8	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	282	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	282	---	---	---	---
conductivity	---	E100	2.0	µS/cm	1090	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	611	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	417	---	---	---	---
pH	---	E108	0.10	pH units	8.09	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	783	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	5.8	---	---	---	---
turbidity	---	E121	0.10	NTU	0.25	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	344	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0065	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	5.31	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.389	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.063	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0875	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0034	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0034	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	410	---	---	---	---
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	1.39	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	1.42	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-GHC-1 A_WG_2021-04 -05_NP	----	----	----	----
Client sampling date / time					11-Jun-2021 13:40	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101974-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	14.3	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	12.4	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	86.7	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	7.12	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0061	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0953	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.032	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0229	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	165	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00060	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.015	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0158	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	59.3	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00032	----	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000687	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00081	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.52	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	2.87	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	4.61	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	4.74	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-GHC-1 A_WG_2021-04 -05_NP	----	----	----	----
Client sampling date / time					11-Jun-2021 13:40	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101974-001 Result	-----	-----	-----	-----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.508	----	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	150	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000021	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00033	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00285	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0936	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.029	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0206	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	149	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00046	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0143	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	58.1	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00010	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000618	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00069	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.48	----	----	----	----	



## Analytical Results

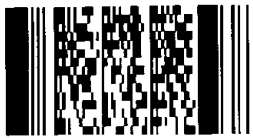
Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-GHC-1 A_WG_2021-04 -05_NP	----	----	----	----
Client sampling date / time					11-Jun-2021 13:40	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101974-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	2.94	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.57	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.67	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.464	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	149	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000020	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00255	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0011	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

<b>COC ID:</b>	<b>2021-06-11-WG</b>		<b>RUSH:</b>
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PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job# Greenhills Operation				Lab Name ALS Calgary				Report Format / Distribution				
Project Manager Jeremy Enns				Lab Contact Justine Burna-a				Email 1: terckcoal@equisonline.com		Excel	PDF	EDD
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City Elkford Province BC				City Calgary Province AB				Email 4:		X	X	X
Postal Code V0B1H0 Country Canada				Postal Code T1Y 7B5 Country Can				Email 5:		X	X	X
				Phone Number 403 407 1794				Email 6:		X	X	X
								Email 7:		X	X	X
								PO number		739453		

Environmental Division  
Calgary  
Work Order Reference  
**CG2101974**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED													
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	Preserv.	Y	Y	N	Y	N	N	N	N	Sodium bisulphate	ZN acetate, NaOH	H2SO4	H2SO4	Sodium bisulphate	
ANALYSIS								ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH/PAH/LEPH/HEPH	SULPHIDE	BOD	COD	Phenols	VOC/PH/BTEX	
GH_MW-GHC-1A_WG_2021-04-05_NP	GH_MW-GHC-1A	WG	N	6/11/2021	13:40	G	7	1	1	1	1	1	1	1	1						

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
			<i>[Signature]</i>	6/12/21

<b>SERVICE REQUEST (rush - subject to availability)</b>	<b>Sampler's Name</b>	<b>Mobile #</b>	<b>Date/Time</b>
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	RG		June 11, 2021
	<b>Sampler's Signature</b>		<i>[Signature]</i>

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>CG2102058</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Jeremy Enns <b>Address</b> : Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0 <b>Telephone</b> : 250 865 3305 <b>Project</b> : GREENHILLS OPERATION <b>PO</b> : VPO00739453 <b>C-O-C number</b> : 2021-06-16-WG <b>Sampler</b> : RG <b>Site</b> : --- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 2 <b>No. of samples analysed</b> : 2	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Justine Buma-a <b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5 <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 17-Jun-2021 08:40 <b>Date Analysis Commenced</b> : 17-Jun-2021 <b>Issue Date</b> : 10-Nov-2021 15:13
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-TD_W G_2021-04-05_ NP	GH_FOX3_WG_ 2021-04-05_NP	----	----	----
Client sampling date / time					16-Jun-2021 14:30	16-Jun-2021 14:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102058-001 Result	CG2102058-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	325	324	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	13.0	13.2	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	338	337	----	----	----	
conductivity	----	E100	2.0	µS/cm	676	695	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	358	363	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	252	322	----	----	----	
pH	----	E108	0.10	pH units	8.39	8.39	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	457	442	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	1.32	1.35	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	397	395	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	7.8	7.9	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.123	0.124	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.26	0.27	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.223	0.246	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.092	0.090	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0024	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	86.9	86.9	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.94	1.02	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.95	0.94	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-TD_W G_2021-04-05_ NP	GH_FOX3_WG_ 2021-04-05_NP	----	----	----
Client sampling date / time					16-Jun-2021 14:30	16-Jun-2021 14:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102058-001 Result	CG2102058-002 Result	-----	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	8.58	8.56	----	----	----	
cation sum	----	EC101	0.10	meq/L	8.56	8.70	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	99.8	102	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.117	0.811	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00017	0.00017	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0234	0.0230	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.431	0.422	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.166	0.187	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	89.4	86.8	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.25	0.23	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.114	0.116	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0507	0.0500	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	36.2	36.4	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.485	0.494	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00100 <sup>DLM</sup>	<0.00100 <sup>DLM</sup>	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00273	0.00262	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.86	2.88	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	<0.050	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	6.44	6.53	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	31.2	31.7	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-TD_W G_2021-04-05_ NP	GH_FOX3_WG_ 2021-04-05_NP	----	----	----
Client sampling date / time					16-Jun-2021 14:30	16-Jun-2021 14:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102058-001 Result	CG2102058-002 Result	-----	-----	-----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	1.34	1.32	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	29.7	30.7	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000080	0.000081	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000545	0.000549	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0021	<0.0010	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00017	0.00019	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0235	0.0244	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.389	0.380	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.175	0.0746	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	84.1	84.7	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.24	0.25	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.123	0.127	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0496	0.0490	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	35.9	36.9	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.489	0.492	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00254	0.00252	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.07	3.18	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-TD_W G_2021-04-05_ NP	GH_FOX3_WG_ 2021-04-05_NP	----	----	----
Client sampling date / time					16-Jun-2021 14:30	16-Jun-2021 14:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102058-001 Result	CG2102058-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.89	6.95	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLM</sup>	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	29.9	30.6	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.28	1.28	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	29.1	28.6	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000074	0.000081	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000500	0.000529	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: **2021-06-16-WG**

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF		EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	teckcoal@equisonline.com	X	X		X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	DL-Equis-GHO-Field@teck.com	X	X		X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:					X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:		X	X		X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:		X	X		X
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:		X	X		X
								Email 7:		X	X		X
								PO number	<b>739453</b>				

SAMPLE DETAILS								ANALYSIS REQUESTED														
File	Preserv.	ANALYSIS	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Y	Y	N	Y	N	N	N	N	Sodium bisulphate	Zn acetate, NaOH	H2SO4	H2SO4	Sodium bisulphate	
GH_MW-TD_WG_2021-04-05_NP		ALS_Package-DOC	WG	N	6/16/2021	14:30	G	7	1	1	1	1	1	1	1	1						
GH_FOX3_WG_2021-04-05_NP		HG-D-CVAF-VA	WG	N	6/16/2021	14:30	G	7	1	1	1	1	1	1	1	1						
		HG-T-U-CVAF-VA																				
		TECKCOAL-MET-D-VA																				
		TECKCOAL-MET-T-VA																				
		TECKCOAL-ROUTINE-VA																				
		ALS_Package-TKN/TOC																				
		EPH/PAH/LEPH/HEPH																				
		SULPHIDE																				
		BOD																				
		COD																				
		Phenols																				
		VOC/PH/BTEX																				

Environmental Division  
Calgary  
Work Order Reference  
**CG2102058**



Telephone : +1 403 407 1800

INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>Dr</i>	6/17 0840

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	RG	Mobile #	
Sampler's Signature		Date/Time	June 16, 2021

91



CERTIFICATE OF ANALYSIS

Work Order : CG2102222
Client : Teck Coal Limited
Contact : Jeremy Enns
Address : Greenhills Operations BOX 5000
Elkford BC Canada V0B1H0
Telephone : 250 865 3305
Project : GREENHILLS OPERATION
PO : VPO00739453
C-O-C number : 2021-06-24-WG
Sampler : HS/RG
Site : ---
Quote number : Teck Coal Master Quote
No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 6
Laboratory : Calgary - Environmental
Account Manager : Justine Buma-a
Address : 2559 29th Street NE
Calgary AB Canada T1Y 7B5
Telephone : +1 403 407 1800
Date Samples Received : 25-Jun-2021 09:00
Date Analysis Commenced : 25-Jun-2021
Issue Date : 13-Jul-2021 09:14

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Lists names like Angela Ren, Annabelle Prasad, Dee Lee, etc., along with their roles and departments.





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLB	<i>Detection Limit Raised. Analyte detected at comparable level in Method Blank.</i>
DLM	<i>Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).</i>



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-PC_W G_2021-04-05_ NP	GH_MW-RLP-2_ WG_2021-04-0 5_NP	----	----	----
Client sampling date / time					24-Jun-2021 14:20	24-Jun-2021 12:35	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102222-001 Result	CG2102222-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	5.1	11.9	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	228	290	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	228	290	----	----	----	
conductivity	----	E100	2.0	µS/cm	1040	1020	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	626	602	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	460	245	----	----	----	
pH	----	E108	0.10	pH units	7.93	7.72	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	795	694	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	119	2.6	----	----	----	
turbidity	----	E121	0.10	NTU	68.8	12.6	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	278	354	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0078	0.313	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250	<0.250	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.50	16.3	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.368	0.699	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.149	0.492	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	4.09	0.358	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050	<0.0050	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0035	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0556	0.0035	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	413	307	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.33	5.28	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.89	5.44	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-PC_W G_2021-04-05_ NP	GH_MW-RLP-2_ WG_2021-04-0 5_NP	----	----	----
Client sampling date / time					24-Jun-2021 14:20	24-Jun-2021 12:35	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102222-001	CG2102222-002	-----	-----	-----	
					Result	Result	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	13.5	12.7	----	----	----	
cation sum	----	EC101	0.10	meq/L	12.6	12.9	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.3	102	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.45	0.781	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	1.32	0.0176	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	0.00013	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00090	0.00040	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.209	0.118	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	0.140	<0.020	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	0.026	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.114	0.0256	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	119	135	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00196	0.00014	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	1.72	1.62	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.0183	<0.00050	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	1.57	1.62	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.00159	0.000058	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0087	0.0382	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	76.7	51.1	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.104	1.49	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00729	<0.00050	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00276	0.00540	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00323	0.00531	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.27	3.61	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	79.0	0.662	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	5.48	5.60	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000044	0.00318	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	1.04	12.8	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-PC_W G_2021-04-05_ NP	GH_MW-RLP-2_ WG_2021-04-0 5_NP	----	----	----
Client sampling date / time					24-Jun-2021 14:20	24-Jun-2021 12:35	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102222-001 Result	CG2102222-002 Result	-----	-----	-----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.158	0.340	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	146	108	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000036	<0.000010	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00011	<0.00010	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0219	<0.00060 <sup>DLM</sup>	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00565	0.00333	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00279	0.00075	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0106	0.0034	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0050 <sup>DLB</sup>	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00016	0.00041	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0933	0.121	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.026	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0379	0.0180	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	115	144	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00024	0.00011	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	1.77	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00432	0.00029	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	1.79	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0076	0.0412	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	82.4	59.0	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00014	1.62	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00258	0.00514	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00058	0.00544	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.03	4.01	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-PC_W G_2021-04-05_ NP	GH_MW-RLP-2_ WG_2021-04-0 5_NP	----	----	----
Client sampling date / time					24-Jun-2021 14:20	24-Jun-2021 12:35	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102222-001 Result	CG2102222-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	81.4	0.630	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.86	5.84	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.02	13.9	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.151	0.338	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	143	106	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00472	0.00301	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	0.00071	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0021	0.0032	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

COC ID: 2021-06-24-WG

RUSH:

**PROJECT/CLIENT INFO**

Facility Name / Job#: Greenhills Operation  
 Project Manager: Jeremy Enns  
 Email: jeremy.enns@teck.com  
 Address: P.O. BOX 5000  
 City: Elkford, BC, Canada  
 Province: BC  
 Country: Canada  
 City: V0B1H0

**LABORATORY**

Lab Name: ALS Calgary  
 Lab Contact: Justine Burmaa  
 Email: Justine.burmaa@alsglobal.com  
 Address: 2559 29 Street NE  
 City: Calgary, AB, Canada  
 Postal Code: T1Y 7B5  
 Phone Number: 403 407 1794

**OTHER INFO**

Report Format / Distribution  
 Email 1: teckcoal@equisonline.com  
 Email 2: DL-Equis-GHO-Field@teck.com  
 Email 3:  
 Email 4:  
 Email 5:  
 Email 6:  
 Email 7:  
 PO number: 739453

Excel	X
PDF	X
EDD	X
	X
	X
	X
	X
	X
	X
	X

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2102222**



Telephone: +1 403 407 1800

**SAMPLE DETAILS**

Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.
MW-PC	N	6/24/2021	14:20	G	7
GH_MW-RLP-2	N	6/24/2021	12:35	G	7

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FE: Field & Lab, N: None

ANALYSIS	H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4	Sodium bisulphate	Zn acetate, NaOH	H2SO4	H2SO4	Sodium bisulphate
ALS_Package-DOC	1	1	1	1	1	1	1					
HG-D-CVAF-VA	1	1	1	1	1	1	1					
HG-T-U-CVAF-VA												
TECKCOAL-MET-D-VA												
TECKCOAL-MET-T-VA												
TECKCOAL-ROUTINE-VA												
ALS_Package-TKN/TOC												
EPH/PAH/LEPH/HEPH												
SULPHIDE												
BOD												
COD												
Phenols												
VOC/PH/TEX												

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

*Handwritten signature and date: 6/25/2021*

**SERVICE REQUEST (rush - subject to availability)**

Regular (default)  X  
 Priority (2-3 business days) - 50% surcharge  
 Emergency (1 Business Day) - 100% surcharge  
 For Emergency <1 Day, ASAP or Weekend - Contact ALS

**Sampler's Name**

**Sampler's Signature**

**HS/RG**

**Mobile #**

**Date/Time** June 24, 2021



SNC-Lavalin  
ATTN: Leslie Harker  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 11-MAY-21  
Report Date: 25-MAY-21 12:25 (MT)  
Version: FINAL

Client Phone: 250-505-6493

## Certificate of Analysis

Lab Work Order #: L2586489  
Project P.O. #: 680806  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers:  
Legal Site Desc:

Inayat Dhaliwal  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2586489-1	L2586489-2	L2586489-3	L2586489-4	L2586489-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	10-MAY-21	10-MAY-21	10-MAY-21	10-MAY-21	10-MAY-21
		Sampled Time	09:15	08:55	12:05	12:05	15:30
		Client ID	RG_MW_ER1A_W G_2021_05_10_NP	RG_MW_ER1B_W G_2021_05_10_NP	RG_MW_ER2A_W G_2021_05_10_NP	RG_MW_ER2B_W G_2021_05_10_NP	RG_MW_LC3A_W G_2021_05_10_NP
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		404	343	425	410	1020
	Hardness (as CaCO3) (mg/L)		224	197	238	235	598
	pH (pH)		8.28	8.29	8.30	8.33	8.22
	ORP (mV)		454	392	363	434	424
	Total Suspended Solids (mg/L)		<1.0	<1.0	14.5	<1.0	<1.0
	Total Dissolved Solids (mg/L)		251	216	261	252	711
	Turbidity (NTU)		0.14	0.45	11.9	0.18	1.11
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		<1.0	2.5	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		160	155	163	151	223
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	3.8	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		160	155	163	154	223
	Ammonia as N (mg/L)		0.0075	0.0043	0.0024	0.0034	0.0012
	Bicarbonate (HCO3) (mg/L)		195	189	199	184	272
	Bromide (Br) (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)		1.05	0.64	1.12	1.23	3.06
	Fluoride (F) (mg/L)		0.116	0.123	0.107	0.112	0.124
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)		103	104	103	108	113
	Nitrate and Nitrite (as N) (mg/L)		0.921	0.466	0.866	0.960	11.3
	Nitrate (as N) (mg/L)		0.921	0.466	0.866	0.960	11.3
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		0.092	<0.050	<0.050	<0.050	<0.050
	Total Nitrogen (mg/L)		1.01	0.466	0.866	0.960	11.3
	Orthophosphate-Dissolved (as P) (mg/L)		<0.0010	0.0012	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)		<0.0020	<0.0020	0.0127	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)		53.2	33.0	63.2	58.9	284
	Anion Sum (meq/L)		4.41	3.84	4.68	4.42	11.3
Cation Sum (meq/L)		4.56	3.99	4.84	4.78	12.7	
Cation - Anion Balance (%)		1.7	2.0	1.7	3.9	6.0	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		1.43	1.40	1.23	1.39	1.71
	Total Organic Carbon (mg/L)		2.57	1.5	1.74	1.56	2.83
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0012	0.0011	0.0055	<0.0010	0.0014

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2586489-6 WG 10-MAY-21 14:10 RG_MW_WC2A_ WG_2021_05_10_ NP	L2586489-7 WG 10-MAY-21 14:05 RG_MW_WC2B_ WG_2021_05_10_ NP	L2586489-8 WG 10-MAY-21 10:50 RG_MW_ER11A_ WG_2021_05_10_ NP	L2586489-9 WG 10-MAY-21 10:20 RG_MW_ER11B_ WG_2021_05_10_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	843	808	360	450
	Hardness (as CaCO3) (mg/L)	508	478	99.5	254
	pH (pH)	8.09	8.32	8.37	8.30
	ORP (mV)	413	394	267	409
	Total Suspended Solids (mg/L)	1.3	<1.0	20.3	<1.0
	Total Dissolved Solids (mg/L)	602	572	235	279
	Turbidity (NTU)	0.37	0.11	10.3	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	187	192	182	161
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	3.6	5.2	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	187	196	188	161
	Ammonia as N (mg/L)	0.00050	0.0020	0.223	<0.0050
	Bicarbonate (HCO3) (mg/L)	228	235	223	196
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	2.16	1.57	0.52	1.28
	Fluoride (F) (mg/L)	0.088	0.101	0.397	0.108
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	114	111	102	106
	Nitrate and Nitrite (as N) (mg/L)	9.14	8.89	0.0051	1.54
	Nitrate (as N) (mg/L)	9.14	8.89	0.0051	1.54
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050	0.073
	Total Nitrogen (mg/L)	9.14	8.89	<0.050	1.61
	Orthophosphate-Dissolved (as P) (mg/L)	0.0013	0.0020	0.0094	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	0.0114	0.0029
	Sulfate (SO4) (mg/L)	231	210	9.15	72.3
	Anion Sum (meq/L)	9.27	8.96	3.98	4.87
	Cation Sum (meq/L)	10.6	9.97	4.07	5.16
	Cation - Anion Balance (%)	6.6	5.3	1.2	2.9
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.12	1.47	2.78	1.63
	Total Organic Carbon (mg/L)	1.43	1.43	3.27	2.04
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0014	<0.0010	0.0029	0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2586489-1 WG 10-MAY-21 09:15 RG_MW_ER1A_W G_2021_05_10_NP	L2586489-2 WG 10-MAY-21 08:55 RG_MW_ER1B_W G_2021_05_10_NP	L2586489-3 WG 10-MAY-21 12:05 RG_MW_ER2A_W G_2021_05_10_NP	L2586489-4 WG 10-MAY-21 12:05 RG_MW_ER2B_W G_2021_05_10_NP	L2586489-5 WG 10-MAY-21 15:30 RG_MW_LC3A_W G_2021_05_10_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00025	<0.00010	0.00071
	Arsenic (As)-Dissolved (mg/L)	0.00010	0.00012	0.00013	0.00011	0.00014
	Barium (Ba)-Dissolved (mg/L)	0.0671	0.0577	0.0707	0.0686	0.106
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	0.016
	Cadmium (Cd)-Dissolved (mg/L)	0.0000089	0.0000069	0.0000137	0.0000089	0.0000285
	Calcium (Ca)-Dissolved (mg/L)	58.7	53.3	63.5	62.6	122
	Chromium (Cr)-Dissolved (mg/L)	0.00019	0.00018	0.00025	0.00018	0.00051
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00017
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00034	0.00092	<0.00020	0.00142
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	0.014	<0.010	0.027
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0041	0.0033	0.0041	0.0040	0.100
	Magnesium (Mg)-Dissolved (mg/L)	18.9	15.5	19.3	19.1	71.2
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00130	<0.00010	0.00207
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00102	0.00107	0.00199	0.00105	0.00659
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00144	<0.00050	0.00376
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.42	0.40	0.46	0.43	2.57
	Selenium (Se)-Dissolved (mg/L)	0.00715	0.00342	0.00750	0.00793	0.0583
	Silicon (Si)-Dissolved (mg/L)	1.91	1.86	1.91	1.95	2.80
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.52	1.18	1.71	1.53	15.9
	Strontium (Sr)-Dissolved (mg/L)	0.224	0.208	0.234	0.233	0.387
	Sulfur (S)-Dissolved (mg/L)	22.7	13.9	25.9	24.4	121
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000933	0.000843	0.00105	0.000954	0.00453
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.0016	<0.0010	0.0012
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2586489-6 WG 10-MAY-21 14:10 RG_MW_WC2A_ WG_2021_05_10_ NP	L2586489-7 WG 10-MAY-21 14:05 RG_MW_WC2B_ WG_2021_05_10_ NP	L2586489-8 WG 10-MAY-21 10:50 RG_MW_ER11A_ WG_2021_05_10_ NP	L2586489-9 WG 10-MAY-21 10:20 RG_MW_ER11B_ WG_2021_05_10_ NP	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	0.00011	0.00052	0.00025	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00016	0.00015	0.00057	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0549	0.0629	0.203	0.0781
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.013	0.012	0.145	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000217	0.0000319	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	122	102	22.7	67.1
	Chromium (Cr)-Dissolved (mg/L)	0.00012	0.00020	<0.00010	0.00021
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	0.015	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0396	0.0518	0.0696	0.0056
	Magnesium (Mg)-Dissolved (mg/L)	49.2	54.4	10.4	21.0
	Manganese (Mn)-Dissolved (mg/L)	0.00062	<0.00010	0.103	0.00069
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00114	0.00296	0.00359	0.000881
	Nickel (Ni)-Dissolved (mg/L)	0.00060	0.00431	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	1.36	1.97	1.99	0.47
	Selenium (Se)-Dissolved (mg/L)	0.0375	0.0441	0.00116	0.0106
	Silicon (Si)-Dissolved (mg/L)	3.01	2.72	4.19	2.02
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	9.22	8.48	46.2	1.78
	Strontium (Sr)-Dissolved (mg/L)	0.349	0.302	0.198	0.259
	Sulfur (S)-Dissolved (mg/L)	98.4	87.3	4.86	29.3
	Thallium (Tl)-Dissolved (mg/L)	0.000015	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.00207	0.00317	0.000388	0.000991
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0012	0.0013	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2586489-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2586489-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2586489-1, -2, -3, -4, -5, -6, -7, -8, -9

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CARBONS-DOC-VA</b>	Water	Dissolved organic carbon by combustion	APHA 5310B
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.			
<b>CARBONS-TOC-VA</b>	Water	Total organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)

## Reference Information

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

## Reference Information

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2586489

Report Date: 25-MAY-21

Page 1 of 12

Client: SNC-Lavalin  
 # 3 - 520 Lake Street  
 Nelson BC V1L 4C6  
 Contact: Leslie Harker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	Water							
Batch	R5459261							
<b>WG3536748-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.4		%		85-115	17-MAY-21
<b>WG3536748-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	17-MAY-21
<b>ALK-MAN-CL</b>								
	Water							
Batch	R5464023							
<b>WG3539956-16</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	21-MAY-21
<b>WG3539956-15</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-MAY-21
<b>BE-D-L-CCMS-CL</b>								
	Water							
Batch	R5458850							
<b>WG3536094-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			93.3		%		80-120	17-MAY-21
<b>WG3536094-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			91.8		%		80-120	17-MAY-21
<b>WG3536094-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-MAY-21
<b>WG3536094-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-MAY-21
<b>BIC-CL</b>								
	Water							
Batch	R5464023							
<b>WG3539956-15</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-MAY-21
<b>BR-L-IC-N-CL</b>								
	Water							
Batch	R5456454							
<b>WG3533521-3</b>	<b>DUP</b>	<b>L2586489-1</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	11-MAY-21
<b>WG3533521-2</b>	<b>LCS</b>							
Bromide (Br)			96.3		%		85-115	11-MAY-21
<b>WG3533521-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	11-MAY-21
<b>CARBONS-DOC-VA</b>								
	Water							



## Quality Control Report

Workorder: L2586489

Report Date: 25-MAY-21

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CARBONS-DOC-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5460487</b>							
<b>WG3537661-3</b>	<b>DUP</b>	<b>L2586489-1</b>						
Dissolved Organic Carbon		1.43	1.39		mg/L	3.1	20	18-MAY-21
<b>WG3537661-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.3		%		80-120	18-MAY-21
<b>WG3537661-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-MAY-21
<b>Batch</b>	<b>R5463143</b>							
<b>WG3539048-3</b>	<b>DUP</b>	<b>L2586489-2</b>						
Dissolved Organic Carbon		1.40	1.30		mg/L	7.3	20	21-MAY-21
<b>WG3539048-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.1		%		80-120	21-MAY-21
<b>WG3539048-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-MAY-21
<b>WG3539048-4</b>	<b>MS</b>	<b>L2586489-2</b>						
Dissolved Organic Carbon			96.7		%		70-130	21-MAY-21
<b>CARBONS-TOC-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5460486</b>							
<b>WG3537331-10</b>	<b>LCS</b>							
Total Organic Carbon			99.2		%		80-120	18-MAY-21
<b>WG3537331-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	18-MAY-21
<b>Batch</b>	<b>R5463143</b>							
<b>WG3539048-2</b>	<b>LCS</b>							
Total Organic Carbon			104.2		%		80-120	21-MAY-21
<b>WG3539048-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	21-MAY-21
<b>CL-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5456454</b>							
<b>WG3533521-3</b>	<b>DUP</b>	<b>L2586489-1</b>						
Chloride (Cl)		1.05	1.07		mg/L	2.0	20	11-MAY-21
<b>WG3533521-2</b>	<b>LCS</b>							
Chloride (Cl)			101.9		%		85-115	11-MAY-21
<b>WG3533521-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	11-MAY-21
<b>CO3-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2586489

Report Date: 25-MAY-21

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5464023							
<b>WG3539956-15 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	21-MAY-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5464023							
<b>WG3539956-15 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	21-MAY-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5456454							
<b>WG3533521-3 DUP</b>		<b>L2586489-1</b>						
Fluoride (F)		0.116	0.119		mg/L	3.0	20	11-MAY-21
<b>WG3533521-2 LCS</b>								
Fluoride (F)			100.1		%		90-110	11-MAY-21
<b>WG3533521-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	11-MAY-21
<b>HG-D-CVAA-CL</b>	<b>Water</b>							
Batch	R5459345							
<b>WG3536825-3 DUP</b>		<b>L2586489-7</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	18-MAY-21
<b>WG3536825-2 LCS</b>								
Mercury (Hg)-Dissolved			85.0		%		80-120	18-MAY-21
<b>WG3536825-1 MB</b>								
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	18-MAY-21
<b>WG3536825-4 MS</b>		<b>L2586489-7</b>						
Mercury (Hg)-Dissolved			84.7		%		70-130	18-MAY-21
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
Batch	R5458850							
<b>WG3536094-2 LCS</b>		<b>TMRM</b>						
Aluminum (Al)-Dissolved			93.9		%		80-120	17-MAY-21
Antimony (Sb)-Dissolved			95.5		%		80-120	17-MAY-21
Arsenic (As)-Dissolved			93.7		%		80-120	17-MAY-21
Barium (Ba)-Dissolved			98.0		%		80-120	17-MAY-21
Bismuth (Bi)-Dissolved			93.2		%		80-120	17-MAY-21
Boron (B)-Dissolved			91.4		%		80-120	17-MAY-21
Cadmium (Cd)-Dissolved			95.4		%		80-120	17-MAY-21
Calcium (Ca)-Dissolved			93.9		%		80-120	17-MAY-21



## Quality Control Report

Workorder: L2586489

Report Date: 25-MAY-21

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5458850</b>							
<b>WG3536094-2</b>	<b>LCS</b>	<b>TMRM</b>						
Chromium (Cr)-Dissolved			94.5		%		80-120	17-MAY-21
Cobalt (Co)-Dissolved			98.0		%		80-120	17-MAY-21
Copper (Cu)-Dissolved			95.7		%		80-120	17-MAY-21
Iron (Fe)-Dissolved			90.8		%		80-120	17-MAY-21
Lead (Pb)-Dissolved			94.1		%		80-120	17-MAY-21
Lithium (Li)-Dissolved			92.1		%		80-120	17-MAY-21
Magnesium (Mg)-Dissolved			99.4		%		80-120	17-MAY-21
Manganese (Mn)-Dissolved			99.0		%		80-120	17-MAY-21
Molybdenum (Mo)-Dissolved			95.8		%		80-120	17-MAY-21
Nickel (Ni)-Dissolved			95.8		%		80-120	17-MAY-21
Phosphorus (P)-Dissolved			91.7		%		70-130	17-MAY-21
Potassium (K)-Dissolved			97.6		%		80-120	17-MAY-21
Selenium (Se)-Dissolved			90.3		%		80-120	17-MAY-21
Silicon (Si)-Dissolved			94.7		%		60-140	17-MAY-21
Silver (Ag)-Dissolved			95.7		%		80-120	17-MAY-21
Sodium (Na)-Dissolved			97.6		%		80-120	17-MAY-21
Strontium (Sr)-Dissolved			91.3		%		80-120	17-MAY-21
Sulfur (S)-Dissolved			113.4		%		80-120	17-MAY-21
Thallium (Tl)-Dissolved			94.0		%		80-120	17-MAY-21
Tin (Sn)-Dissolved			94.9		%		80-120	17-MAY-21
Titanium (Ti)-Dissolved			83.3		%		80-120	17-MAY-21
Uranium (U)-Dissolved			94.3		%		80-120	17-MAY-21
Vanadium (V)-Dissolved			97.0		%		80-120	17-MAY-21
Zinc (Zn)-Dissolved			98.9		%		80-120	17-MAY-21
Zirconium (Zr)-Dissolved			88.1		%		80-120	17-MAY-21
<b>WG3536094-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			98.6		%		80-120	17-MAY-21
Antimony (Sb)-Dissolved			96.9		%		80-120	17-MAY-21
Arsenic (As)-Dissolved			94.8		%		80-120	17-MAY-21
Barium (Ba)-Dissolved			100.4		%		80-120	17-MAY-21
Bismuth (Bi)-Dissolved			94.0		%		80-120	17-MAY-21
Boron (B)-Dissolved			89.8		%		80-120	17-MAY-21
Cadmium (Cd)-Dissolved			97.2		%		80-120	17-MAY-21
Calcium (Ca)-Dissolved			95.5		%		80-120	17-MAY-21



## Quality Control Report

Workorder: L2586489

Report Date: 25-MAY-21

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5458850</b>							
<b>WG3536094-6</b>	<b>LCS</b>	<b>TMRM</b>						
Chromium (Cr)-Dissolved			96.5		%		80-120	17-MAY-21
Cobalt (Co)-Dissolved			98.9		%		80-120	17-MAY-21
Copper (Cu)-Dissolved			94.6		%		80-120	17-MAY-21
Iron (Fe)-Dissolved			92.2		%		80-120	17-MAY-21
Lead (Pb)-Dissolved			94.2		%		80-120	17-MAY-21
Lithium (Li)-Dissolved			93.5		%		80-120	17-MAY-21
Magnesium (Mg)-Dissolved			104.5		%		80-120	17-MAY-21
Manganese (Mn)-Dissolved			99.3		%		80-120	17-MAY-21
Molybdenum (Mo)-Dissolved			95.8		%		80-120	17-MAY-21
Nickel (Ni)-Dissolved			96.2		%		80-120	17-MAY-21
Phosphorus (P)-Dissolved			90.9		%		70-130	17-MAY-21
Potassium (K)-Dissolved			95.7		%		80-120	17-MAY-21
Selenium (Se)-Dissolved			95.1		%		80-120	17-MAY-21
Silicon (Si)-Dissolved			98.9		%		60-140	17-MAY-21
Silver (Ag)-Dissolved			96.3		%		80-120	17-MAY-21
Sodium (Na)-Dissolved			99.0		%		80-120	17-MAY-21
Strontium (Sr)-Dissolved			91.4		%		80-120	17-MAY-21
Sulfur (S)-Dissolved			103.8		%		80-120	17-MAY-21
Thallium (Tl)-Dissolved			94.3		%		80-120	17-MAY-21
Tin (Sn)-Dissolved			97.7		%		80-120	17-MAY-21
Titanium (Ti)-Dissolved			88.0		%		80-120	17-MAY-21
Uranium (U)-Dissolved			91.4		%		80-120	17-MAY-21
Vanadium (V)-Dissolved			96.0		%		80-120	17-MAY-21
Zinc (Zn)-Dissolved			99.5		%		80-120	17-MAY-21
Zirconium (Zr)-Dissolved			88.9		%		80-120	17-MAY-21
<b>WG3536094-1</b>								
	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-MAY-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-MAY-21
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	17-MAY-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-MAY-21



## Quality Control Report

Workorder: L2586489

Report Date: 25-MAY-21

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5458850</b>							
<b>WG3536094-1 MB</b>								
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-MAY-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-MAY-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-MAY-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-MAY-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-MAY-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	17-MAY-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-MAY-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-MAY-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-MAY-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-MAY-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-MAY-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	17-MAY-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-MAY-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-MAY-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-MAY-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-MAY-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-MAY-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	17-MAY-21
<b>WG3536094-5 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-MAY-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-MAY-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-MAY-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-MAY-21



## Quality Control Report

Workorder: L2586489

Report Date: 25-MAY-21

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5458850</b>							
<b>WG3536094-5</b>	<b>MB</b>							
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-MAY-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-MAY-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-MAY-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-MAY-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-MAY-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	17-MAY-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-MAY-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-MAY-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-MAY-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-MAY-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-MAY-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	17-MAY-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-MAY-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-MAY-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-MAY-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-MAY-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-MAY-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	17-MAY-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5460204</b>							
<b>WG3537924-15</b>	<b>DUP</b>	<b>L2586489-1</b>						
Ammonia as N		0.0075	0.0071		mg/L	5.5	20	19-MAY-21
<b>WG3537924-14</b>	<b>LCS</b>							
Ammonia as N			104.5		%		85-115	19-MAY-21
Ammonia as N			104.5		mg/L		85-115	19-MAY-21
<b>WG3537924-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	19-MAY-21
<b>WG3537924-16</b>	<b>MS</b>	<b>L2586489-1</b>						



## Quality Control Report

Workorder: L2586489

Report Date: 25-MAY-21

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
Water								
Batch	R5460204							
WG3537924-16	MS	L2586489-1						
Ammonia as N			94.5		%		75-125	19-MAY-21
<b>NO2-L-IC-N-CL</b>								
Water								
Batch	R5456454							
WG3533521-3	DUP	L2586489-1						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	11-MAY-21
WG3533521-2	LCS							
Nitrite (as N)			107.3		%		90-110	11-MAY-21
WG3533521-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	11-MAY-21
<b>NO3-L-IC-N-CL</b>								
Water								
Batch	R5456454							
WG3533521-3	DUP	L2586489-1						
Nitrate (as N)		0.921	0.948		mg/L	2.9	20	11-MAY-21
WG3533521-2	LCS							
Nitrate (as N)			99.3		%		90-110	11-MAY-21
WG3533521-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	11-MAY-21
<b>OH-CL</b>								
Water								
Batch	R5464023							
WG3539956-15	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-MAY-21
<b>ORP-CL</b>								
Water								
Batch	R5458103							
WG3535318-1	CRM	CL-ORP						
ORP			226		mV		210-230	14-MAY-21
WG3535318-2	DUP	L2586489-1						
ORP		454	461	J	mV	6.7	15	14-MAY-21
<b>P-T-L-COL-CL</b>								
Water								
Batch	R5458681							
WG3536022-3	DUP	L2586489-8						
Phosphorus (P)-Total		0.0114	0.0108		mg/L	5.9	20	17-MAY-21
WG3536022-2	LCS							
Phosphorus (P)-Total			106.9		%		80-120	17-MAY-21
WG3536022-1	MB							



## Quality Control Report

Workorder: L2586489

Report Date: 25-MAY-21

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch R5458681								
WG3536022-1 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-MAY-21
WG3536022-4 MS								
Phosphorus (P)-Total		L2586489-8	105.5		%		70-130	17-MAY-21
<b>PH-CL</b>								
<b>Water</b>								
Batch R5464023								
WG3539956-16 LCS								
pH			7.04		pH		6.9-7.1	21-MAY-21
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch R5456005								
WG3532912-5 DUP								
Orthophosphate-Dissolved (as P)		L2586489-9	<0.0010	RPD-NA	mg/L	N/A	20	11-MAY-21
WG3532912-2 LCS								
Orthophosphate-Dissolved (as P)			99.8		%		80-120	11-MAY-21
WG3532912-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-MAY-21
WG3532912-6 MS								
Orthophosphate-Dissolved (as P)		L2586489-6	100.5		%		70-130	11-MAY-21
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch R5456454								
WG3533521-3 DUP								
Sulfate (SO4)		L2586489-1	53.2		mg/L	2.9	20	11-MAY-21
WG3533521-2 LCS								
Sulfate (SO4)			98.8		%		90-110	11-MAY-21
WG3533521-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	11-MAY-21
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch R5459371								
WG3535852-3 DUP								
Total Dissolved Solids		L2586489-5	711		mg/L	4.2	20	17-MAY-21
WG3535852-2 LCS								
Total Dissolved Solids			95.0		%		85-115	17-MAY-21
WG3535852-1 MB								
Total Dissolved Solids			<10		mg/L		10	17-MAY-21
<b>TKN-L-F-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2586489

Report Date: 25-MAY-21

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5458593</b>							
<b>WG3535982-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			91.0		%		75-125	17-MAY-21
<b>WG3535982-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-MAY-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5459297</b>							
<b>WG3535851-2</b>	<b>LCS</b>							
Total Suspended Solids			89.4		%		85-115	17-MAY-21
<b>WG3535851-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	17-MAY-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5457354</b>							
<b>WG3534529-3</b>	<b>DUP</b>	<b>L2586489-3</b>						
Turbidity		11.9	12.0		NTU	0.8	15	13-MAY-21
<b>WG3534529-2</b>	<b>LCS</b>							
Turbidity			99.0		%		85-115	13-MAY-21
<b>WG3534529-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	13-MAY-21



# Quality Control Report

Workorder: L2586489

Report Date: 25-MAY-21

Page 11 of 12

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2586489

Report Date: 25-MAY-21

Page 12 of 12

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	10-MAY-21 09:15	14-MAY-21 19:00	0.25	106	hours	EHTR-FM
	2	10-MAY-21 08:55	14-MAY-21 19:00	0.25	106	hours	EHTR-FM
	3	10-MAY-21 12:05	14-MAY-21 19:00	0.25	103	hours	EHTR-FM
	4	10-MAY-21 12:05	14-MAY-21 19:00	0.25	103	hours	EHTR-FM
	5	10-MAY-21 15:30	14-MAY-21 19:00	0.25	100	hours	EHTR-FM
	6	10-MAY-21 14:10	14-MAY-21 19:00	0.25	101	hours	EHTR-FM
	7	10-MAY-21 14:05	14-MAY-21 19:00	0.25	101	hours	EHTR-FM
	8	10-MAY-21 10:50	14-MAY-21 19:00	0.25	104	hours	EHTR-FM
	9	10-MAY-21 10:20	14-MAY-21 19:00	0.25	105	hours	EHTR-FM
pH							
	1	10-MAY-21 09:15	21-MAY-21 08:00	0.25	263	hours	EHTR-FM
	2	10-MAY-21 08:55	21-MAY-21 08:00	0.25	263	hours	EHTR-FM
	3	10-MAY-21 12:05	21-MAY-21 08:00	0.25	260	hours	EHTR-FM
	4	10-MAY-21 12:05	21-MAY-21 08:00	0.25	260	hours	EHTR-FM
	5	10-MAY-21 15:30	21-MAY-21 08:00	0.25	257	hours	EHTR-FM
	6	10-MAY-21 14:10	21-MAY-21 08:00	0.25	258	hours	EHTR-FM
	7	10-MAY-21 14:05	21-MAY-21 08:00	0.25	258	hours	EHTR-FM
	8	10-MAY-21 10:50	21-MAY-21 08:00	0.25	261	hours	EHTR-FM
	9	10-MAY-21 10:20	21-MAY-21 08:00	0.25	262	hours	EHTR-FM

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2586489 were received on 11-MAY-21 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2586489-COFC

COC Number: 21 -

Page 1 of 2

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>											
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply											
Contact: Leslie Harker		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>PRIORITY (Business Days)</b>		4 day [P4-20%] <input type="checkbox"/>		<b>EMERGENCY</b>		1 Business day [E1 - 100%] <input type="checkbox"/>					
Phone: 250-505-6493		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		3 day [P3-25%] <input type="checkbox"/>		2 day [P2-50%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>							
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Date and Time Required for all E&P TATs:											
Street: 520 Lake Street		Emails: SNC - 'Leslie.Harker' 'Mia.Sakelariou'		Date and Time Required for all E&P TATs:											
City/Province: Nelson, BC		'Alex.Heathcott' 'Vicky.Lipinski@sncclavalin.com'		For tests that can not be performed according to the service level selected, you will be contacted.											
Postal Code: V1L 4C6		Teck - 'Thais.Lamana@teck.com' 'Jessica.Mackie@teck.com' 'teck.lab.results@teck.com'													
<b>Invoice To</b>		<b>Invoice Distribution</b>		<b>Analysis Request</b>											
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input checked="" type="checkbox"/> FAX		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below											
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: Leslie.Harker@sncclavalin.com		F/P P F/P P											
Company:		payables@sncclavalin.com		DOC (C-DIS-ORG-LOW-CL)											
Contact:		Oil and Gas Required Fields (client use)		TOC (C-TOT-ORG-LOW-CL)											
<b>Project Information</b>		AFE/Cost Center: PO#		BCMDG D-Met + Hg (MET-D-BCMDG-CL)											
ALS Account # / Quote #:		Major/Minor Code: Routing Code:		Total N Calc. (N-T-CALC-CL)											
Job #: 666653		Requisitioner:		Nitrate + Nitrite Calc. (N2N3-CALC-CL)											
PO / AFE: 680806		Location:		Teck Routine (TECKCOAL-ROUTINE-CL)											
LSD:		ALS Contact: Inayat Dhaliwal 403-407-1784		TKN (TKN-L-F-CL)											
ALS Lab Work Order # (lab use only):		Sampler: AH/SE		Bicarbonate (BIC-CL)											
				Carbonate (CO3-CL)											
				Hydroxide (OH-CL)											
				SAMPLES ON HOLD											
				Sample is hazardous (please provide further details)											
				NUMBER OF CONTAINERS											
<b>ALS Sample # (lab use only)</b>		<b>Sample Identification &amp;/or Coordinates (This description will appear on the report)</b>		<b>Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)</b>		<b>Date (dd-mmm-yy)</b>		<b>Time (hh:mm)</b>		<b>Sample Type</b>					
1		RG_MW_ER1A_WG_2021 0510 NP		RG_MW_ER1A		10-MAR-21		915		WG		R R R R R R R R R R		5	
2		RG_MW_ER1B_WG_2021 0510 NP		RG_MW_ER1B		10-MAR-21		855		WG		R R R R R R R R R R		5	
3		RG_MW_ER2A_WG_2021 0510 NP		RG_MW_ER2A		10-MAR-21		1205		WG		R R R R R R R R R R		5	
4		RG_MW_ER2B_WG_2021 0510 NP		RG_MW_ER2B		10-MAR-21		1205		WG		R R R R R R R R R R		5	
5		RG_MW_LC3A_WG_2021 0510 NP		RG_MW_LC3A		10-MAR-21		15:30		WG		R R R R R R R R R R		5	
		<del>RG_MW_LC3B_WG_2021 NP</del>		<del>RG_MW_LC3B</del>						<del>WG</del>		<del>R R R R R R R R R R</del>			
		<del>RG_MW_LC3C_WG_2021 NP</del>		<del>RG_MW_LC3C</del>						<del>WG</del>		<del>R R R R R R R R R R</del>			
		<del>RG_MW_LCWC1_WG_2021 NP</del>		<del>RG_MW_LCWC1</del>						<del>WG</del>		<del>R R R R R R R R R R</del>			
6		RG_MW_WC2A_WG_2021 0510 NP		RG_MW_WC2A		10-MAR-21		1410		WG		R R R R R R R R R R		5	
7		RG_MW_WC2B_WG_2021 0510 NP		RG_MW_WC2B		10-MAR-21		1405		WG		R R R R R R R R R R		5	
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>											
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>											
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>											
		REP- Regional Effects Program FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input type="checkbox"/>											
				INITIAL COOLER TEMPERATURES °C											
				FINAL COOLER TEMPERATURES °C											
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>		<b>FINAL SHIPMENT RECEPTION (lab use only)</b>											
Released by: <i>[Signature]</i>		Date: May 10 2021		Time: 1200		Received by:		Date:		Time:		Received by:		Date:	

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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SEPT 2017 FROM

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.





SNC-Lavalin  
ATTN: Leslie Harker  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 12-MAY-21  
Report Date: 26-MAY-21 15:43 (MT)  
Version: FINAL

Client Phone: 250-505-6493

## Certificate of Analysis

Lab Work Order #: L2587102  
Project P.O. #: 680806  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers:  
Legal Site Desc:

Inayat Dhaliwal  
Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

26-MAY-21 15:43 (MT)

Version: FINAL

		Sample ID	L2587102-1	L2587102-2	L2587102-3	L2587102-4	L2587102-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	11-MAY-21	11-MAY-21	11-MAY-21	11-MAY-21	11-MAY-21
		Sampled Time	09:20	13:00	13:50	11:30	11:00
		Client ID	RG_MW_LC3B_W G_2021_05_11_NP	RG_MW_LCWC1_ WG_2021_05_11_ NP	RG_MW_ER7A_W G_2021_05_11_NP	RG_MW_ER9A_W G_2021_05_11_NP	RG_MW_ER9B_W G_2021_05_11_NP
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		1090	929	515	430	1310
	Hardness (as CaCO3) (mg/L)		605	518	286	205	762
	pH (pH)		8.26	8.12	8.38	8.15	8.25
	ORP (mV)		420	364	420	411	392
	Total Suspended Solids (mg/L)		6.5	1.8	4.5	10.6	<1.0
	Total Dissolved Solids (mg/L)		789	637	287	251	1020
	Turbidity (NTU)		1.81	1.94	2.94	10.7	<0.10
	<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		<1.0	2.2	<1.0	<1.0
Alkalinity, Bicarbonate (as CaCO3) (mg/L)			235	211	256	230	251
Alkalinity, Carbonate (as CaCO3) (mg/L)			<1.0	<1.0	10.2	<1.0	<1.0
Alkalinity, Hydroxide (as CaCO3) (mg/L)			<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (as CaCO3) (mg/L)			235	211	266	230	251
Ammonia as N (mg/L)			0.0098	0.0111	0.0347	0.101	<0.0050
Bicarbonate (HCO3) (mg/L)			286	257	312	281	306
Bromide (Br) (mg/L)			<0.050	<0.050	<0.050	<0.050	<0.25
Carbonate (CO3) (mg/L)			<5.0	<5.0	6.1	<5.0	<5.0
Chloride (Cl) (mg/L)			2.07	2.00	0.56	6.81	3.03
Fluoride (F) (mg/L)			0.154	0.074	0.286	0.204	<0.10
Hydroxide (OH) (mg/L)			<5.0	<5.0	<5.0	<5.0	<5.0
Ion Balance (%)			97.9	98.9	97.8	103	95.7
Nitrate and Nitrite (as N) (mg/L)			12.3	18.5	0.0090	0.0076	23.0
Nitrate (as N) (mg/L)			12.3	18.5	0.0090	0.0063	23.0
Nitrite (as N) (mg/L)			<0.0010	<0.0010	<0.0010	0.0013	<0.0050
Total Kjeldahl Nitrogen (mg/L)			3.03	0.286	<0.050	0.257	<0.25
Total Nitrogen (mg/L)			15.3	18.8	<0.050	0.265	23.0
Orthophosphate-Dissolved (as P) (mg/L)			<0.0010	0.0017	<0.0010	0.0017	0.0012
Phosphorus (P)-Total (mg/L)			0.0083	0.0028	0.0021	0.0172	0.0025
Sulfate (SO4) (mg/L)			367	252	37.6	13.8	469
Anion Sum (meq/L)			13.3	10.8	6.13	5.10	16.5
Cation Sum (meq/L)			13.0	10.7	5.99	5.22	15.8
Cation - Anion Balance (%)		-1.1	-0.5	-1.1	1.3	-2.2	
<b>Organic / Inorganic Carbon</b>	Dissolved Carbon Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Organic Carbon (mg/L)		2.87	3.97	3.59	2.24	3.12
	Total Organic Carbon (mg/L)		3.6	3.3	3.0	2.3	3.4
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2587102-6 WG 11-MAY-21 11:00 RG_MW_MC10A_ WG_2021_05_11_ NP	L2587102-7 WG 11-MAY-21 11:30 RG_MW_MC11A_ WG_2021_05_11_ NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1300	431		
	Hardness (as CaCO3) (mg/L)	766	203		
	pH (pH)	8.19	8.12		
	ORP (mV)	439	386		
	Total Suspended Solids (mg/L)	<1.0	11.4		
	Total Dissolved Solids (mg/L)	1020	246		
	Turbidity (NTU)	<0.10	10.5		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	236	235		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	236	235		
	Ammonia as N (mg/L)	<0.0050	0.0785		
	Bicarbonate (HCO3) (mg/L)	288	287		
	Bromide (Br) (mg/L)	<0.25	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	2.27	6.79		
	Fluoride (F) (mg/L)	<0.10	0.209		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	97.9	100		
	Nitrate and Nitrite (as N) (mg/L)	23.0	0.0067		
	Nitrate (as N) (mg/L)	23.0	0.0057		
	Nitrite (as N) (mg/L)	<0.0050	0.0010		
	Total Kjeldahl Nitrogen (mg/L)	<0.25	<0.050		
	Total Nitrogen (mg/L)	23.0	<0.050		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010		
	Phosphorus (P)-Total (mg/L)	0.0022	0.0184		
	Sulfate (SO4) (mg/L)	470	13.9		
	Anion Sum (meq/L)	16.2	5.19		
	Cation Sum (meq/L)	15.9	5.20		
	Cation - Anion Balance (%)	-1.0	0.1		
<b>Organic / Inorganic Carbon</b>	Dissolved Carbon Filtration Location	FIELD	FIELD		
	Dissolved Organic Carbon (mg/L)	4.39	2.07		
	Total Organic Carbon (mg/L)	3.3	2.2		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2587102-1 WG 11-MAY-21 09:20 RG_MW_LC3B_W G_2021_05_11_NP	L2587102-2 WG 11-MAY-21 13:00 RG_MW_LCWC1_ WG_2021_05_11_ NP	L2587102-3 WG 11-MAY-21 13:50 RG_MW_ER7A_W G_2021_05_11_NP	L2587102-4 WG 11-MAY-21 11:30 RG_MW_ER9A_W G_2021_05_11_NP	L2587102-5 WG 11-MAY-21 11:00 RG_MW_ER9B_W G_2021_05_11_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	0.0012	0.0013	0.0040	0.0023	<0.0010
	Antimony (Sb)-Dissolved (mg/L)	0.00210	<0.00010	0.00030	0.00013	0.00011
	Arsenic (As)-Dissolved (mg/L)	0.00017	0.00013	0.00077	0.00033	0.00014
	Barium (Ba)-Dissolved (mg/L)	0.0916	0.150	0.0430	0.575	0.123
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.020	0.017	0.030	0.046	0.016
	Cadmium (Cd)-Dissolved (mg/L)	0.0000421	0.0000445	0.0000161	0.0000077	0.0000642
	Calcium (Ca)-Dissolved (mg/L)	120	131	63.8	50.5	182
	Chromium (Cr)-Dissolved (mg/L)	0.00157	0.00171	<0.00010	<0.00010	0.00021
	Cobalt (Co)-Dissolved (mg/L)	0.00025	0.00015	0.00023	0.00026	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.0215	0.00109	<0.00020	<0.00020	0.00023
	Iron (Fe)-Dissolved (mg/L)	0.041	<0.010	0.102	0.200	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.133	0.0376	0.0060	0.0271	0.0512
	Magnesium (Mg)-Dissolved (mg/L)	73.9	46.4	30.9	19.1	74.5
	Manganese (Mn)-Dissolved (mg/L)	0.00290	0.00104	0.122	0.121	0.00185
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.0137	0.00194	0.00569	0.00595	0.00101
	Nickel (Ni)-Dissolved (mg/L)	0.00639	0.00118	0.00110	<0.00050	0.00059
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	4.61	1.49	2.53	1.41	1.86
	Selenium (Se)-Dissolved (mg/L)	0.0612	0.0793	0.000124	0.000112	0.0814
	Silicon (Si)-Dissolved (mg/L)	2.60	4.48	6.24	4.82	4.28
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	18.0	7.54	4.34	24.7	11.9
	Strontium (Sr)-Dissolved (mg/L)	0.434	0.367	0.246	0.354	0.460
	Sulfur (S)-Dissolved (mg/L)	127	89.3	11.8	4.92	166
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00066	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.00624	0.00184	0.00294	0.000475	0.00306
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0011	<0.0010	<0.0010	<0.0010	0.0014
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2587102-6 WG 11-MAY-21 11:00 RG_MW_MC10A_ WG_2021_05_11_ NP	L2587102-7 WG 11-MAY-21 11:30 RG_MW_MC11A_ WG_2021_05_11_ NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	0.0014	0.0027		
	Antimony (Sb)-Dissolved (mg/L)	0.00011	0.00013		
	Arsenic (As)-Dissolved (mg/L)	0.00015	0.00031		
	Barium (Ba)-Dissolved (mg/L)	0.122	0.582		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.017	0.048		
	Cadmium (Cd)-Dissolved (mg/L)	0.0000609	<0.000050		
	Calcium (Ca)-Dissolved (mg/L)	184	49.9		
	Chromium (Cr)-Dissolved (mg/L)	0.00018	<0.00010		
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00026		
	Copper (Cu)-Dissolved (mg/L)	0.00025	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.205		
	Lead (Pb)-Dissolved (mg/L)	0.000113	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0509	0.0272		
	Magnesium (Mg)-Dissolved (mg/L)	74.6	19.0		
	Manganese (Mn)-Dissolved (mg/L)	0.00188	0.122		
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000924	0.00598		
	Nickel (Ni)-Dissolved (mg/L)	0.00060	<0.00050		
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		
	Potassium (K)-Dissolved (mg/L)	1.90	1.40		
	Selenium (Se)-Dissolved (mg/L)	0.0845	0.000164		
	Silicon (Si)-Dissolved (mg/L)	4.29	4.81		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	11.9	25.0		
	Strontium (Sr)-Dissolved (mg/L)	0.465	0.351		
	Sulfur (S)-Dissolved (mg/L)	168	5.24		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030		
	Uranium (U)-Dissolved (mg/L)	0.00306	0.000488		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0010	<0.0010		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Dissolved Organic Carbon	MS-B	L2587102-6, -7
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2587102-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2587102-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2587102-1, -2, -3, -4, -5, -6, -7

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>DOC-WT</b>	Water	Dissolved Organic Carbon	APHA 5310B
Sample is filtered through a 0.45um filter, then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)

## Reference Information

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated  
 Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TOC-WT** Water Total Organic Carbon APHA 5310B

Sample is injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

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### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 1 of 15

Client: SNC-Lavalin  
 # 3 - 520 Lake Street  
 Nelson BC V1L 4C6  
 Contact: Leslie Harker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5459261</b>							
<b>WG3536748-6</b>	<b>DUP</b>	<b>L2587102-4</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	17-MAY-21
<b>WG3536748-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.4		%		85-115	17-MAY-21
<b>WG3536748-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	17-MAY-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5464023</b>							
<b>WG3539956-20</b>	<b>DUP</b>	<b>L2587102-1</b>						
Alkalinity, Total (as CaCO3)		235	234		mg/L	0.3	20	21-MAY-21
<b>WG3539956-16</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	21-MAY-21
<b>WG3539956-19</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.2		%		85-115	21-MAY-21
<b>WG3539956-15</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-MAY-21
<b>WG3539956-18</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-MAY-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5458850</b>							
<b>WG3536094-7</b>	<b>DUP</b>	<b>L2587102-2</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	18-MAY-21
<b>WG3536094-10</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			90.3		%		80-120	18-MAY-21
<b>WG3536094-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			91.8		%		80-120	17-MAY-21
<b>WG3536094-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-MAY-21
<b>WG3536094-9</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-MAY-21
<b>WG3536094-8</b>	<b>MS</b>	<b>L2587102-2</b>						
Beryllium (Be)-Dissolved			102.2		%		70-130	18-MAY-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5464023</b>							
<b>WG3539956-20</b>	<b>DUP</b>	<b>L2587102-1</b>						
Bicarbonate (HCO3)		286	293		mg/L	2.4	20	21-MAY-21
<b>WG3539956-19</b>	<b>LCS</b>							
Bicarbonate (HCO3)					mg/L			21-MAY-21



## Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 2 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BIC-CL</b>								
<b>Water</b>								
Batch R5464023								
<b>WG3539956-15 MB</b>								
Bicarbonate (HCO3)			<5.0		mg/L		5	21-MAY-21
<b>WG3539956-18 MB</b>								
Bicarbonate (HCO3)			<5.0		mg/L		5	21-MAY-21
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
Batch R5456819								
<b>WG3533917-14 LCS</b>								
Bromide (Br)			101.9		%		85-115	13-MAY-21
<b>WG3533917-13 MB</b>								
Bromide (Br)			<0.050		mg/L		0.05	13-MAY-21
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								
Batch R5456819								
<b>WG3533917-14 LCS</b>								
Chloride (Cl)			101.1		%		85-115	13-MAY-21
<b>WG3533917-13 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	13-MAY-21
<b>CO3-CL</b>								
<b>Water</b>								
Batch R5464023								
<b>WG3539956-20 DUP</b>								
Carbonate (CO3)		L2587102-1	<5.0	RPD-NA	mg/L	N/A	20	21-MAY-21
<b>WG3539956-19 LCS</b>								
Carbonate (CO3)					mg/L			21-MAY-21
<b>WG3539956-15 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	21-MAY-21
<b>WG3539956-18 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	21-MAY-21
<b>DOC-WT</b>								
<b>Water</b>								
Batch R5460446								
<b>WG3537109-3 DUP</b>								
Dissolved Organic Carbon		L2587102-1	3.13		mg/L	8.6	20	19-MAY-21
<b>WG3537109-2 LCS</b>								
Dissolved Organic Carbon			113.0		%		80-120	19-MAY-21
<b>WG3537109-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-MAY-21
<b>WG3537109-4 MS</b>								
Dissolved Organic Carbon		L2587102-1	115.4		%		70-130	19-MAY-21



## Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 3 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
<b>DOC-WT</b>		<b>Water</b>							
Batch R5461969									
WG3537124-2	LCS								
Dissolved Organic Carbon			112.3		%		80-120	21-MAY-21	
WG3537124-1	MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-MAY-21	
<b>EC-L-PCT-CL</b>		<b>Water</b>							
Batch R5464023									
WG3539956-20	DUP	L2587102-1							
Conductivity (@ 25C)			1090		uS/cm	0.3	10	21-MAY-21	
WG3539956-19	LCS								
Conductivity (@ 25C)			104.4		%		90-110	21-MAY-21	
WG3539956-15	MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	21-MAY-21	
WG3539956-18	MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	21-MAY-21	
<b>F-IC-N-CL</b>		<b>Water</b>							
Batch R5456819									
WG3533917-10	LCS								
Fluoride (F)			91.9		%		90-110	12-MAY-21	
WG3533917-14	LCS								
Fluoride (F)			92.3		%		90-110	13-MAY-21	
WG3533917-13	MB								
Fluoride (F)			<0.020		mg/L		0.02	13-MAY-21	
WG3533917-9	MB								
Fluoride (F)			<0.020		mg/L		0.02	12-MAY-21	
<b>HG-D-CVAA-CL</b>		<b>Water</b>							
Batch R5460159									
WG3537512-3	DUP	L2587102-7							
Mercury (Hg)-Dissolved			<0.0000050	<0.0000050C	RPD-NA	mg/L	N/A	20	19-MAY-21
WG3537512-7	DUP	L2587102-6							
Mercury (Hg)-Dissolved			<0.0000050	<0.0000050C	RPD-NA	mg/L	N/A	20	19-MAY-21
WG3537512-2	LCS								
Mercury (Hg)-Dissolved			98.0		%		80-120	19-MAY-21	
WG3537512-6	LCS								
Mercury (Hg)-Dissolved			101.0		%		80-120	19-MAY-21	
WG3537512-1	MB								
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	19-MAY-21	
WG3537512-5	MB								
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	19-MAY-21	



## Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 4 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5460159</b>							
<b>WG3537512-4 MS</b>		<b>L2587102-7</b>						
Mercury (Hg)-Dissolved			96.0		%		70-130	19-MAY-21
<b>WG3537512-8 MS</b>		<b>L2587102-6</b>						
Mercury (Hg)-Dissolved			102.0		%		70-130	19-MAY-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5458850</b>							
<b>WG3536094-7 DUP</b>		<b>L2587102-2</b>						
Aluminum (Al)-Dissolved		0.0013	0.0020	J	mg/L	0.0007	0.002	18-MAY-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-MAY-21
Arsenic (As)-Dissolved		0.00013	0.00013		mg/L	3.4	20	18-MAY-21
Barium (Ba)-Dissolved		0.150	0.154		mg/L	2.4	20	18-MAY-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-MAY-21
Boron (B)-Dissolved		0.017	0.016		mg/L	2.6	20	18-MAY-21
Cadmium (Cd)-Dissolved		0.0000445	0.0000452		mg/L	1.7	20	18-MAY-21
Calcium (Ca)-Dissolved		131	131		mg/L	0.2	20	18-MAY-21
Chromium (Cr)-Dissolved		0.00171	0.00178		mg/L	3.8	20	18-MAY-21
Cobalt (Co)-Dissolved		0.00015	0.00014		mg/L	7.0	20	18-MAY-21
Copper (Cu)-Dissolved		0.00109	0.00109		mg/L	0.0	20	18-MAY-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-MAY-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-MAY-21
Lithium (Li)-Dissolved		0.0376	0.0375		mg/L	0.3	20	18-MAY-21
Magnesium (Mg)-Dissolved		46.4	46.7		mg/L	0.7	20	18-MAY-21
Manganese (Mn)-Dissolved		0.00104	0.00100		mg/L	3.2	20	18-MAY-21
Molybdenum (Mo)-Dissolved		0.00194	0.00192		mg/L	1.3	20	18-MAY-21
Nickel (Ni)-Dissolved		0.00118	0.00119		mg/L	1.1	20	18-MAY-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	18-MAY-21
Potassium (K)-Dissolved		1.49	1.50		mg/L	0.8	20	18-MAY-21
Selenium (Se)-Dissolved		0.0793	0.0777		mg/L	2.0	20	18-MAY-21
Silicon (Si)-Dissolved		4.48	4.42		mg/L	1.4	20	18-MAY-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-MAY-21
Sodium (Na)-Dissolved		7.54	7.71		mg/L	2.2	20	18-MAY-21
Strontium (Sr)-Dissolved		0.367	0.371		mg/L	1.1	20	18-MAY-21
Sulfur (S)-Dissolved		89.3	87.7		mg/L	1.8	20	18-MAY-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-MAY-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-MAY-21





## Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 5 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5458850</b>							
<b>WG3536094-7</b>	<b>DUP</b>	<b>L2587102-2</b>						
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	18-MAY-21
Uranium (U)-Dissolved		0.00184	0.00182		mg/L	1.3	20	18-MAY-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-MAY-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-MAY-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	18-MAY-21
<b>WG3536094-10</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			93.1		%		80-120	18-MAY-21
Antimony (Sb)-Dissolved			99.8		%		80-120	18-MAY-21
Arsenic (As)-Dissolved			92.8		%		80-120	18-MAY-21
Barium (Ba)-Dissolved			96.3		%		80-120	18-MAY-21
Bismuth (Bi)-Dissolved			94.2		%		80-120	18-MAY-21
Boron (B)-Dissolved			84.9		%		80-120	18-MAY-21
Cadmium (Cd)-Dissolved			95.5		%		80-120	18-MAY-21
Calcium (Ca)-Dissolved			95.1		%		80-120	18-MAY-21
Chromium (Cr)-Dissolved			95.7		%		80-120	18-MAY-21
Cobalt (Co)-Dissolved			95.3		%		80-120	18-MAY-21
Copper (Cu)-Dissolved			94.1		%		80-120	18-MAY-21
Iron (Fe)-Dissolved			90.8		%		80-120	18-MAY-21
Lead (Pb)-Dissolved			95.8		%		80-120	18-MAY-21
Lithium (Li)-Dissolved			88.9		%		80-120	18-MAY-21
Magnesium (Mg)-Dissolved			92.8		%		80-120	18-MAY-21
Manganese (Mn)-Dissolved			97.7		%		80-120	18-MAY-21
Molybdenum (Mo)-Dissolved			95.7		%		80-120	18-MAY-21
Nickel (Ni)-Dissolved			93.7		%		80-120	18-MAY-21
Phosphorus (P)-Dissolved			102.9		%		70-130	18-MAY-21
Potassium (K)-Dissolved			94.4		%		80-120	18-MAY-21
Selenium (Se)-Dissolved			87.4		%		80-120	18-MAY-21
Silicon (Si)-Dissolved			94.3		%		60-140	18-MAY-21
Silver (Ag)-Dissolved			98.7		%		80-120	18-MAY-21
Sodium (Na)-Dissolved			91.0		%		80-120	18-MAY-21
Strontium (Sr)-Dissolved			94.0		%		80-120	18-MAY-21
Sulfur (S)-Dissolved			86.9		%		80-120	18-MAY-21
Thallium (Tl)-Dissolved			98.6		%		80-120	18-MAY-21
Tin (Sn)-Dissolved			94.8		%		80-120	18-MAY-21



## Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 6 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5458850</b>							
<b>WG3536094-10</b>	<b>LCS</b>	<b>TMRM</b>						
Titanium (Ti)-Dissolved			92.8		%		80-120	18-MAY-21
Uranium (U)-Dissolved			97.1		%		80-120	18-MAY-21
Vanadium (V)-Dissolved			95.4		%		80-120	18-MAY-21
Zinc (Zn)-Dissolved			89.4		%		80-120	18-MAY-21
Zirconium (Zr)-Dissolved			95.1		%		80-120	18-MAY-21
<b>WG3536094-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			98.6		%		80-120	17-MAY-21
Antimony (Sb)-Dissolved			96.9		%		80-120	17-MAY-21
Arsenic (As)-Dissolved			94.8		%		80-120	17-MAY-21
Barium (Ba)-Dissolved			100.4		%		80-120	17-MAY-21
Bismuth (Bi)-Dissolved			94.0		%		80-120	17-MAY-21
Boron (B)-Dissolved			89.8		%		80-120	17-MAY-21
Cadmium (Cd)-Dissolved			97.2		%		80-120	17-MAY-21
Calcium (Ca)-Dissolved			95.5		%		80-120	17-MAY-21
Chromium (Cr)-Dissolved			96.5		%		80-120	17-MAY-21
Cobalt (Co)-Dissolved			98.9		%		80-120	17-MAY-21
Copper (Cu)-Dissolved			94.6		%		80-120	17-MAY-21
Iron (Fe)-Dissolved			92.2		%		80-120	17-MAY-21
Lead (Pb)-Dissolved			94.2		%		80-120	17-MAY-21
Lithium (Li)-Dissolved			93.5		%		80-120	17-MAY-21
Magnesium (Mg)-Dissolved			104.5		%		80-120	17-MAY-21
Manganese (Mn)-Dissolved			99.3		%		80-120	17-MAY-21
Molybdenum (Mo)-Dissolved			95.8		%		80-120	17-MAY-21
Nickel (Ni)-Dissolved			96.2		%		80-120	17-MAY-21
Phosphorus (P)-Dissolved			90.9		%		70-130	17-MAY-21
Potassium (K)-Dissolved			95.7		%		80-120	17-MAY-21
Selenium (Se)-Dissolved			95.1		%		80-120	17-MAY-21
Silicon (Si)-Dissolved			98.9		%		60-140	17-MAY-21
Silver (Ag)-Dissolved			96.3		%		80-120	17-MAY-21
Sodium (Na)-Dissolved			99.0		%		80-120	17-MAY-21
Strontium (Sr)-Dissolved			91.4		%		80-120	17-MAY-21
Sulfur (S)-Dissolved			103.8		%		80-120	17-MAY-21
Thallium (Tl)-Dissolved			94.3		%		80-120	17-MAY-21
Tin (Sn)-Dissolved			97.7		%		80-120	17-MAY-21



## Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 7 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5458850</b>							
<b>WG3536094-6</b>	<b>LCS</b>	<b>TMRM</b>						
Titanium (Ti)-Dissolved			88.0		%		80-120	17-MAY-21
Uranium (U)-Dissolved			91.4		%		80-120	17-MAY-21
Vanadium (V)-Dissolved			96.0		%		80-120	17-MAY-21
Zinc (Zn)-Dissolved			99.5		%		80-120	17-MAY-21
Zirconium (Zr)-Dissolved			88.9		%		80-120	17-MAY-21
<b>WG3536094-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-MAY-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-MAY-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-MAY-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-MAY-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-MAY-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-MAY-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-MAY-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-MAY-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-MAY-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	17-MAY-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-MAY-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-MAY-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-MAY-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-MAY-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-MAY-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	17-MAY-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-MAY-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-21



## Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 8 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5458850</b>							
<b>WG3536094-5 MB</b>								
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-MAY-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-MAY-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-MAY-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-MAY-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	17-MAY-21
<b>WG3536094-9 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-MAY-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-MAY-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-MAY-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-MAY-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-MAY-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-MAY-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-MAY-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-MAY-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-MAY-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-MAY-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-MAY-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-MAY-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-MAY-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-MAY-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-MAY-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-MAY-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-MAY-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-MAY-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	18-MAY-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-MAY-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-MAY-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-MAY-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-MAY-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-MAY-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-MAY-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	18-MAY-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-MAY-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-MAY-21



## Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 9 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5458850</b>							
<b>WG3536094-9</b>	<b>MB</b>							
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-MAY-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-MAY-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-MAY-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-MAY-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	18-MAY-21
<b>WG3536094-8</b>	<b>MS</b>	<b>L2587102-2</b>						
Aluminum (Al)-Dissolved			100.0		%		70-130	18-MAY-21
Antimony (Sb)-Dissolved			104.0		%		70-130	18-MAY-21
Arsenic (As)-Dissolved			100.9		%		70-130	18-MAY-21
Barium (Ba)-Dissolved			98.9		%		70-130	18-MAY-21
Bismuth (Bi)-Dissolved			98.0		%		70-130	18-MAY-21
Boron (B)-Dissolved			95.8		%		70-130	18-MAY-21
Cadmium (Cd)-Dissolved			100.8		%		70-130	18-MAY-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	18-MAY-21
Chromium (Cr)-Dissolved			101.4		%		70-130	18-MAY-21
Cobalt (Co)-Dissolved			101.8		%		70-130	18-MAY-21
Copper (Cu)-Dissolved			101.0		%		70-130	18-MAY-21
Iron (Fe)-Dissolved			97.5		%		70-130	18-MAY-21
Lead (Pb)-Dissolved			101.1		%		70-130	18-MAY-21
Lithium (Li)-Dissolved			102.6		%		70-130	18-MAY-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	18-MAY-21
Manganese (Mn)-Dissolved			103.2		%		70-130	18-MAY-21
Molybdenum (Mo)-Dissolved			100.7		%		70-130	18-MAY-21
Nickel (Ni)-Dissolved			99.9		%		70-130	18-MAY-21
Phosphorus (P)-Dissolved			102.0		%		70-130	18-MAY-21
Potassium (K)-Dissolved			99.3		%		70-130	18-MAY-21
Selenium (Se)-Dissolved			95.0		%		70-130	18-MAY-21
Silicon (Si)-Dissolved			95.7		%		70-130	18-MAY-21
Silver (Ag)-Dissolved			83.6		%		70-130	18-MAY-21
Sodium (Na)-Dissolved			99.98		%		70-130	18-MAY-21
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	18-MAY-21
Thallium (Tl)-Dissolved			100.4		%		70-130	18-MAY-21
Tin (Sn)-Dissolved			101.1		%		70-130	18-MAY-21
Titanium (Ti)-Dissolved			101.4		%		70-130	18-MAY-21



## Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 10 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5458850</b>							
<b>WG3536094-8</b>	<b>MS</b>	<b>L2587102-2</b>						
Uranium (U)-Dissolved			101.6		%		70-130	18-MAY-21
Vanadium (V)-Dissolved			100.9		%		70-130	18-MAY-21
Zinc (Zn)-Dissolved			103.1		%		70-130	18-MAY-21
Zirconium (Zr)-Dissolved			100.4		%		70-130	18-MAY-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5462838</b>							
<b>WG3538901-3</b>	<b>DUP</b>	<b>L2587102-1</b>						
Ammonia as N		0.0098	0.0087		mg/L	12	20	20-MAY-21
<b>WG3538901-7</b>	<b>DUP</b>	<b>L2587102-5</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-MAY-21
<b>WG3538901-2</b>	<b>LCS</b>							
Ammonia as N			102.3		%		85-115	20-MAY-21
<b>WG3538901-6</b>	<b>LCS</b>							
Ammonia as N			100.0		%		85-115	20-MAY-21
<b>WG3538901-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	20-MAY-21
<b>WG3538901-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	20-MAY-21
<b>WG3538901-4</b>	<b>MS</b>	<b>L2587102-1</b>						
Ammonia as N			106.2		%		75-125	20-MAY-21
<b>WG3538901-8</b>	<b>MS</b>	<b>L2587102-5</b>						
Ammonia as N			101.1		%		75-125	20-MAY-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5456819</b>							
<b>WG3533917-14</b>	<b>LCS</b>							
Nitrite (as N)			101.8		%		90-110	13-MAY-21
<b>WG3533917-13</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAY-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5456819</b>							
<b>WG3533917-10</b>	<b>LCS</b>							
Nitrate (as N)			100.5		%		90-110	12-MAY-21
<b>WG3533917-14</b>	<b>LCS</b>							
Nitrate (as N)			101.4		%		90-110	13-MAY-21
<b>WG3533917-13</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAY-21
<b>WG3533917-9</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 11 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5456819							
<b>WG3533917-9 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	12-MAY-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5464023							
<b>WG3539956-20 DUP</b>		<b>L2587102-1</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	21-MAY-21
<b>WG3539956-15 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	21-MAY-21
<b>WG3539956-18 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	21-MAY-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5458103							
<b>WG3535318-1 CRM</b>		<b>CL-ORP</b>						
ORP			226		mV		210-230	14-MAY-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5459984							
<b>WG3537772-2 LCS</b>								
Phosphorus (P)-Total			103.6		%		80-120	19-MAY-21
<b>WG3537772-6 LCS</b>								
Phosphorus (P)-Total			103.8		%		80-120	19-MAY-21
<b>WG3537772-1 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-MAY-21
<b>WG3537772-5 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-MAY-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5464023							
<b>WG3539956-20 DUP</b>		<b>L2587102-1</b>						
pH		8.26	8.23	J	pH	0.03	0.2	21-MAY-21
<b>WG3539956-16 LCS</b>								
pH			7.04		pH		6.9-7.1	21-MAY-21
<b>WG3539956-19 LCS</b>								
pH			7.04		pH		6.9-7.1	21-MAY-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 12 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
<b>PO4-DO-L-COL-CL</b> <b>Water</b>									
Batch      R5457268									
WG3534235-2 <b>LCS</b>									
Orthophosphate-Dissolved (as P)			101.6		%		80-120	13-MAY-21	
WG3534235-1 <b>MB</b>									
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-MAY-21	
<b>SO4-IC-N-CL</b> <b>Water</b>									
Batch      R5456819									
WG3533917-10 <b>LCS</b>									
Sulfate (SO4)			101.8		%		90-110	12-MAY-21	
WG3533917-14 <b>LCS</b>									
Sulfate (SO4)			104.2		%		90-110	13-MAY-21	
WG3533917-13 <b>MB</b>									
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAY-21	
WG3533917-9 <b>MB</b>									
Sulfate (SO4)			<0.30		mg/L		0.3	12-MAY-21	
<b>SOLIDS-TDS-CL</b> <b>Water</b>									
Batch      R5459371									
WG3535852-2 <b>LCS</b>									
Total Dissolved Solids			95.0		%		85-115	17-MAY-21	
WG3535852-1 <b>MB</b>									
Total Dissolved Solids			<10		mg/L		10	17-MAY-21	
Batch      R5460186									
WG3536509-2 <b>LCS</b>									
Total Dissolved Solids			98.8		%		85-115	18-MAY-21	
WG3536509-1 <b>MB</b>									
Total Dissolved Solids			<10		mg/L		10	18-MAY-21	
<b>TKN-L-F-CL</b> <b>Water</b>									
Batch      R5459430									
WG3536715-3 <b>DUP</b>									
Total Kjeldahl Nitrogen				L2587102-1 3.03	3.02	mg/L	0.3	20	18-MAY-21
WG3536715-2 <b>LCS</b>									
Total Kjeldahl Nitrogen			102.5		%		75-125	18-MAY-21	
WG3536715-6 <b>LCS</b>									
Total Kjeldahl Nitrogen			102.0		%		75-125	18-MAY-21	
WG3536715-1 <b>MB</b>									
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-MAY-21	
WG3536715-5 <b>MB</b>									
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-MAY-21	
WG3536715-4 <b>MS</b> L2587102-2									





## Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 13 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R5459430							
WG3536715-4	MS	L2587102-2						
Total Kjeldahl Nitrogen			109.6		%		70-130	18-MAY-21
<b>TOC-WT</b>								
<b>Water</b>								
Batch	R5459717							
WG3536868-3	DUP	L2587102-2						
Total Organic Carbon		3.3	3.4		mg/L	3.6	20	18-MAY-21
WG3536868-2	LCS							
Total Organic Carbon			117.8		%		80-120	18-MAY-21
WG3536868-1	MB							
Total Organic Carbon			<1.0		mg/L		1	18-MAY-21
WG3536868-4	MS	L2587102-2						
Total Organic Carbon			118.5		%		70-130	18-MAY-21
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch	R5459297							
WG3535851-2	LCS							
Total Suspended Solids			89.4		%		85-115	17-MAY-21
WG3535851-1	MB							
Total Suspended Solids			<1.0		mg/L		1	17-MAY-21
Batch	R5460053							
WG3536508-2	LCS							
Total Suspended Solids			91.1		%		85-115	18-MAY-21
WG3536508-1	MB							
Total Suspended Solids			<1.0		mg/L		1	18-MAY-21
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch	R5458002							
WG3535213-12	DUP	L2587102-1						
Turbidity		1.81	1.76		NTU	2.8	15	13-MAY-21
WG3535213-11	LCS							
Turbidity			99.0		%		85-115	13-MAY-21
WG3535213-8	LCS							
Turbidity			99.96		%		85-115	13-MAY-21
WG3535213-10	MB							
Turbidity			<0.10		NTU		0.1	13-MAY-21
WG3535213-7	MB							
Turbidity			<0.10		NTU		0.1	13-MAY-21

# Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 14 of 15

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2587102

Report Date: 26-MAY-21

Page 15 of 15

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	11-MAY-21 09:20	14-MAY-21 19:00	0.25	82	hours	EHTR-FM
	2	11-MAY-21 13:00	14-MAY-21 19:00	0.25	78	hours	EHTR-FM
	3	11-MAY-21 13:50	14-MAY-21 19:00	0.25	77	hours	EHTR-FM
	4	11-MAY-21 11:30	14-MAY-21 19:00	0.25	79	hours	EHTR-FM
	5	11-MAY-21 11:00	14-MAY-21 19:00	0.25	80	hours	EHTR-FM
	6	11-MAY-21 11:00	14-MAY-21 19:00	0.25	80	hours	EHTR-FM
	7	11-MAY-21 11:30	14-MAY-21 19:00	0.25	79	hours	EHTR-FM
pH							
	1	11-MAY-21 09:20	21-MAY-21 08:00	0.25	239	hours	EHTR-FM
	2	11-MAY-21 13:00	21-MAY-21 08:00	0.25	235	hours	EHTR-FM
	3	11-MAY-21 13:50	21-MAY-21 08:00	0.25	234	hours	EHTR-FM
	4	11-MAY-21 11:30	21-MAY-21 08:00	0.25	236	hours	EHTR-FM
	5	11-MAY-21 11:00	21-MAY-21 08:00	0.25	237	hours	EHTR-FM
	6	11-MAY-21 11:00	21-MAY-21 08:00	0.25	237	hours	EHTR-FM
	7	11-MAY-21 11:30	21-MAY-21 08:00	0.25	236	hours	EHTR-FM

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2587102 were received on 12-MAY-21 09:05.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.











SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 09-JUN-21  
Report Date: 02-JUL-21 15:50 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2599282  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

02-JUL-21 15:50 (MT)

Version: FINAL

Sample ID Description Sampled Date Sampled Time Client ID		L2599282-1 WG 08-JUN-21 15:50 GH_MW-MC- 1S_WG_2021_06_ 08_NP	L2599282-2 WG 08-JUN-21 14:35 GH_MW_LC1- A_WG_2021_06_0 8_NP	L2599282-3 WG 08-JUN-21 13:10 GH_MW_LC1- B_WG_2021_06_0 8_NP	L2599282-4 WG 08-JUN-21 12:00 GH_MW_LC2- A_WG_2021_06_0 8_NP	L2599282-5 WG 08-JUN-21 11:10 GH_MW_LC2- B_WG_2021_06_0 8_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	298	320	367	342	376
	Hardness (as CaCO3) (mg/L)	165	174	210	184	207
	pH (pH)	8.10	7.73	7.89	7.77	7.92
	ORP (mV)	340	452	344	351	333
	Total Suspended Solids (mg/L)	<1.0	4.2	<1.0	2.1	<1.0
	Total Dissolved Solids (mg/L)	173	208	231	218	224
	Turbidity (NTU)	0.12	5.00	0.14	0.11	0.21
	<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
Alkalinity, Bicarbonate (as CaCO3) (mg/L)		154	183	217	183	224
Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (as CaCO3) (mg/L)		154	183	217	183	224
Ammonia as N (mg/L)		0.0084	0.0241	<0.0050	<0.0050	0.0115
Bicarbonate (HCO3) (mg/L)		233	224	264	224	273
Bromide (Br) (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
Carbonate (CO3) (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
Chloride (Cl) (mg/L)		0.42	0.79	0.56	0.90	0.58
Fluoride (F) (mg/L)		0.146	0.412	0.154	0.146	0.141
Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
Ion Balance (%)		98.3	89.3	90.5	87.9	87.7
Nitrate and Nitrite (as N) (mg/L)		0.148	<0.0051	0.346	0.241	0.252
Nitrate (as N) (mg/L)		0.148	<0.0050	0.346	0.241	0.252
Nitrite (as N) (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen (mg/L)		0.094	0.056	0.149	0.068	0.129
Total Nitrogen (mg/L)		0.242	0.056	0.495	0.309	0.381
Orthophosphate-Dissolved (as P) (mg/L)		0.0018	0.0017	0.0017	0.0011	0.0016
Phosphorus (P)-Total (mg/L)		<0.0020	0.0072	<0.0020	<0.0020	<0.0020
Sulfate (SO4) (mg/L)		14.6	29.1	22.4	30.5	22.9
Anion Sum (meq/L)		3.42	4.31	4.84	4.35	4.99
Cation Sum (meq/L)		3.36	3.85	4.38	3.83	4.38
Cation - Anion Balance (%)	-0.8	-5.7	-5.0	-6.4	-6.5	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.73	<0.50	2.32	<0.50	2.05
	Total Organic Carbon (mg/L)	1.78	<0.50	1.93	<0.50	2.40
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0015	<0.0010	<0.0010	0.0012

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2599282-1 WG 08-JUN-21 15:50 GH_MW-MC- 1S_WG_2021_06_ 08_NP	L2599282-2 WG 08-JUN-21 14:35 GH_MW_LC1- A_WG_2021_06_0 8_NP	L2599282-3 WG 08-JUN-21 13:10 GH_MW_LC1- B_WG_2021_06_0 8_NP	L2599282-4 WG 08-JUN-21 12:00 GH_MW_LC2- A_WG_2021_06_0 8_NP	L2599282-5 WG 08-JUN-21 11:10 GH_MW_LC2- B_WG_2021_06_0 8_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00041	0.00010	0.00026
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00068	0.00011	<0.00010	0.00012
	Barium (Ba)-Dissolved (mg/L)	0.0522	0.0900	0.0798	0.0768	0.0609
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	0.024	<0.010	<0.010	0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000057	<0.0000050	0.0000103	<0.0000050	0.0000153
	Calcium (Ca)-Dissolved (mg/L)	47.3	44.4	57.1	50.4	57.1
	Chromium (Cr)-Dissolved (mg/L)	0.00021	<0.00010	0.00016	0.00023	0.00017
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00011	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00024	<0.00020	0.00037	<0.00020	0.00035
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.172	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0024	0.0078	0.0076	0.0044	0.0079
	Magnesium (Mg)-Dissolved (mg/L)	11.5	15.3	16.5	14.2	15.5
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.226	<0.00010	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000946	0.00331	0.00208	0.00117	0.00141
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00076
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.38	0.95	0.95	0.60	0.82
	Selenium (Se)-Dissolved (mg/L)	0.000819	<0.000050	0.00180	0.00190	0.00147
	Silicon (Si)-Dissolved (mg/L)	2.00	4.46	2.40	1.90	2.52
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.979	7.67	3.53	3.01	5.24
	Strontium (Sr)-Dissolved (mg/L)	0.205	0.400	0.212	0.186	0.205
	Sulfur (S)-Dissolved (mg/L)	5.52	10.8	8.20	11.1	8.76
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000763	0.00109	0.00146	0.00111	0.00116
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Phosphorus (P)-Total	MS-B	L2599282-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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**ACIDITY-PCT-CL**      Water      Acidity by Automatic Titration      APHA 2310 Acidity  
 This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

**ALK-MAN-CL**      Water      Alkalinity (Species) by Manual Titration      APHA 2320 ALKALINITY  
 This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

**BE-D-L-CCMS-CL**      Water      Diss. Be (low) in Water by CRC ICPMS      APHA 3030B/6020A (mod)  
 Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**BIC-CL**      Water      Bicarbonate (HCO<sub>3</sub>)      APHA 2320 B-Pot. Titration

**BR-L-IC-N-CL**      Water      Bromide in Water by IC (Low Level)      EPA 300.1 (mod)  
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**C-DIS-ORG-LOW-CL**      Water      Dissolved Organic Carbon      APHA 5310 B-Instrumental  
 This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.  
 TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**C-TOT-ORG-LOW-CL**      Water      Total Organic Carbon      APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.  
 TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-L-IC-N-CL**      Water      Chloride in Water by IC      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**CO3-CL**      Water      Carbonate (CO<sub>3</sub>)      APHA 2320 B-Potentiometric Titration

**EC-L-PCT-CL**      Water      Electrical Conductivity (EC)      APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL**      Water      Fluoride in Water by IC      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL**      Water      Hardness      APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL**      Water      Dissolved Mercury in Water by CVAAS      APHA 3030B/EPA 1631E (mod)

## Reference Information

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL**      Water      Dissolved Metals in Water by CRC ICPMS      APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL**      Water      Total Nitrogen (Calculation)      APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL**      Water      Nitrate+Nitrite      CALCULATION

**NH3-L-F-CL**      Water      Ammonia, Total (as N)      J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL**      Water      Nitrite in Water by IC (Low Level)      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**      Water      Nitrate in Water by IC (Low Level)      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL**      Water      Hydroxide in Water      APHA 2320 B-Potentiometric Titration

**ORP-CL**      Water      Oxidation reduction potential by elect.      ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**      Water      Phosphorus (P)-Total      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL**      Water      pH      APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**      Water      Orthophosphate-Dissolved (as P)      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**      Water      Sulfate in Water by IC      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**      Water      Total Dissolved Solids      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

## Reference Information

<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2599282

Report Date: 02-JUL-21

Page 1 of 10

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491189</b>							
<b>WG3555981-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			108.1		%		85-115	15-JUN-21
<b>WG3555981-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	15-JUN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493959</b>							
<b>WG3559031-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			112.0		%		85-115	19-JUN-21
<b>WG3559031-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-JUN-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			103.4		%		80-120	16-JUN-21
<b>WG3556476-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-JUN-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493959</b>							
<b>WG3559031-7</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	19-JUN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487689</b>							
<b>WG3553644-10</b>	<b>LCS</b>							
Bromide (Br)			104.8		%		85-115	10-JUN-21
<b>WG3553644-2</b>	<b>LCS</b>							
Bromide (Br)			99.4		%		85-115	10-JUN-21
<b>WG3553644-6</b>	<b>LCS</b>							
Bromide (Br)			103.9		%		85-115	10-JUN-21
<b>WG3553644-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-JUN-21
<b>WG3553644-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-JUN-21
<b>WG3553644-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-JUN-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2599282

Report Date: 02-JUL-21

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5507438							
<b>WG3567803-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			111.1		%		80-120	01-JUL-21
<b>WG3567803-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5507438							
<b>WG3567803-2</b>	<b>LCS</b>							
Total Organic Carbon			112.0		%		80-120	01-JUL-21
<b>WG3567803-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5487689							
<b>WG3553644-10</b>	<b>LCS</b>							
Chloride (Cl)			101.8		%		85-115	10-JUN-21
<b>WG3553644-2</b>	<b>LCS</b>							
Chloride (Cl)			101.4		%		85-115	10-JUN-21
<b>WG3553644-6</b>	<b>LCS</b>							
Chloride (Cl)			101.9		%		85-115	10-JUN-21
<b>WG3553644-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	10-JUN-21
<b>WG3553644-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	10-JUN-21
<b>WG3553644-9</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	10-JUN-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5493959							
<b>WG3559031-7</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	19-JUN-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5493959							
<b>WG3559031-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.3		%		90-110	19-JUN-21
<b>WG3559031-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-JUN-21
<b>F-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2599282

Report Date: 02-JUL-21

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487689</b>							
<b>WG3553644-10</b>	<b>LCS</b>							
Fluoride (F)			100.5		%		90-110	10-JUN-21
<b>WG3553644-2</b>	<b>LCS</b>							
Fluoride (F)			99.3		%		90-110	10-JUN-21
<b>WG3553644-6</b>	<b>LCS</b>							
Fluoride (F)			100.1		%		90-110	10-JUN-21
<b>WG3553644-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-JUN-21
<b>WG3553644-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-JUN-21
<b>WG3553644-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-JUN-21
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5490946</b>							
<b>WG3555580-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			101.0		%		80-120	15-JUN-21
<b>WG3555580-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-JUN-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			102.5		%		80-120	16-JUN-21
Antimony (Sb)-Dissolved			107.8		%		80-120	16-JUN-21
Arsenic (As)-Dissolved			100.7		%		80-120	16-JUN-21
Barium (Ba)-Dissolved			98.5		%		80-120	16-JUN-21
Bismuth (Bi)-Dissolved			103.2		%		80-120	16-JUN-21
Boron (B)-Dissolved			105.3		%		80-120	16-JUN-21
Cadmium (Cd)-Dissolved			97.0		%		80-120	16-JUN-21
Calcium (Ca)-Dissolved			98.4		%		80-120	16-JUN-21
Chromium (Cr)-Dissolved			102.4		%		80-120	16-JUN-21
Cobalt (Co)-Dissolved			102.0		%		80-120	16-JUN-21
Copper (Cu)-Dissolved			98.6		%		80-120	16-JUN-21
Iron (Fe)-Dissolved			100.9		%		80-120	16-JUN-21
Lead (Pb)-Dissolved			101.5		%		80-120	16-JUN-21
Lithium (Li)-Dissolved			104.7		%		80-120	16-JUN-21
Magnesium (Mg)-Dissolved			98.3		%		80-120	16-JUN-21
Manganese (Mn)-Dissolved			99.8		%		80-120	16-JUN-21





## Quality Control Report

Workorder: L2599282

Report Date: 02-JUL-21

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-6</b>	<b>LCS</b>	<b>TMRM</b>						
Molybdenum (Mo)-Dissolved			101.3		%		80-120	16-JUN-21
Nickel (Ni)-Dissolved			99.6		%		80-120	16-JUN-21
Phosphorus (P)-Dissolved			104.1		%		70-130	16-JUN-21
Potassium (K)-Dissolved			104.3		%		80-120	16-JUN-21
Selenium (Se)-Dissolved			101.3		%		80-120	16-JUN-21
Silicon (Si)-Dissolved			107.1		%		60-140	16-JUN-21
Silver (Ag)-Dissolved			108.5		%		80-120	16-JUN-21
Sodium (Na)-Dissolved			105.5		%		80-120	16-JUN-21
Strontium (Sr)-Dissolved			101.8		%		80-120	16-JUN-21
Sulfur (S)-Dissolved			113.1		%		80-120	16-JUN-21
Thallium (Tl)-Dissolved			102.3		%		80-120	16-JUN-21
Tin (Sn)-Dissolved			101.0		%		80-120	16-JUN-21
Titanium (Ti)-Dissolved			94.0		%		80-120	16-JUN-21
Uranium (U)-Dissolved			101.6		%		80-120	16-JUN-21
Vanadium (V)-Dissolved			102.3		%		80-120	16-JUN-21
Zinc (Zn)-Dissolved			106.1		%		80-120	16-JUN-21
Zirconium (Zr)-Dissolved			101.9		%		80-120	16-JUN-21
<b>WG3556476-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-JUN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-JUN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-JUN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-JUN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21





## Quality Control Report

Workorder: L2599282

Report Date: 02-JUL-21

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
Water								
Batch R5487689								
WG3553644-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	10-JUN-21
<b>NO3-L-IC-N-CL</b>								
Water								
Batch R5487689								
WG3553644-10	LCS							
Nitrate (as N)			101.3		%		90-110	10-JUN-21
WG3553644-2	LCS							
Nitrate (as N)			100.6		%		90-110	10-JUN-21
WG3553644-6	LCS							
Nitrate (as N)			101.4		%		90-110	10-JUN-21
WG3553644-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	10-JUN-21
WG3553644-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	10-JUN-21
WG3553644-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	10-JUN-21
<b>OH-CL</b>								
Water								
Batch R5493959								
WG3559031-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	19-JUN-21
<b>ORP-CL</b>								
Water								
Batch R5488764								
WG3554011-1	CRM	CL-ORP						
ORP			219		mV		210-230	13-JUN-21
<b>P-T-L-COL-CL</b>								
Water								
Batch R5490902								
WG3555561-10	LCS							
Phosphorus (P)-Total			103.0		%		80-120	15-JUN-21
WG3555561-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-JUN-21
<b>PH-CL</b>								
Water								
Batch R5493959								
WG3559031-8	LCS							
pH			7.00		pH		6.9-7.1	19-JUN-21



## Quality Control Report

Workorder: L2599282

Report Date: 02-JUL-21

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5483216</b>							
<b>WG3552083-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.5		%		80-120	10-JUN-21
<b>WG3552083-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	10-JUN-21
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5487689</b>							
<b>WG3553644-10</b>	<b>LCS</b>							
Sulfate (SO4)			100.9		%		90-110	10-JUN-21
<b>WG3553644-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.3		%		90-110	10-JUN-21
<b>WG3553644-6</b>	<b>LCS</b>							
Sulfate (SO4)			101.2		%		90-110	10-JUN-21
<b>WG3553644-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	10-JUN-21
<b>WG3553644-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	10-JUN-21
<b>WG3553644-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	10-JUN-21
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491369</b>							
<b>WG3554990-6</b>	<b>DUP</b>	<b>L2599282-4</b>						
Total Dissolved Solids		218	209		mg/L	4.0	20	15-JUN-21
<b>WG3554990-2</b>	<b>LCS</b>							
Total Dissolved Solids			91.7		%		85-115	15-JUN-21
<b>WG3554990-5</b>	<b>LCS</b>							
Total Dissolved Solids			103.7		%		85-115	15-JUN-21
<b>WG3554990-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	15-JUN-21
<b>WG3554990-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	15-JUN-21
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5490913</b>							
<b>WG3555117-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			83.0		%		75-125	15-JUN-21
<b>WG3555117-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.0		%		75-125	15-JUN-21
<b>WG3555117-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-21



## Quality Control Report

Workorder: L2599282

Report Date: 02-JUL-21

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5490913							
<b>WG3555117-3 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-21
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5490700							
<b>WG3554160-2 LCS</b>								
Total Suspended Solids			106.3		%		85-115	14-JUN-21
<b>WG3554160-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	14-JUN-21
Batch	R5491405							
<b>WG3554986-8 LCS</b>								
Total Suspended Solids			91.4		%		85-115	15-JUN-21
<b>WG3554986-7 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	15-JUN-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5484417							
<b>WG3552583-2 LCS</b>								
Turbidity			99.0		%		85-115	10-JUN-21
<b>WG3552583-1 MB</b>								
Turbidity			<0.10		NTU		0.1	10-JUN-21

# Quality Control Report

Workorder: L2599282

Report Date: 02-JUL-21

Page 9 of 10

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2599282

Report Date: 02-JUL-21

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	08-JUN-21 15:50	13-JUN-21 15:30	0.25	120	hours	EHTR-FM
	2	08-JUN-21 14:35	13-JUN-21 15:30	0.25	121	hours	EHTR-FM
	3	08-JUN-21 13:10	13-JUN-21 15:30	0.25	122	hours	EHTR-FM
	4	08-JUN-21 12:00	13-JUN-21 15:30	0.25	124	hours	EHTR-FM
	5	08-JUN-21 11:10	13-JUN-21 15:30	0.25	124	hours	EHTR-FM
pH							
	1	08-JUN-21 15:50	21-JUN-21 09:00	0.25	305	hours	EHTR-FM
	2	08-JUN-21 14:35	19-JUN-21 09:00	0.25	258	hours	EHTR-FM
	3	08-JUN-21 13:10	19-JUN-21 09:00	0.25	260	hours	EHTR-FM
	4	08-JUN-21 12:00	19-JUN-21 09:00	0.25	261	hours	EHTR-FM
	5	08-JUN-21 11:10	19-JUN-21 09:00	0.25	262	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2599282 were received on 09-JUN-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2599282-COFC

C Number:

Page 1 of 2

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report Company: SNC-Lavalin Contact: Genevieve Pomerleau Phone: Tel.: 804-515-5151 x 129 Cell.: 250-464-5672 Company address below will appear on the final report Street: 520 Lake Street City/Province: Nelson, BC Postal Code: V1L 4C6		<b>Report Format / Distribution</b> Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL) Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Emails: SNC - genevieve.pomerleau, Gavin Grundy, and vicky.lipinski@snc-lavalin.com Teck - crystal.sabel@teck.com		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b> Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply PRIORITY (Business Days) 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/> EMERGENCY 1 Business day [E1 - 100%] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/> Date and Time Required for all E&P TATs:																																									
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO Company: Contact:		<b>Invoice Distribution</b> Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Emails: tyler.gale@snc-lavalin.com payables@snc-lavalin.com		<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below <table border="1"> <tr> <td>F/P</td> <td>P</td> <td>F/P</td> <td></td> <td></td> <td></td> <td>P</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>DOC (C-DIS-ORG-LOW-CL)</td> <td>TOC (C-TOT-ORG-LOW-CL)</td> <td>BCMDG D-Met. +Hg (MET-D-BCMDG-CL)</td> <td>Total N Calc. (N-T-CALC-CL)</td> <td>Nitrate + Nitrite Calc. (NZN3-CALC-CL)</td> <td>Teck Routine (TECKCOAL-ROUTINE-CL)</td> <td>TKN (TKN-L-F-CL)</td> <td>Bicarbonate (BIC-CL)</td> <td>Carbonate (CO3-CL)</td> <td>Hydroxide (OH-CL)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		F/P	P	F/P				P														DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met. +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (NZN3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)										
F/P	P	F/P				P																																							
DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met. +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (NZN3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)																																				
<b>Project Information</b> ALS Account # / Quote #: MOR125 / Q72340 Job #: Greenhills Operations PO / AFE: 658004 LSD:		<b>Oil and Gas Required Fields (client use)</b> AFE/Cost Center: Major/Minor Code: Requisitioner: Location:		<b>ALS Lab Work Order # (lab use only):</b> 242 ALS Contact: Inayat Dhaliwal 403-407-1784 Sampler: JVG, TC																																									
<b>ALS Sample # (lab use only)</b>	<b>Sample Identification &amp;/or Coordinates</b> (This description will appear on the report)	<b>Teck Sample Location (sys_loc_code)</b> (For Teck data upload to EQUIS database)	<b>Date</b> (dd-mmm-yy)	<b>Time</b> (hh:mm)	<b>Sample Type</b>																																								
	GH_MW-MC-1S_WG_2021_06_08_NP	GH_MW-MC-1S	08-Jun-21		WG	X	X	X	X	X	X	X	X	X	X																														
	GH_MW-MC-1D_WG_2021_06_08_NP	GH_MW-MC-1D			WG																																								
	GH_MW-MC-2S_WG_2021_06_08_NP	GH_MW-MC-2S			WG																																								
	GH_MW-MC-2D_WG_2021_06_08_NP	GH_MW-MC-2D			WG																																								
	GH_MW-Willow-1S_WG_2021_06_08_NP	GH_MW-Willow-1S			WG																																								
	GH_MW-Willow-1D_WG_2021_06_08_NP	GH_MW-Willow-1D			WG																																								
	GH_MW-Willow-2S_WG_2021_06_08_NP	GH_MW-Willow-2S			WG																																								
	GH_MW-Willow-2D_WG_2021_06_08_NP	GH_MW-Willow-2D			WG																																								
	GH_MW-Willow-3S_WG_2021_06_08_NP	GH_MW-Willow-3S			WG																																								
	GH_MW-Willow-3D_WG_2021_06_08_NP	GH_MW-Willow-3D			WG																																								
	GH_MW-Wolf-1S_WG_2021_06_08_NP	GH_MW-Wolf-1S			WG																																								
	GH_MW-Wolf-1D_WG_2021_06_08_NP	GH_MW-Wolf-1D			WG																																								

<b>Drinking Water (DW) Samples (client use)</b> Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b> PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com Teck Facility Name: (please select the applicable Facility) GH-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b> Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input type="checkbox"/> INITIAL COOLER TEMPERATURES °C: / FINAL COOLER TEMPERATURES °C:	
<b>SHIPMENT RELEASE (client use)</b> Released by: <u>Dentorad</u> Date: <u>21/06/08</u> Time: <u>1700</u>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b> Received by: <u>[Signature]</u> Date: <u>6/9</u> Time: <u>[Signature]</u>		<b>FINAL SHIPMENT RECEPTION (lab use only)</b> Received by: _____ Date: _____ Time: _____	







SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 10-JUN-21  
Report Date: 03-NOV-21 15:39 (MT)  
Version: FINAL REV. 2

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2599881  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Milica Papic  
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2599881-1 WG 09-JUN-21 09:55 GH_MW-MC- 1D_WG_2021_06_ 09_NP	L2599881-2 WG 09-JUN-21 11:55 GH_MW-MC- 2S_WG_2021_06_ 09_NP	L2599881-3 WG 09-JUN-21 13:50 GH_MW-MC- 2D_WG_2021_06_ 09_NP	L2599881-4 WG 09-JUN-21 15:45 GH_MW-WILLOW- 2S_WG_2021_06_ 09_NP	L2599881-5 WG 09-JUN-21 12:00 GH_MW-MC10- A_WG_2021_06_0 9_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	325	490	1720	327	1810
	Hardness (as CaCO3) (mg/L)	126	235	20.1	193	19.8
	pH (pH)	7.92	7.84	8.92	7.75	8.71
	ORP (mV)	440	395	-278 <sup>RRV</sup>	467	-279 <sup>RRV</sup>
	Total Suspended Solids (mg/L)	<1.0	<1.0	4.9	15.7	4.5
	Total Dissolved Solids (mg/L)	212	303	1110	212	1090
	Turbidity (NTU)	1.13	0.72	21.1	9.44	21.0
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	4.9	<1.0	1.2	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	222	237	480	218	529
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	87.6	<1.0	57.8
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	222	237 <sup>HTD</sup>	567	218	586
	Ammonia as N (mg/L)	0.0368	0.0692	0.631	0.0060	0.711
	Bicarbonate (HCO3) (mg/L)	270	325	585	266	645
	Bromide (Br) (mg/L)	<0.050	<0.050	0.58	<0.050	0.33
	Carbonate (CO3) (mg/L)	<5.0	<5.0	52.6	<5.0	34.7
	Chloride (Cl) (mg/L)	18.7	1.43	256	0.35	260
	Fluoride (F) (mg/L)	0.686	0.153	2.99	0.163	3.08
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	87.9	89.3	100	91.0	94.8
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	0.494	0.556	0.119	<0.025
	Nitrate (as N) (mg/L)	<0.0050	0.494	0.539	0.119	<0.025
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.0164	<0.0010	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.310	0.163	0.564	0.237	0.555
	Total Nitrogen (mg/L)	0.310	0.657	1.12	0.356	0.555
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0042	0.0634	<0.0010	0.0619
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0062	0.213	0.0878	0.205
	Sulfate (SO4) (mg/L)	<0.30	56.9	17.3	8.01	15.2
	Anion Sum (meq/L)	5.00	6.01	19.1	4.55	19.5
	Cation Sum (meq/L)	4.39	5.37	19.2	4.14	18.5
Cation - Anion Balance (%)	-6.4	-5.7	0.1	-4.7	-2.7	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	2.18	1.54	4.12	0.74
	Total Organic Carbon (mg/L)	<0.50	2.64	1.98	4.62	1.91
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0064	0.0198	0.0017	0.0242

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2599881-6 WG 09-JUN-21 12:00 GH_MW_MC10- B_WG_2021_06_0 9_NP	L2599881-7 WG 09-JUN-21 12:00 GH_MW_MC10- C_WG_2021_06_0 9_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	<2.0	<2.0		
	Hardness (as CaCO3) (mg/L)	<0.50	<0.50		
	pH (pH)	3.95	4.01		
	ORP (mV)	452	518		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	<10	<10		
	Turbidity (NTU)	<0.10	<0.10		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.9	1.9		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	<1.0		
	Ammonia as N (mg/L)	<0.0050	<0.0050		
	Bicarbonate (HCO3) (mg/L)	<5.0	<5.0		
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	<0.10	<0.10		
	Fluoride (F) (mg/L)	<0.020	<0.020		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	0.0	0.0		
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	<0.0051		
	Nitrate (as N) (mg/L)	<0.0050	<0.0050		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.092	0.148		
	Total Nitrogen (mg/L)	0.092	0.148		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010		
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020		
	Sulfate (SO4) (mg/L)	<0.30	<0.30		
	Anion Sum (meq/L)	<0.10	<0.10		
	Cation Sum (meq/L)	0.11	<0.10		
	Cation - Anion Balance (%)	0.0	0.0		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.52		
	Total Organic Carbon (mg/L)	<0.50	0.56		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	<0.0010		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2599881-1 WG 09-JUN-21 09:55 GH_MW-MC- 1D_WG_2021_06_ 09_NP	L2599881-2 WG 09-JUN-21 11:55 GH_MW-MC- 2S_WG_2021_06_ 09_NP	L2599881-3 WG 09-JUN-21 13:50 GH_MW-MC- 2D_WG_2021_06_ 09_NP	L2599881-4 WG 09-JUN-21 15:45 GH_MW-WILLOW- 2S_WG_2021_06_ 09_NP	L2599881-5 WG 09-JUN-21 12:00 GH_MW_MC10- A_WG_2021_06_0 9_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	DLDS <0.00050	0.00011	<0.00010	DLDS <0.00050
	Arsenic (As)-Dissolved (mg/L)	0.00096	DLDS <0.00050	0.00080	0.00017	0.00071
	Barium (Ba)-Dissolved (mg/L)	0.807	0.0846	0.138	0.170	0.127
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	DLDS <0.00010	<0.000020	<0.000020	DLDS <0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	DLDS <0.00025	<0.000050	<0.000050	DLDS <0.00025
	Boron (B)-Dissolved (mg/L)	0.093	DLDS <0.050	0.713	0.025	0.752
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.000043	<0.0000050	0.0000120	DLDS <0.000025
	Calcium (Ca)-Dissolved (mg/L)	27.2	63.9	3.33	49.3	3.29
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	DLDS <0.00050	0.00012	<0.00010	DLDS <0.00050
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	DLDS <0.00050	<0.00010	<0.00010	DLDS <0.00050
	Copper (Cu)-Dissolved (mg/L)	<0.00020	DLDS <0.0010	<0.00020	0.00043	DLDS <0.0010
	Iron (Fe)-Dissolved (mg/L)	0.164	DLDS <0.050	<0.010	<0.010	DLDS <0.050
	Lead (Pb)-Dissolved (mg/L)	<0.000050	DLDS <0.00025	<0.000050	<0.000050	DLDS <0.00025
	Lithium (Li)-Dissolved (mg/L)	0.0856	0.0202	1.51	0.0116	1.04
	Magnesium (Mg)-Dissolved (mg/L)	14.0	18.3	2.85	16.9	2.81
	Manganese (Mn)-Dissolved (mg/L)	0.129	0.0175	0.0387	<0.00010	0.0368
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00641	0.00149	0.000490	0.000667	0.00053
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	DLDS <0.0025	<0.00050	<0.00050	DLDS <0.0025
	Phosphorus (P)-Dissolved (mg/L)	<0.050	DLDS <0.25	0.192	<0.050	DLDS <0.25
	Potassium (K)-Dissolved (mg/L)	1.34	1.00	1.88	1.04	1.76
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.00268	0.00258	0.000774	0.00619
	Silicon (Si)-Dissolved (mg/L)	3.42	3.45	3.21	3.47	3.05
	Silver (Ag)-Dissolved (mg/L)	<0.000010	DLDS <0.000050	<0.000010	<0.000010	DLDS <0.000050
	Sodium (Na)-Dissolved (mg/L)	42.2	14.9	430	6.04	416
	Strontium (Sr)-Dissolved (mg/L)	0.396	0.215	0.238	0.127	0.233
	Sulfur (S)-Dissolved (mg/L)	<0.50	21.0	364	4.32	461
	Thallium (Tl)-Dissolved (mg/L)	0.000036	DLDS <0.000050	<0.000010	<0.000010	DLDS <0.000050
	Tin (Sn)-Dissolved (mg/L)	<0.00010	DLDS <0.00050	<0.00010	<0.00010	DLDS <0.00050
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	DLDS <0.0015	<0.00030	<0.00030	DLDS <0.0015
	Uranium (U)-Dissolved (mg/L)	0.000070	0.000832	0.000562	0.000468	0.000527
	Vanadium (V)-Dissolved (mg/L)	<0.00050	DLDS <0.0025	<0.00050	<0.00050	DLDS <0.0025
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	DLDS <0.0050	<0.0010	<0.0010	DLDS <0.0050
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	DLDS <0.0010	<0.00030	<0.00030	DLDS <0.0010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2599881-6 WG 09-JUN-21 12:00 GH_MW_MC10- B_WG_2021_06_0 9_NP	L2599881-7 WG 09-JUN-21 12:00 GH_MW_MC10- C_WG_2021_06_0 9_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.00021 <sup>RRV</sup>	<0.00010		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010		
	Cadmium (Cd)-Dissolved (mg/L)	0.0000068 <sup>RRV</sup>	<0.0000050		
	Calcium (Ca)-Dissolved (mg/L)	<0.050	<0.050		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010		
	Magnesium (Mg)-Dissolved (mg/L)	<0.0050	<0.0050		
	Manganese (Mn)-Dissolved (mg/L)	0.00016 <sup>RRV</sup>	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050		
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		
	Potassium (K)-Dissolved (mg/L)	<0.10	<0.10		
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050		
	Silicon (Si)-Dissolved (mg/L)	<0.050	<0.050		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	<0.050	<0.050		
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	<0.00020		
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030		
	Uranium (U)-Dissolved (mg/L)	<0.000010	<0.000010		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0025 <sup>RRV</sup>	<0.0010		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2599881-1, -2, -3, -4, -5, -6, -7

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.



## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 1 of 15

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5492013</b>							
<b>WG3556961-3</b>	<b>DUP</b>	<b>L2599881-5</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	16-JUN-21
<b>WG3556961-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			107.9		%		85-115	16-JUN-21
<b>WG3556961-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	16-JUN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493959</b>							
<b>WG3559031-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			112.3		%		85-115	19-JUN-21
<b>WG3559031-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			111.0		%		85-115	19-JUN-21
<b>WG3559031-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-JUN-21
<b>WG3559031-16</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-JUN-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-11</b>	<b>DUP</b>	<b>L2599881-7</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	16-JUN-21
<b>WG3556476-10</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			110.4		%		80-120	16-JUN-21
<b>WG3556476-14</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			97.3		%		80-120	16-JUN-21
<b>WG3556476-13</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-JUN-21
<b>WG3556476-9</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-JUN-21
<b>WG3556476-12</b>	<b>MS</b>	<b>L2599881-7</b>						
Beryllium (Be)-Dissolved			104.0		%		70-130	16-JUN-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5493959</b>							
<b>WG3559031-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	19-JUN-21
<b>WG3559031-16</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	19-JUN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 2 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5488068</b>							
<b>WG3553805-3</b>	<b>DUP</b>	<b>L2599881-7</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	10-JUN-21
<b>WG3553805-2</b>	<b>LCS</b>							
Bromide (Br)			101.5		%		85-115	10-JUN-21
<b>WG3553805-7</b>	<b>LCS</b>							
Bromide (Br)			99.1		%		85-115	10-JUN-21
<b>WG3553805-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-JUN-21
<b>WG3553805-6</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-JUN-21
<b>WG3553805-4</b>	<b>MS</b>	<b>L2599881-7</b>						
Bromide (Br)			99.8		%		75-125	10-JUN-21
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5507437</b>							
<b>WG3567802-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			90.7		%		80-120	01-JUL-21
<b>WG3567802-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>Batch</b>	<b>R5507438</b>							
<b>WG3567803-5</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.7		%		80-120	01-JUL-21
<b>WG3567803-4</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5507437</b>							
<b>WG3567802-2</b>	<b>LCS</b>							
Total Organic Carbon			95.2		%		80-120	01-JUL-21
<b>WG3567802-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>Batch</b>	<b>R5507438</b>							
<b>WG3567803-5</b>	<b>LCS</b>							
Total Organic Carbon			103.7		%		80-120	01-JUL-21
<b>WG3567803-4</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	01-JUL-21
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 3 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-L-IC-N-CL</b>								
<b>Batch R5488068</b>								
<b>WG3553805-3</b>	<b>DUP</b>	<b>L2599881-7</b>						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	10-JUN-21
<b>WG3553805-2</b>	<b>LCS</b>							
Chloride (Cl)			100.9		%		85-115	10-JUN-21
<b>WG3553805-7</b>	<b>LCS</b>							
Chloride (Cl)			100.9		%		85-115	10-JUN-21
<b>WG3553805-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	10-JUN-21
<b>WG3553805-6</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	10-JUN-21
<b>WG3553805-4</b>	<b>MS</b>	<b>L2599881-7</b>						
Chloride (Cl)			103.2		%		75-125	10-JUN-21
<b>CO3-CL</b>								
<b>Batch R5493959</b>								
<b>WG3559031-13</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	19-JUN-21
<b>WG3559031-16</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	19-JUN-21
<b>EC-L-PCT-CL</b>								
<b>Batch R5493959</b>								
<b>WG3559031-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.8		%		90-110	19-JUN-21
<b>WG3559031-17</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.2		%		90-110	19-JUN-21
<b>WG3559031-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-JUN-21
<b>WG3559031-16</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-JUN-21
<b>F-IC-N-CL</b>								
<b>Batch R5488068</b>								
<b>WG3553805-3</b>	<b>DUP</b>	<b>L2599881-7</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	10-JUN-21
<b>WG3553805-2</b>	<b>LCS</b>							
Fluoride (F)			102.1		%		90-110	10-JUN-21
<b>WG3553805-7</b>	<b>LCS</b>							
Fluoride (F)			105.0		%		90-110	10-JUN-21
<b>WG3553805-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-JUN-21



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 4 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5488068</b>							
<b>WG3553805-6</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-JUN-21
<b>WG3553805-4</b>	<b>MS</b>	<b>L2599881-7</b>						
Fluoride (F)			105.4		%		75-125	10-JUN-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5492447</b>							
<b>WG3557408-3</b>	<b>DUP</b>	<b>L2599881-7</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	17-JUN-21
<b>WG3557408-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			107.0		%		80-120	17-JUN-21
<b>WG3557408-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.6		%		80-120	17-JUN-21
<b>WG3557408-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-JUN-21
<b>WG3557408-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-JUN-21
<b>WG3557408-4</b>	<b>MS</b>	<b>L2599881-7</b>						
Mercury (Hg)-Dissolved			102.0		%		70-130	17-JUN-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-11</b>	<b>DUP</b>	<b>L2599881-7</b>						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	16-JUN-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUN-21
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUN-21
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUN-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-JUN-21
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-JUN-21
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	16-JUN-21
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-JUN-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUN-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUN-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	16-JUN-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-JUN-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-JUN-21
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	16-JUN-21
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	16-JUN-21
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUN-21



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 5 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-11</b>	<b>DUP</b>	<b>L2599881-7</b>						
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-JUN-21
Nickel (Ni)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-JUN-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-JUN-21
Potassium (K)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	16-JUN-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-JUN-21
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-JUN-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-JUN-21
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-JUN-21
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	16-JUN-21
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	16-JUN-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-JUN-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUN-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	16-JUN-21
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-JUN-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	16-JUN-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	16-JUN-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	16-JUN-21
<b>WG3556476-10</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			102.5		%		80-120	16-JUN-21
Antimony (Sb)-Dissolved			109.2		%		80-120	16-JUN-21
Arsenic (As)-Dissolved			101.4		%		80-120	16-JUN-21
Barium (Ba)-Dissolved			100.8		%		80-120	16-JUN-21
Bismuth (Bi)-Dissolved			106.4		%		80-120	16-JUN-21
Boron (B)-Dissolved			117.0		%		80-120	16-JUN-21
Cadmium (Cd)-Dissolved			99.9		%		80-120	16-JUN-21
Calcium (Ca)-Dissolved			99.3		%		80-120	16-JUN-21
Chromium (Cr)-Dissolved			99.4		%		80-120	16-JUN-21
Cobalt (Co)-Dissolved			102.0		%		80-120	16-JUN-21
Copper (Cu)-Dissolved			99.0		%		80-120	16-JUN-21
Iron (Fe)-Dissolved			103.6		%		80-120	16-JUN-21
Lead (Pb)-Dissolved			103.5		%		80-120	16-JUN-21
Lithium (Li)-Dissolved			106.1		%		80-120	16-JUN-21
Magnesium (Mg)-Dissolved			101.1		%		80-120	16-JUN-21
Manganese (Mn)-Dissolved			100.5		%		80-120	16-JUN-21



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 6 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-10</b>	<b>LCS</b>	<b>TMRM</b>						
Molybdenum (Mo)-Dissolved			103.7		%		80-120	16-JUN-21
Nickel (Ni)-Dissolved			100.3		%		80-120	16-JUN-21
Phosphorus (P)-Dissolved			116.9		%		70-130	16-JUN-21
Potassium (K)-Dissolved			103.9		%		80-120	16-JUN-21
Selenium (Se)-Dissolved			101.5		%		80-120	16-JUN-21
Silicon (Si)-Dissolved			110.3		%		60-140	16-JUN-21
Silver (Ag)-Dissolved			114.1		%		80-120	16-JUN-21
Sodium (Na)-Dissolved			104.0		%		80-120	16-JUN-21
Strontium (Sr)-Dissolved			102.5		%		80-120	16-JUN-21
Sulfur (S)-Dissolved			113.3		%		80-120	16-JUN-21
Thallium (Tl)-Dissolved			103.3		%		80-120	16-JUN-21
Tin (Sn)-Dissolved			102.7		%		80-120	16-JUN-21
Titanium (Ti)-Dissolved			105.1		%		80-120	16-JUN-21
Uranium (U)-Dissolved			103.2		%		80-120	16-JUN-21
Vanadium (V)-Dissolved			102.9		%		80-120	16-JUN-21
Zinc (Zn)-Dissolved			102.3		%		80-120	16-JUN-21
Zirconium (Zr)-Dissolved			103.2		%		80-120	16-JUN-21
<b>WG3556476-14</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			106.7		%		80-120	16-JUN-21
Antimony (Sb)-Dissolved			113.3		%		80-120	16-JUN-21
Arsenic (As)-Dissolved			103.5		%		80-120	16-JUN-21
Barium (Ba)-Dissolved			103.7		%		80-120	16-JUN-21
Bismuth (Bi)-Dissolved			106.1		%		80-120	16-JUN-21
Boron (B)-Dissolved			111.6		%		80-120	16-JUN-21
Cadmium (Cd)-Dissolved			102.6		%		80-120	16-JUN-21
Calcium (Ca)-Dissolved			103.9		%		80-120	16-JUN-21
Chromium (Cr)-Dissolved			103.3		%		80-120	16-JUN-21
Cobalt (Co)-Dissolved			106.8		%		80-120	16-JUN-21
Copper (Cu)-Dissolved			101.8		%		80-120	16-JUN-21
Iron (Fe)-Dissolved			103.6		%		80-120	16-JUN-21
Lead (Pb)-Dissolved			105.5		%		80-120	16-JUN-21
Lithium (Li)-Dissolved			109.5		%		80-120	16-JUN-21
Magnesium (Mg)-Dissolved			106.7		%		80-120	16-JUN-21
Manganese (Mn)-Dissolved			102.8		%		80-120	16-JUN-21



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 7 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-14</b>	<b>LCS</b>	<b>TMRM</b>						
Molybdenum (Mo)-Dissolved			107.1		%		80-120	16-JUN-21
Nickel (Ni)-Dissolved			103.9		%		80-120	16-JUN-21
Phosphorus (P)-Dissolved			110.6		%		70-130	16-JUN-21
Potassium (K)-Dissolved			106.9		%		80-120	16-JUN-21
Selenium (Se)-Dissolved			106.0		%		80-120	16-JUN-21
Silicon (Si)-Dissolved			110.3		%		60-140	16-JUN-21
Silver (Ag)-Dissolved			107.3		%		80-120	16-JUN-21
Sodium (Na)-Dissolved			107.9		%		80-120	16-JUN-21
Strontium (Sr)-Dissolved			106.1		%		80-120	16-JUN-21
Sulfur (S)-Dissolved			113.2		%		80-120	16-JUN-21
Thallium (Tl)-Dissolved			106.1		%		80-120	16-JUN-21
Tin (Sn)-Dissolved			105.3		%		80-120	16-JUN-21
Titanium (Ti)-Dissolved			107.4		%		80-120	16-JUN-21
Uranium (U)-Dissolved			106.8		%		80-120	16-JUN-21
Vanadium (V)-Dissolved			105.1		%		80-120	16-JUN-21
Zinc (Zn)-Dissolved			109.8		%		80-120	16-JUN-21
Zirconium (Zr)-Dissolved			105.1		%		80-120	16-JUN-21
<b>WG3556476-13</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-JUN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-JUN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-JUN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-JUN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21





## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 8 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-13 MB</b>								
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-JUN-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	16-JUN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-JUN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-JUN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
<b>WG3556476-9 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-JUN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-JUN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-JUN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-JUN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 9 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-9</b>	<b>MB</b>							
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-JUN-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-JUN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	16-JUN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-JUN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-JUN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-JUN-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-21
<b>WG3556476-12</b>	<b>MS</b>	<b>L2599881-7</b>						
Aluminum (Al)-Dissolved			100.6		%		70-130	16-JUN-21
Antimony (Sb)-Dissolved			103.7		%		70-130	16-JUN-21
Arsenic (As)-Dissolved			95.6		%		70-130	16-JUN-21
Barium (Ba)-Dissolved			98.0		%		70-130	16-JUN-21
Bismuth (Bi)-Dissolved			98.9		%		70-130	16-JUN-21
Boron (B)-Dissolved			111.2		%		70-130	16-JUN-21
Cadmium (Cd)-Dissolved			99.3		%		70-130	16-JUN-21
Calcium (Ca)-Dissolved			93.7		%		70-130	16-JUN-21
Chromium (Cr)-Dissolved			98.0		%		70-130	16-JUN-21
Cobalt (Co)-Dissolved			99.6		%		70-130	16-JUN-21
Copper (Cu)-Dissolved			99.7		%		70-130	16-JUN-21
Iron (Fe)-Dissolved			98.8		%		70-130	16-JUN-21
Lead (Pb)-Dissolved			101.9		%		70-130	16-JUN-21
Lithium (Li)-Dissolved			110.4		%		70-130	16-JUN-21
Magnesium (Mg)-Dissolved			92.5		%		70-130	16-JUN-21
Manganese (Mn)-Dissolved			97.9		%		70-130	16-JUN-21



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 10 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5491690</b>							
<b>WG3556476-12</b>	<b>MS</b>	<b>L2599881-7</b>						
Molybdenum (Mo)-Dissolved			98.4		%		70-130	16-JUN-21
Nickel (Ni)-Dissolved			98.1		%		70-130	16-JUN-21
Phosphorus (P)-Dissolved			101.0		%		70-130	16-JUN-21
Potassium (K)-Dissolved			100.1		%		70-130	16-JUN-21
Selenium (Se)-Dissolved			100.9		%		70-130	16-JUN-21
Silicon (Si)-Dissolved			97.0		%		70-130	16-JUN-21
Silver (Ag)-Dissolved			105.1		%		70-130	16-JUN-21
Sodium (Na)-Dissolved			96.2		%		70-130	16-JUN-21
Strontium (Sr)-Dissolved			100.3		%		70-130	16-JUN-21
Thallium (Tl)-Dissolved			104.3		%		70-130	16-JUN-21
Tin (Sn)-Dissolved			98.6		%		70-130	16-JUN-21
Titanium (Ti)-Dissolved			102.1		%		70-130	16-JUN-21
Uranium (U)-Dissolved			100.0		%		70-130	16-JUN-21
Vanadium (V)-Dissolved			99.1		%		70-130	16-JUN-21
Zinc (Zn)-Dissolved			103.4		%		70-130	16-JUN-21
Zirconium (Zr)-Dissolved			100.7		%		70-130	16-JUN-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5503269</b>							
<b>WG3562999-6</b>	<b>LCS</b>							
Ammonia as N			104.9		%		85-115	24-JUN-21
<b>WG3562999-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	24-JUN-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5488068</b>							
<b>WG3553805-3</b>	<b>DUP</b>	<b>L2599881-7</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	10-JUN-21
<b>WG3553805-2</b>	<b>LCS</b>							
Nitrite (as N)			95.3		%		90-110	10-JUN-21
<b>WG3553805-7</b>	<b>LCS</b>							
Nitrite (as N)			95.4		%		90-110	10-JUN-21
<b>WG3553805-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	10-JUN-21
<b>WG3553805-6</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	10-JUN-21
<b>WG3553805-4</b>	<b>MS</b>	<b>L2599881-7</b>						
Nitrite (as N)			97.3		%		75-125	10-JUN-21



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 11 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
<b>Batch R5488068</b>								
<b>WG3553805-3</b>	<b>DUP</b>	<b>L2599881-7</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	10-JUN-21
<b>WG3553805-2</b>	<b>LCS</b>							
Nitrate (as N)			103.2		%		90-110	10-JUN-21
<b>WG3553805-7</b>	<b>LCS</b>							
Nitrate (as N)			102.2		%		90-110	10-JUN-21
<b>WG3553805-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	10-JUN-21
<b>WG3553805-6</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	10-JUN-21
<b>WG3553805-4</b>	<b>MS</b>	<b>L2599881-7</b>						
Nitrate (as N)			105.3		%		75-125	10-JUN-21
<b>OH-CL</b>								
<b>Batch R5493959</b>								
<b>WG3559031-13</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	19-JUN-21
<b>WG3559031-16</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	19-JUN-21
<b>ORP-CL</b>								
<b>Batch R5491707</b>								
<b>WG3556515-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			222		mV		210-230	16-JUN-21
<b>WG3556515-2</b>	<b>DUP</b>	<b>L2599881-1</b>						
ORP		440	427	J	mV	12.8	15	16-JUN-21
<b>P-T-L-COL-CL</b>								
<b>Batch R5491545</b>								
<b>WG3556040-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			102.1		%		80-120	16-JUN-21
<b>WG3556040-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			102.5		%		80-120	16-JUN-21
<b>WG3556040-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-JUN-21
<b>WG3556040-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-JUN-21
<b>PH-CL</b>								



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 12 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R5493959							
WG3559031-14	LCS							
pH			7.00		pH		6.9-7.1	19-JUN-21
WG3559031-17	LCS							
pH			7.00		pH		6.9-7.1	19-JUN-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5483216							
WG3552083-14	LCS							
Orthophosphate-Dissolved (as P)			101.6		%		80-120	10-JUN-21
WG3552083-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	10-JUN-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5488068							
WG3553805-3	DUP	L2599881-7						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	10-JUN-21
WG3553805-2	LCS							
Sulfate (SO4)			101.1		%		90-110	10-JUN-21
WG3553805-7	LCS							
Sulfate (SO4)			101.1		%		90-110	10-JUN-21
WG3553805-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	10-JUN-21
WG3553805-6	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	10-JUN-21
WG3553805-4	MS	L2599881-7						
Sulfate (SO4)			103.3		%		75-125	10-JUN-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5491369							
WG3554990-5	LCS							
Total Dissolved Solids			103.7		%		85-115	15-JUN-21
WG3554990-4	MB							
Total Dissolved Solids			<10		mg/L		10	15-JUN-21
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5491560							
WG3556014-2	LCS							
Total Kjeldahl Nitrogen			83.0		%		75-125	16-JUN-21
WG3556014-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-21
<b>TSS-L-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 13 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5491405							
<b>WG3554986-10</b>	<b>LCS</b>							
Total Suspended Solids			95.1		%		85-115	15-JUN-21
<b>WG3554986-9</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	15-JUN-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5484417							
<b>WG3552583-6</b>	<b>DUP</b>	<b>L2599881-3</b>						
Turbidity		21.1	20.5		NTU	2.9	15	10-JUN-21
<b>WG3552583-5</b>	<b>LCS</b>							
Turbidity			99.5		%		85-115	10-JUN-21
<b>WG3552583-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	10-JUN-21

# Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 14 of 15

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2599881

Report Date: 03-NOV-21

Page 15 of 15

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	09-JUN-21 09:55	16-JUN-21 14:00	0.25	172	hours	EHTR-FM
	2	09-JUN-21 11:55	16-JUN-21 14:00	0.25	170	hours	EHTR-FM
	3	09-JUN-21 13:50	16-JUN-21 14:00	0.25	168	hours	EHTR-FM
	4	09-JUN-21 15:45	16-JUN-21 14:00	0.25	166	hours	EHTR-FM
	5	09-JUN-21 12:00	16-JUN-21 14:00	0.25	170	hours	EHTR-FM
	6	09-JUN-21 12:00	16-JUN-21 14:00	0.25	170	hours	EHTR-FM
	7	09-JUN-21 12:00	16-JUN-21 14:00	0.25	170	hours	EHTR-FM
pH							
	1	09-JUN-21 09:55	19-JUN-21 09:00	0.25	239	hours	EHTR-FM
	2	09-JUN-21 11:55	21-JUN-21 09:00	0.25	285	hours	EHTR-FM
	3	09-JUN-21 13:50	19-JUN-21 09:00	0.25	235	hours	EHTR-FM
	4	09-JUN-21 15:45	19-JUN-21 09:00	0.25	233	hours	EHTR-FM
	5	09-JUN-21 12:00	19-JUN-21 09:00	0.25	237	hours	EHTR-FM
	6	09-JUN-21 12:00	19-JUN-21 09:00	0.25	237	hours	EHTR-FM
	7	09-JUN-21 12:00	19-JUN-21 09:00	0.25	237	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2599881 were received on 10-JUN-21 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.





Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2599881-COFC

COC Number:

Page 1 of 2

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<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>	
Company:	SNC-Lavalin	Select Report Format:	<input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)	<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply	
Contact:	Genevieve Pomerleau	Quality Control (QC) Report with Report	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<b>PRIORITY (Business Days)</b>	<b>EMERGENCY</b>
Phone:	Tel.: 604-515-5151 x 129 Cell.: 250-464-5672	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%]	<input type="checkbox"/> 1 Business day [E1 - 100%]
Company address below will appear on the final report		Select Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	3 day [P3-25%]	<input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)]
Street:	520 Lake Street	Emails:	SNC - 'genevieve.pomerleau', 'gavin.grundy', and 'vicky.lipinski@snclavalin.com'	2 day [P2-50%]	
City/Province:	Nelson, BC	Teck - crystal.sabel@teck.com		Date and Time Required for all E&P TATs:	
Postal Code:	V1L 4C6			For tests that can not be performed according to the service level selected, you will be contacted.	

<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>Invoice Distribution</b>		<b>Analysis Request</b>							
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	Indicate Filtered (E), Preserved (P) or Filtered and Preserved (F/P) below							
Company:		Emails: tyler.gale@snclavalin.com		F/P	P	F/P					
Contact:		payables@snclavalin.com									
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>									
ALS Account # / Quote #:	MOR125 / Q72340	AFE/Cost Center:	PO#								
Job #:	Greenhills Operations	Major/Minor Code:	Routing Code:								
PO / AFE:	658004	Requisitioner:									
LSD:		Location:									

<b>ALS Lab Work Order # (lab use only):</b>		<b>ALS Contact:</b> Inayat Dhaliwal 403-407-1784		<b>Sampler:</b> JVG, JD														
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
	GH_MW-MC-1S_WG_2021_06_09_NP	GH_MW-MC-1S	09 June 21		WG	X	X	X	X	X	X	X	X	X	X			5
1	GH_MW-MC-1D_WG_2021_06_09_NP	GH_MW-MC-1D	09 June 21	9:55	WG	X	X	X	X	X	X	X	X	X	X			5
2	GH_MW-MC-2S_WG_2021_06_09_NP	GH_MW-MC-2S	09 June 21	11:55	WG	X	X	X	X	X	X	X	X	X	X			5
3	GH_MW-MC-2D_WG_2021_06_09_NP	GH_MW-MC-2D	09 June 21	13:50	WG	X	X	X	X	X	X	X	X	X	X			5
	GH_MW-Willow-1S_WG_2021_06_09_NP	GH_MW-Willow-1S			WG													
4	GH_MW-Willow-1D_WG_2021_06_09_NP	GH_MW-Willow-1D			WG													
	GH_MW-Willow-2S_WG_2021_06_09_NP	GH_MW-Willow-2S	09 June 21	15:45	WG	X	X	X	X	X	X	X	X	X	X			5
	GH_MW-Willow-2D_WG_2021_06_09_NP	GH_MW-Willow-2D			WG													
	GH_MW-Willow-3S_WG_2021_06_09_NP	GH_MW-Willow-3S			WG													
	GH_MW-Willow-3D_WG_2021_06_09_NP	GH_MW-Willow-3D			WG													
	GH_MW-Wolf-1S_WG_2021_06_09_NP	GH_MW-Wolf-1S			WG													
	GH_MW-Wolf-1D_WG_2021_06_09_NP	GH_MW-Wolf-1D			WG													

<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>			
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>			
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>			
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input type="checkbox"/>			
				INITIAL COOLER TEMPERATURES °C: 4°C FINAL COOLER TEMPERATURES °C:			
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>		<b>FINAL SHIPMENT RECEPTION (lab use only)</b>			
Released by: Gen Vongrad	Date: 21/06/09	Time: 17:00	Received by: DK	Date: 6/10	Time: 08:44	Received by:	Date:



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2599881-COFC

COC Number:

Page 2 of 2

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<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																										
Company:	SNC-Lavalin	Select Report Format:	<input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)	<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																										
Contact:	Tyler Gale	Quality Control (QC) Report with Report	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	PRIORITY (Business Days)	4 day [P4-20%]	<input type="checkbox"/>	EMERGENCY	1 Business day [E1 - 100%]	<input type="checkbox"/>																					
Phone:	Tel.:604-515-5151 x 129 Cell.: 250-464-5672	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%]	<input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]	<input type="checkbox"/>																					
Company address below will appear on the final report		Select Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		2 day [P2-50%]	<input type="checkbox"/>																								
Street:	520 Lake Street	Emails:	SNC - tyler.gale, gavin.grundy, and vicky.lipinski@snc-lavalin.com	Date and Time Required for all E&P TATs:																										
City/Province:	Nelson, BC	Teck - jennifer.dane, crystal.sabel@teck.com		For tests that can not be performed according to the service level selected, you will be contacted.																										
Postal Code:	V1L 4C6			<b>Analysis Request</b>																										
<b>Invoice To</b>	Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<b>Invoice Distribution</b>		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																										
Copy of Invoice with Report	<input type="checkbox"/> YES <input type="checkbox"/> NO	Select Invoice Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	F/P	P	F/P		P																						
Company:		Emails: tyler.gale@snc-lavalin.com		DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS														
Contact:		Emails: payables@snc-lavalin.com																												
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																												
ALS Account # / Quote #:	MOR125 / Q72340	AFE/Cost Center:	PO#																											
Job #:	Greenhills Operations	Major/Minor Code:	Routing Code:																											
PO / AFE:	658004	Requisitioner:																												
LSD:		Location:																												
<b>ALS Lab Work Order # (lab use only):</b>		ALS Contact:	Inayat Dhaliwal 403-407-1784														Sampler:	JV6, JD												
<b>ALS Sample # (lab use only)</b>	<b>Sample Identification &amp;/or Coordinates</b> (This description will appear on the report)	<b>Teck Sample Location (sys_loc_code)</b> (For Teck data upload to EQUIS database)	<b>Date</b> (dd-mmm-yy)														<b>Time</b> (hh:mm)	<b>Sample Type</b>												
5	GH_MW_MC10-A_WG_2021_06_09_NP	GH_MW_MC10-A	09 Jun 21														12:00	WG	X	X	X	X	X	X	X	X				
6	GH_MW_MC11-A_WG_2021_06_09_NP	GH_MW_MC11-A			WG																									
7	GH_MW_MC10-B_WG_2021_06_09_NP	GH_MW_MC10-B	09 Jun 21	12:00	WG	X	X	X	X	X	X	X	X																	
8	GH_MW_MC10-C_WG_2021_06_09_NP	GH_MW_MC10-C	09 Jun 21	12:00	WG	X	X	X	X	X	X	X	X																	
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																										
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																										
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																										
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input type="checkbox"/>																										
				INITIAL COOLER TEMPERATURES °C																										
				FINAL COOLER TEMPERATURES °C																										
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																								
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:																
Jen Naganad	21/06/09	1700	NR	6/10	0845																									



SNC-Lavalin  
ATTN: Tyler Gale  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 23-JUN-21  
Report Date: 03-NOV-21 08:31 (MT)  
Version: FINAL REV. 2

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2605569  
Project P.O. #: 681309  
Job Reference: 681309  
C of C Numbers:  
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.  
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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## ALS ENVIRONMENTAL ANALYTICAL REPORT

03-NOV-21 08:31 (MT)

Version: FINAL REV. 2

Sample ID Description Sampled Date Sampled Time Client ID		L2605569-1 WG 22-JUN-21 12:45 GH_MW_GHC_2A _WG_2021_06_22 _NP	L2605569-2 WG 22-JUN-21 10:50 GH_MW_GHC_2B _WG_2021_06_22 _NP	L2605569-3 WG 22-JUN-21 09:00 GH_MW_GHC_4B _WG_2021_06_22 _NP	L2605569-4 WG 22-JUN-21 14:00 GH_MW_GAC_1 WG_2021_06_22 NP	L2605569-5 WG 22-JUN-21 12:00 GH_MW_MC10- A_WG_2021_06_2 2_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1250	709	1130	1710	1140
	Hardness (as CaCO3) (mg/L)	687	415	693	1130	679
	pH (pH)	7.56	7.67	7.59	7.57	7.55
	ORP (mV)	406	469	468	426	459
	Total Suspended Solids (mg/L)	8.2	<1.0	<1.0	12.4	<1.0
	Total Dissolved Solids (mg/L)	881	457	822	1530	899
	Turbidity (NTU)	4.01	8.71	0.37	20.4	0.39
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	21.7	6.3	8.4	7.4	7.8
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	372	328	280	161	279
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	372	328	280	161	279
	Ammonia as N (mg/L)	0.225	0.0057	0.0108	0.0531	0.0115
	Bicarbonate (HCO3) (mg/L)	454	401	341	197	340
	Bromide (Br) (mg/L)	<0.25	<0.050	<0.25	<0.25	<0.25
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	0.60	1.53	6.87	3.33	6.98
	Fluoride (F) (mg/L)	0.15	0.116	0.12	0.11	0.13
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	96.7	101	95.4	97.4	95.5
	Nitrate and Nitrite (as N) (mg/L)	0.027	0.0209	1.29	0.029	1.31
	Nitrate (as N) (mg/L)	0.027	0.0209	1.29	0.029	1.31
	Nitrite (as N) (mg/L)	<0.0050	<0.0010	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.333	0.056	0.852	0.274	0.465
	Total Nitrogen (mg/L)	0.360	0.077	2.14	0.303	1.77
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010 <sup>RRV</sup>	0.0014 <sup>RRV</sup>	0.0039 <sup>RRV</sup>	<0.0010	0.0031 <sup>RRV</sup>
	Phosphorus (P)-Total (mg/L)	0.0185	0.0067	0.0039	0.0064	0.0039
	Sulfate (SO4) (mg/L)	416	98.8	427	967	413
	Anion Sum (meq/L)	16.1	8.67	14.8	23.4	14.5
	Cation Sum (meq/L)	15.6	8.74	14.1	22.8	13.8
Cation - Anion Balance (%)	-1.7	0.4	-2.4	-1.3	-2.3	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.82 <sup>DTC</sup>	2.25	2.30	3.30	2.45
	Total Organic Carbon (mg/L)	1.02 <sup>DTC</sup>	2.33	2.05	3.21	2.06
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0255	0.0014	0.0010	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2605569-6 WG 22-JUN-21 09:15 GH_MW_MC10- B_WG_2021_06_2 2_NP	L2605569-7 WG 22-JUN-21 12:00 GH_MW_MC10- C_WG_2021_06_2 2_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	<2.0	<2.0		
	Hardness (as CaCO3) (mg/L)	<0.50	<0.50		
	pH (pH)	4.16	4.35		
	ORP (mV)	488	416		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	<10	<10		
	Turbidity (NTU)	<0.10	<0.10		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	1.4		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	<1.0		
	Ammonia as N (mg/L)	<0.0050	<0.0050		
	Bicarbonate (HCO3) (mg/L)	<5.0	<5.0		
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	<0.10	<0.10		
	Fluoride (F) (mg/L)	<0.020	<0.020		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	0.0	0.0		
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	<0.0051		
	Nitrate (as N) (mg/L)	<0.0050	<0.0050		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050		
	Total Nitrogen (mg/L)	<0.050	<0.050		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010		
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020		
	Sulfate (SO4) (mg/L)	<0.30	<0.30		
	Anion Sum (meq/L)	<0.10	<0.10		
	Cation Sum (meq/L)	<0.10	<0.10		
	Cation - Anion Balance (%)	0.0	0.0		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50		
	Total Organic Carbon (mg/L)	<0.50	<0.50		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	<0.0010		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

03-NOV-21 08:31 (MT)

Version: FINAL REV. 2

Sample ID Description Sampled Date Sampled Time Client ID	L2605569-1 WG 22-JUN-21 12:45 GH_MW_GHC_2A _WG_2021_06_22 _NP	L2605569-2 WG 22-JUN-21 10:50 GH_MW_GHC_2B _WG_2021_06_22 _NP	L2605569-3 WG 22-JUN-21 09:00 GH_MW_GHC_4B _WG_2021_06_22 _NP	L2605569-4 WG 22-JUN-21 14:00 GH_MW_GAC_1_ WG_2021_06_22_ NP	L2605569-5 WG 22-JUN-21 12:00 GH_MW_MC10- A_WG_2021_06_2 2_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00011	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00018	<0.00010	0.00014	0.00183	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.00911	0.0608	0.0655	0.0240	0.0653
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.211	0.059	0.016	0.019	0.016
	Cadmium (Cd)-Dissolved (mg/L)	0.0000074	0.0000101	0.0000458	<0.0000050	0.0000318
	Calcium (Ca)-Dissolved (mg/L)	211	122	169	319	166
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00013	0.00014	<0.00010	0.00012
	Cobalt (Co)-Dissolved (mg/L)	0.00022	<0.00010	<0.00010	0.00026	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00081	0.00028	<0.00020	0.00025
	Iron (Fe)-Dissolved (mg/L)	0.019	0.012	<0.010	1.98	<0.010
	Lead (Pb)-Dissolved (mg/L)	0.000068	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0451	0.0171	0.0078	0.0088	0.0075
	Magnesium (Mg)-Dissolved (mg/L)	38.9	27.0	66.0	80.1	64.3
	Manganese (Mn)-Dissolved (mg/L)	1.30	0.00081	0.00024	0.648	0.00014
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000252	0.000386	0.000414	0.00145	0.000389
	Nickel (Ni)-Dissolved (mg/L)	0.00097	<0.00050	<0.00050	0.00128	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	3.57	1.40	1.78	1.57	1.73
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000288	0.0400	<0.000050	0.0382
	Silicon (Si)-Dissolved (mg/L)	6.77	5.29	5.00	5.16	4.88
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	39.8	9.32	5.09	4.41	4.98
	Strontium (Sr)-Dissolved (mg/L)	0.709	0.275	0.335	0.601	0.333
	Sulfur (S)-Dissolved (mg/L)	134	33.0	137	312	131
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000035	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	0.00041	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000280	0.000506	0.00145	0.000368	0.00141
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0019	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2605569-6 WG 22-JUN-21 09:15 GH_MW_MC10- B_WG_2021_06_2 2_NP	L2605569-7 WG 22-JUN-21 12:00 GH_MW_MC10- C_WG_2021_06_2 2_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	<0.00010	<0.00010		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010		
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Calcium (Ca)-Dissolved (mg/L)	<0.050	<0.050		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010		
	Magnesium (Mg)-Dissolved (mg/L)	<0.0050	<0.0050		
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050		
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		
	Potassium (K)-Dissolved (mg/L)	<0.10	<0.10		
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050		
	Silicon (Si)-Dissolved (mg/L)	<0.050	<0.050		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	<0.050	<0.050		
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	<0.00020		
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030		
	Uranium (U)-Dissolved (mg/L)	<0.000010	<0.000010		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2605569-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2605569-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2605569-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2605569-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Phosphorus (P)-Total	MS-B	L2605569-1, -2, -3, -4, -5, -6, -7

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			



## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water                      Total Kjeldahl Nitrogen                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water                      Total Suspended Solids                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water                      Turbidity                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2605569

Report Date: 03-NOV-21

Page 1 of 14

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Tyler Gale

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5505705</b>							
<b>WG3565789-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.6		%		85-115	29-JUN-21
<b>WG3565789-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.3		mg/L		2	29-JUN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5504517</b>							
<b>WG3564466-15</b>	<b>DUP</b>	<b>L2605569-1</b>						
Alkalinity, Total (as CaCO3)		372	357		mg/L	4.1	20	26-JUN-21
<b>WG3564466-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			110.4		%		85-115	26-JUN-21
<b>WG3564466-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-JUN-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5503420</b>							
<b>WG3563725-7</b>	<b>DUP</b>	<b>L2605569-7</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	25-JUN-21
<b>WG3563725-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			106.5		%		80-120	25-JUN-21
<b>WG3563725-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			101.4		%		80-120	25-JUN-21
<b>WG3563725-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-JUN-21
<b>WG3563725-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-JUN-21
<b>WG3563725-8</b>	<b>MS</b>	<b>L2605569-7</b>						
Beryllium (Be)-Dissolved			99.6		%		70-130	25-JUN-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5504517</b>							
<b>WG3564466-15</b>	<b>DUP</b>	<b>L2605569-1</b>						
Bicarbonate (HCO3)		454	436		mg/L	4.1	20	26-JUN-21
<b>WG3564466-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	26-JUN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5504340</b>							
<b>WG3564332-2</b>	<b>LCS</b>							
Bromide (Br)			100.1		%		85-115	24-JUN-21
<b>WG3564332-6</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2605569

Report Date: 03-NOV-21

Page 2 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
Water								
Batch	R5504340							
<b>WG3564332-6</b>	<b>LCS</b>							
Bromide (Br)			90.2		%		85-115	26-JUN-21
<b>WG3564332-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	24-JUN-21
<b>WG3564332-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	26-JUN-21
<b>C-DIS-ORG-LOW-CL</b>								
Water								
Batch	R5508017							
<b>WG3568114-8</b>	<b>DUP</b>	<b>L2605569-7</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	02-JUL-21
<b>WG3568114-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.9		%		80-120	03-JUL-21
<b>WG3568114-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			104.7		%		80-120	02-JUL-21
<b>WG3568114-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-JUL-21
<b>WG3568114-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-JUL-21
<b>WG3568114-7</b>	<b>MS</b>	<b>L2605569-7</b>						
Dissolved Organic Carbon			117.4		%		70-130	02-JUL-21
<b>C-TOT-ORG-LOW-CL</b>								
Water								
Batch	R5508017							
<b>WG3568114-8</b>	<b>DUP</b>	<b>L2605569-7</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	02-JUL-21
<b>WG3568114-2</b>	<b>LCS</b>							
Total Organic Carbon			107.5		%		80-120	03-JUL-21
<b>WG3568114-6</b>	<b>LCS</b>							
Total Organic Carbon			107.8		%		80-120	02-JUL-21
<b>WG3568114-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	03-JUL-21
<b>WG3568114-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	02-JUL-21
<b>WG3568114-7</b>	<b>MS</b>	<b>L2605569-7</b>						
Total Organic Carbon			118.6		%		70-130	02-JUL-21
<b>CL-L-IC-N-CL</b>								
Water								



## Quality Control Report

Workorder: L2605569

Report Date: 03-NOV-21

Page 3 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-L-IC-N-CL</b>								
<b>Batch R5504340</b>								
<b>WG3564332-2</b>	<b>LCS</b>							
Chloride (Cl)			100.7		%		85-115	24-JUN-21
<b>WG3564332-6</b>	<b>LCS</b>							
Chloride (Cl)			101.1		%		85-115	26-JUN-21
<b>WG3564332-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	24-JUN-21
<b>WG3564332-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	26-JUN-21
<b>CO3-CL</b>								
<b>Batch R5504517</b>								
<b>WG3564466-15</b>	<b>DUP</b>	<b>L2605569-1</b>						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	26-JUN-21
<b>WG3564466-13</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	26-JUN-21
<b>EC-L-PCT-CL</b>								
<b>Batch R5504517</b>								
<b>WG3564466-15</b>	<b>DUP</b>	<b>L2605569-1</b>						
Conductivity (@ 25C)		1250	1240		uS/cm	0.5	10	26-JUN-21
<b>WG3564466-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			103.8		%		90-110	26-JUN-21
<b>WG3564466-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	26-JUN-21
<b>F-IC-N-CL</b>								
<b>Batch R5504340</b>								
<b>WG3564332-2</b>	<b>LCS</b>							
Fluoride (F)			102.2		%		90-110	24-JUN-21
<b>WG3564332-6</b>	<b>LCS</b>							
Fluoride (F)			102.3		%		90-110	26-JUN-21
<b>WG3564332-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	24-JUN-21
<b>WG3564332-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	26-JUN-21
<b>HG-D-CVAA-CL</b>								
<b>Batch R5502578</b>								
<b>WG3563529-3</b>	<b>DUP</b>	<b>L2605569-7</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	25-JUN-21
<b>WG3563529-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2605569

Report Date: 03-NOV-21

Page 4 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5502578</b>							
<b>WG3563529-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			109.0		%		80-120	25-JUN-21
<b>WG3563529-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	25-JUN-21
<b>WG3563529-4</b>	<b>MS</b>	<b>L2605569-7</b>						
Mercury (Hg)-Dissolved			108.0		%		70-130	25-JUN-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5503420</b>							
<b>WG3563725-7</b>	<b>DUP</b>	<b>L2605569-7</b>						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-JUN-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-JUN-21
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-JUN-21
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-JUN-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-JUN-21
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-JUN-21
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	25-JUN-21
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-JUN-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-JUN-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-JUN-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	25-JUN-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-JUN-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-JUN-21
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-JUN-21
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	25-JUN-21
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-JUN-21
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-JUN-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	25-JUN-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-JUN-21
Potassium (K)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	25-JUN-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-JUN-21
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-JUN-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-JUN-21
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-JUN-21
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	25-JUN-21
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	25-JUN-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-JUN-21



## Quality Control Report

Workorder: L2605569

Report Date: 03-NOV-21

Page 5 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5503420</b>							
<b>WG3563725-7</b>	<b>DUP</b>	<b>L2605569-7</b>						
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-JUN-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	25-JUN-21
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-JUN-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	25-JUN-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-JUN-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	25-JUN-21
<b>WG3563725-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			104.2		%		80-120	25-JUN-21
Antimony (Sb)-Dissolved			112.7		%		80-120	25-JUN-21
Arsenic (As)-Dissolved			100.8		%		80-120	25-JUN-21
Barium (Ba)-Dissolved			105.0		%		80-120	25-JUN-21
Bismuth (Bi)-Dissolved			106.2		%		80-120	25-JUN-21
Boron (B)-Dissolved			107.2		%		80-120	25-JUN-21
Cadmium (Cd)-Dissolved			100.7		%		80-120	25-JUN-21
Calcium (Ca)-Dissolved			104.5		%		80-120	25-JUN-21
Chromium (Cr)-Dissolved			102.5		%		80-120	25-JUN-21
Cobalt (Co)-Dissolved			102.9		%		80-120	25-JUN-21
Copper (Cu)-Dissolved			101.0		%		80-120	25-JUN-21
Iron (Fe)-Dissolved			99.1		%		80-120	25-JUN-21
Lead (Pb)-Dissolved			105.8		%		80-120	25-JUN-21
Lithium (Li)-Dissolved			99.0		%		80-120	25-JUN-21
Magnesium (Mg)-Dissolved			109.9		%		80-120	25-JUN-21
Manganese (Mn)-Dissolved			103.6		%		80-120	25-JUN-21
Molybdenum (Mo)-Dissolved			107.4		%		80-120	25-JUN-21
Nickel (Ni)-Dissolved			100.4		%		80-120	25-JUN-21
Phosphorus (P)-Dissolved			93.4		%		70-130	25-JUN-21
Potassium (K)-Dissolved			104.5		%		80-120	25-JUN-21
Selenium (Se)-Dissolved			99.1		%		80-120	25-JUN-21
Silicon (Si)-Dissolved			107.5		%		60-140	25-JUN-21
Silver (Ag)-Dissolved			103.0		%		80-120	25-JUN-21
Sodium (Na)-Dissolved			103.7		%		80-120	25-JUN-21
Strontium (Sr)-Dissolved			104.4		%		80-120	25-JUN-21
Sulfur (S)-Dissolved			105.8		%		80-120	25-JUN-21
Thallium (Tl)-Dissolved			105.0		%		80-120	25-JUN-21



## Quality Control Report

Workorder: L2605569

Report Date: 03-NOV-21

Page 6 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5503420</b>							
<b>WG3563725-2</b>	<b>LCS</b>	<b>TMRM</b>						
Tin (Sn)-Dissolved			105.5		%		80-120	25-JUN-21
Titanium (Ti)-Dissolved			100.8		%		80-120	25-JUN-21
Uranium (U)-Dissolved			105.9		%		80-120	25-JUN-21
Vanadium (V)-Dissolved			104.5		%		80-120	25-JUN-21
Zinc (Zn)-Dissolved			99.0		%		80-120	25-JUN-21
Zirconium (Zr)-Dissolved			101.8		%		80-120	25-JUN-21
<b>WG3563725-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			101.2		%		80-120	25-JUN-21
Antimony (Sb)-Dissolved			108.4		%		80-120	25-JUN-21
Arsenic (As)-Dissolved			96.0		%		80-120	25-JUN-21
Barium (Ba)-Dissolved			99.5		%		80-120	25-JUN-21
Bismuth (Bi)-Dissolved			103.5		%		80-120	25-JUN-21
Boron (B)-Dissolved			109.6		%		80-120	25-JUN-21
Cadmium (Cd)-Dissolved			97.8		%		80-120	25-JUN-21
Calcium (Ca)-Dissolved			99.4		%		80-120	25-JUN-21
Chromium (Cr)-Dissolved			100.1		%		80-120	25-JUN-21
Cobalt (Co)-Dissolved			99.7		%		80-120	25-JUN-21
Copper (Cu)-Dissolved			96.6		%		80-120	25-JUN-21
Iron (Fe)-Dissolved			96.4		%		80-120	25-JUN-21
Lead (Pb)-Dissolved			101.3		%		80-120	25-JUN-21
Lithium (Li)-Dissolved			92.7		%		80-120	25-JUN-21
Magnesium (Mg)-Dissolved			98.8		%		80-120	25-JUN-21
Manganese (Mn)-Dissolved			101.1		%		80-120	25-JUN-21
Molybdenum (Mo)-Dissolved			102.9		%		80-120	25-JUN-21
Nickel (Ni)-Dissolved			98.2		%		80-120	25-JUN-21
Phosphorus (P)-Dissolved			99.8		%		70-130	25-JUN-21
Potassium (K)-Dissolved			100.0		%		80-120	25-JUN-21
Selenium (Se)-Dissolved			102.0		%		80-120	25-JUN-21
Silicon (Si)-Dissolved			105.4		%		60-140	25-JUN-21
Silver (Ag)-Dissolved			98.6		%		80-120	25-JUN-21
Sodium (Na)-Dissolved			98.6		%		80-120	25-JUN-21
Strontium (Sr)-Dissolved			100.8		%		80-120	25-JUN-21
Sulfur (S)-Dissolved			100.3		%		80-120	25-JUN-21
Thallium (Tl)-Dissolved			102.0		%		80-120	25-JUN-21





## Quality Control Report

Workorder: L2605569

Report Date: 03-NOV-21

Page 7 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5503420</b>							
<b>WG3563725-6</b>	<b>LCS</b>	<b>TMRM</b>						
Tin (Sn)-Dissolved			100.9		%		80-120	25-JUN-21
Titanium (Ti)-Dissolved			94.1		%		80-120	25-JUN-21
Uranium (U)-Dissolved			99.0		%		80-120	25-JUN-21
Vanadium (V)-Dissolved			101.4		%		80-120	25-JUN-21
Zinc (Zn)-Dissolved			91.6		%		80-120	25-JUN-21
Zirconium (Zr)-Dissolved			98.4		%		80-120	25-JUN-21
<b>WG3563725-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-JUN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-JUN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-JUN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-JUN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-JUN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-JUN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-JUN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-JUN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-JUN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-JUN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-JUN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-JUN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-JUN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-JUN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-JUN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-JUN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-JUN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-JUN-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	25-JUN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-JUN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-JUN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-JUN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-JUN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-JUN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-JUN-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	25-JUN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-JUN-21



## Quality Control Report

Workorder: L2605569

Report Date: 03-NOV-21

Page 8 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5503420</b>							
<b>WG3563725-1</b>	<b>MB</b>							
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-JUN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-JUN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-JUN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-JUN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-JUN-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	25-JUN-21
<b>WG3563725-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-JUN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-JUN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-JUN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-JUN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-JUN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-JUN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-JUN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-JUN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-JUN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-JUN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-JUN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-JUN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-JUN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-JUN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-JUN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-JUN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-JUN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-JUN-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	25-JUN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-JUN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-JUN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-JUN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-JUN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-JUN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-JUN-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	25-JUN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-JUN-21



## Quality Control Report

Workorder: L2605569

Report Date: 03-NOV-21

Page 9 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5503420</b>							
<b>WG3563725-5</b>	<b>MB</b>							
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-JUN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-JUN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-JUN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-JUN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-JUN-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	25-JUN-21
<b>WG3563725-8</b>	<b>MS</b>	<b>L2605569-7</b>						
Aluminum (Al)-Dissolved			104.7		%		70-130	25-JUN-21
Antimony (Sb)-Dissolved			106.1		%		70-130	25-JUN-21
Arsenic (As)-Dissolved			96.4		%		70-130	25-JUN-21
Barium (Ba)-Dissolved			103.9		%		70-130	25-JUN-21
Bismuth (Bi)-Dissolved			103.7		%		70-130	25-JUN-21
Boron (B)-Dissolved			107.6		%		70-130	25-JUN-21
Cadmium (Cd)-Dissolved			104.4		%		70-130	25-JUN-21
Calcium (Ca)-Dissolved			102.6		%		70-130	25-JUN-21
Chromium (Cr)-Dissolved			102.3		%		70-130	25-JUN-21
Cobalt (Co)-Dissolved			101.1		%		70-130	25-JUN-21
Copper (Cu)-Dissolved			102.1		%		70-130	25-JUN-21
Iron (Fe)-Dissolved			102.9		%		70-130	25-JUN-21
Lead (Pb)-Dissolved			104.8		%		70-130	25-JUN-21
Lithium (Li)-Dissolved			95.9		%		70-130	25-JUN-21
Magnesium (Mg)-Dissolved			98.4		%		70-130	25-JUN-21
Manganese (Mn)-Dissolved			108.7		%		70-130	25-JUN-21
Molybdenum (Mo)-Dissolved			106.1		%		70-130	25-JUN-21
Nickel (Ni)-Dissolved			101.3		%		70-130	25-JUN-21
Phosphorus (P)-Dissolved			98.7		%		70-130	25-JUN-21
Potassium (K)-Dissolved			101.2		%		70-130	25-JUN-21
Selenium (Se)-Dissolved			106.4		%		70-130	25-JUN-21
Silicon (Si)-Dissolved			99.9		%		70-130	25-JUN-21
Silver (Ag)-Dissolved			102.9		%		70-130	25-JUN-21
Sodium (Na)-Dissolved			93.3		%		70-130	25-JUN-21
Strontium (Sr)-Dissolved			107.9		%		70-130	25-JUN-21
Thallium (Tl)-Dissolved			102.8		%		70-130	25-JUN-21
Tin (Sn)-Dissolved			102.1		%		70-130	25-JUN-21



## Quality Control Report

Workorder: L2605569

Report Date: 03-NOV-21

Page 10 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5503420</b>							
<b>WG3563725-8</b>	<b>MS</b>	<b>L2605569-7</b>						
Titanium (Ti)-Dissolved			98.1		%		70-130	25-JUN-21
Uranium (U)-Dissolved			105.2		%		70-130	25-JUN-21
Vanadium (V)-Dissolved			102.6		%		70-130	25-JUN-21
Zinc (Zn)-Dissolved			99.5		%		70-130	25-JUN-21
Zirconium (Zr)-Dissolved			107.4		%		70-130	25-JUN-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5507199</b>							
<b>WG3567377-10</b>	<b>LCS</b>							
Ammonia as N			105.4		%		85-115	30-JUN-21
<b>WG3567377-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	30-JUN-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5504340</b>							
<b>WG3564332-2</b>	<b>LCS</b>							
Nitrite (as N)			101.8		%		90-110	24-JUN-21
<b>WG3564332-6</b>	<b>LCS</b>							
Nitrite (as N)			100.4		%		90-110	26-JUN-21
<b>WG3564332-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	24-JUN-21
<b>WG3564332-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	26-JUN-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5504340</b>							
<b>WG3564332-2</b>	<b>LCS</b>							
Nitrate (as N)			101.8		%		90-110	24-JUN-21
<b>WG3564332-6</b>	<b>LCS</b>							
Nitrate (as N)			102.0		%		90-110	26-JUN-21
<b>WG3564332-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	24-JUN-21
<b>WG3564332-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	26-JUN-21
<b>OH-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5504517</b>							
<b>WG3564466-15</b>	<b>DUP</b>	<b>L2605569-1</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	26-JUN-21
<b>WG3564466-13</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2605569

Report Date: 03-NOV-21

Page 11 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>OH-CL</b>	<b>Water</b>							
Batch R5504517 WG3564466-13 MB Hydroxide (OH)			<5.0		mg/L		5	26-JUN-21
<b>ORP-CL</b>	<b>Water</b>							
Batch R5505277 WG3565314-1 CRM ORP		<b>CL-ORP</b>	221		mV		210-230	28-JUN-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch R5505659 WG3565803-14 LCS Phosphorus (P)-Total			93.0		%		80-120	29-JUN-21
Batch R5505659 WG3565803-13 MB Phosphorus (P)-Total			<0.0020		mg/L		0.002	29-JUN-21
<b>PH-CL</b>	<b>Water</b>							
Batch R5504517 WG3564466-15 DUP pH		<b>L2605569-1</b> 7.56	7.62	J	pH	0.06	0.2	26-JUN-21
Batch R5504517 WG3564466-14 LCS pH			7.01		pH		6.9-7.1	26-JUN-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch R5498502 WG3561957-6 LCS Orthophosphate-Dissolved (as P)			100.1		%		80-120	23-JUN-21
Batch R5498502 WG3561957-5 MB Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	23-JUN-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch R5504340 WG3564332-2 LCS Sulfate (SO4)			101.8		%		90-110	24-JUN-21
Batch R5504340 WG3564332-6 LCS Sulfate (SO4)			101.6		%		90-110	26-JUN-21
Batch R5504340 WG3564332-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	24-JUN-21
Batch R5504340 WG3564332-5 MB Sulfate (SO4)			<0.30		mg/L		0.3	26-JUN-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2605569

Report Date: 03-NOV-21

Page 12 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5502729</b>							
<b>WG3563195-2</b>	<b>LCS</b>							
Total Dissolved Solids			103.2		%		85-115	25-JUN-21
<b>WG3563195-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	25-JUN-21
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5504563</b>							
<b>WG3564455-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			83.9		%		75-125	27-JUN-21
<b>WG3564455-7</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			120.0		%		75-125	27-JUN-21
<b>WG3564455-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-JUN-21
<b>WG3564455-6</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-JUN-21
<b>WG3564455-5</b>	<b>MS</b>	<b>L2605569-1</b>						
Total Kjeldahl Nitrogen			102.0		%		70-130	27-JUN-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5502563</b>							
<b>WG3563193-2</b>	<b>LCS</b>							
Total Suspended Solids			103.4		%		85-115	25-JUN-21
<b>WG3563193-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	25-JUN-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5502600</b>							
<b>WG3563442-3</b>	<b>DUP</b>	<b>L2605569-2</b>						
Turbidity		8.71	8.73		NTU	0.2	15	24-JUN-21
<b>WG3563442-2</b>	<b>LCS</b>							
Turbidity			99.5		%		85-115	24-JUN-21
<b>WG3563442-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	24-JUN-21
<b>Batch</b>	<b>R5503518</b>							
<b>WG3563818-2</b>	<b>LCS</b>							
Turbidity			99.96		%		85-115	25-JUN-21
<b>WG3563818-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	25-JUN-21

# Quality Control Report

Workorder: L2605569

Report Date: 03-NOV-21

Page 13 of 14

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2605569

Report Date: 03-NOV-21

Page 14 of 14

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	22-JUN-21 12:45	28-JUN-21 14:35	0.25	146	hours	EHTR-FM
	2	22-JUN-21 10:50	28-JUN-21 14:35	0.25	148	hours	EHTR-FM
	3	22-JUN-21 09:00	28-JUN-21 14:35	0.25	150	hours	EHTR-FM
	4	22-JUN-21 14:00	28-JUN-21 14:35	0.25	144	hours	EHTR-FM
	5	22-JUN-21 12:00	28-JUN-21 14:35	0.25	147	hours	EHTR-FM
	6	22-JUN-21 09:15	28-JUN-21 14:35	0.25	149	hours	EHTR-FM
	7	22-JUN-21 12:00	28-JUN-21 14:35	0.25	147	hours	EHTR-FM
pH							
	1	22-JUN-21 12:45	26-JUN-21 09:00	0.25	92	hours	EHTR-FM
	2	22-JUN-21 10:50	26-JUN-21 09:00	0.25	94	hours	EHTR-FM
	3	22-JUN-21 09:00	26-JUN-21 09:00	0.25	96	hours	EHTR-FM
	4	22-JUN-21 14:00	26-JUN-21 09:00	0.25	91	hours	EHTR-FM
	5	22-JUN-21 12:00	26-JUN-21 09:00	0.25	93	hours	EHTR-FM
	6	22-JUN-21 09:15	26-JUN-21 09:00	0.25	96	hours	EHTR-FM
	7	22-JUN-21 12:00	26-JUN-21 09:00	0.25	93	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2605569 were received on 23-JUN-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.









**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102762**  
**Client** : **Teck Coal Limited**  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_01-03\_Q3-2021  
**Sampler** : Evan Warner  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Jul-2021 08:50  
**Date Analysis Commenced** : 22-Jul-2021  
**Issue Date** : 30-Jul-2021 11:49

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
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Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-01-03_	----	----	----	----
(Matrix: Water)						WP_Q3-2021_N				
					Client sampling date / time	21-Jul-2021 08:35	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2102762-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	---	---	---	---	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	159	---	---	---	---	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	159	---	---	---	---	
conductivity	----	E100	2.0	µS/cm	376	---	---	---	---	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	197	---	---	---	---	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	467	---	---	---	---	
pH	----	E108	0.10	pH units	8.24	---	---	---	---	
solids, total dissolved [TDS]	----	E162	10	mg/L	242	---	---	---	---	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	---	---	---	---	
turbidity	----	E121	0.10	NTU	<0.10	---	---	---	---	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	194	---	---	---	---	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.74	---	---	---	---	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.114	---	---	---	---	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.186	---	---	---	---	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.00	---	---	---	---	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	---	---	---	---	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	51.4	---	---	---	---	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.31	---	---	---	---	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.34	---	---	---	---	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-01-03_	----	----	----	----
(Matrix: Water)					WP_Q3-2021_N					
					P					
					Client sampling date / time	21-Jul-2021 08:35	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102762-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.34	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	4.01	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.4	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	3.95	----	----	----	----	----
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00010	----	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0797	----	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0116	----	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	59.1	----	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00029	----	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00697	----	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	----	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000514	----	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0028	----	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	15.2	----	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000994	----	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00072	----	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	0.465	----	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	4.48	----	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	2.15	----	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	1.40	----	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.214	----	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	17.4	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-01-03_ WP_Q3-2021_N P	----	----	----	----
Client sampling date / time					21-Jul-2021 08:35	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102762-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, total	7440-61-1	E420	0.00010	mg/L	0.000818	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0521	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0792	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0106	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	56.0	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00028	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00078	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000063	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0026	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	13.9	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000952	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.444	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	5.11	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.15	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.38	----	----	----	----	



**Analytical Results**

					Client sample ID	RG_DW-01-03_	----	----	----	----
						WP_Q3-2021_N				
						P				
					Client sampling date / time	21-Jul-2021 08:35	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102762-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.222	----	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	17.2	----	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000822	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0206	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL REPORT

**Work Order** : **CG2102762**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_01-03\_Q3-2021  
**Sampler** : Evan Warner  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Jul-2021 08:50  
**Date Analysis Commenced** : 22-Jul-2021  
**Issue Date** : 30-Jul-2021 11:50

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2102762  
Client : Teck Coal Limited  
Project : REGIONAL EFFECTS PROGRAM

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 249443)</b>											
CG2102750-001	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	27.0	27.5	0.5	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 249944)</b>											
CG2102762-001	RG_DW-01-03_WP_Q3-20 21_NP	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 251328)</b>											
CG2102754-001	Anonymous	pH	----	E108	0.10	pH units	7.46	7.49	0.401%	4%	----
<b>Physical Tests (QC Lot: 251329)</b>											
CG2102757-001	Anonymous	conductivity	----	E100	2.0	µS/cm	701	700	0.143%	10%	----
<b>Physical Tests (QC Lot: 251330)</b>											
CG2102757-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	326	331	1.58%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	326	331	1.58%	20%	----
<b>Physical Tests (QC Lot: 252419)</b>											
CG2102762-001	RG_DW-01-03_WP_Q3-20 21_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	242	234	3.57%	20%	----
<b>Physical Tests (QC Lot: 253837)</b>											
CG2102753-005	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	456	468	2.79%	15%	----
<b>Anions and Nutrients (QC Lot: 249393)</b>											
CG2102753-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	276	278	0.570%	20%	----
<b>Anions and Nutrients (QC Lot: 249394)</b>											
CG2102753-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249395)</b>											
CG2102753-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.42	0.29	0.13	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249396)</b>											
CG2102753-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	9.83	9.87	0.423%	20%	----
<b>Anions and Nutrients (QC Lot: 249397)</b>											
CG2102753-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0043	0.0045	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249398)</b>											
CG2102753-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.241	0.236	2.06%	20%	----
<b>Anions and Nutrients (QC Lot: 249465)</b>											
CG2102750-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 250080)</b>											
CG2102753-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0065	0.0070	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 251414)</b>											
CG2102752-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 252485)</b>											
CG2102752-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.153	0.145	5.84%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 252997)</b>											
CG2102762-001	RG_DW-01-03_WP_Q3-20 21_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.31	1.10	0.21	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 253002)</b>											
CG2102762-001	RG_DW-01-03_WP_Q3-20 21_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.34	1.21	0.13	Diff <2x LOR	----
<b>Total Metals (QC Lot: 250701)</b>											
CG2102731-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00028	0.00031	0.00002	Diff <2x LOR	----
<b>Total Metals (QC Lot: 250702)</b>											
CG2102731-001	Anonymous	manganese, total	7439-96-5	E420	0.00010	mg/L	0.00046	0.00044	0.00001	Diff <2x LOR	----
CG2102731-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.162	0.167	2.97%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.011	0.011	0.0001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0133 µg/L	0.0000129	0.0000004	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	74.3	73.1	1.60%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00163	0.00163	0.000003	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.023	0.027	0.004	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000162	0.000164	0.000002	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0059	0.0058	0.00008	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	16.9	17.1	1.43%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000674	0.000682	1.32%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.834	0.841	0.732%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	5.26 µg/L	0.00508	3.40%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.48	2.55	2.64%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 250702) - continued</b>											
CG2102731-001	Anonymous	sodium, total	17341-25-2	E420	0.050	mg/L	5.61	5.60	0.228%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.196	0.200	1.93%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	13.8	14.4	4.30%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000674	0.000690	2.37%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0056	0.0058	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 253021)</b>											
CG2102752-001	Anonymous	cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0143 µg/L	0.0000173	0.0000030	Diff <2x LOR	----
CG2102752-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 253021) - continued</b>											
CG2102752-001	Anonymous	thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 253022)</b>											
CG2102752-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 249443)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 249944)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 251329)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 251330)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 252413)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 252419)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 249393)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 249394)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 249395)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 249396)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 249397)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 249398)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 249465)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 250080)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 251414)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 252485)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 252485) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 252997)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 253002)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 250701)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 250702)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 250702) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 253021)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 253022)</b>						

Page : 10 of 17  
Work Order : CG2102762  
Client : Teck Coal Limited  
Project : REGIONAL EFFECTS PROGRAM



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 253022) - continued</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 249443)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 249944)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	95.8	85.0	115	---
<b>Physical Tests (QCLot: 251328)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 251329)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	95.0	90.0	110	---
<b>Physical Tests (QCLot: 251330)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	99.8	85.0	115	---
<b>Physical Tests (QCLot: 252413)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	97.3	85.0	115	---
<b>Physical Tests (QCLot: 252419)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	93.3	85.0	115	---
<b>Physical Tests (QCLot: 253837)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Anions and Nutrients (QCLot: 249393)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 249394)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.0	85.0	115	---
<b>Anions and Nutrients (QCLot: 249395)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 249396)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 249397)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 249398)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	94.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 249465)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	101	80.0	120	---
<b>Anions and Nutrients (QCLot: 250080)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 251414)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 251414) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	122	75.0	125	----
<b>Anions and Nutrients (QCLot: 252485)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.6	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 252997)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	100	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 253002)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Total Metals (QCLot: 250701)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 250702)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	106	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	99.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.4	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	90.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.7	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.3	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	94.4	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.8	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	98.6	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.6	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 250702) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.9	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	96.1	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
<b>Dissolved Metals (QCLot: 253021)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	107	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	100	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	108	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----

Page : 14 of 17  
 Work Order : CG2102762  
 Client : Teck Coal Limited  
 Project : REGIONAL EFFECTS PROGRAM



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 253021) - continued</b>									
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 253022)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 249393)</b>										
CG2102753-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	114 mg/L	100 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 249394)</b>										
CG2102753-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.514 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 249395)</b>										
CG2102753-004	Anonymous	chloride	16887-00-6	E235.Cl-L	112 mg/L	100 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 249396)</b>										
CG2102753-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.71 mg/L	2.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 249397)</b>										
CG2102753-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.536 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 249398)</b>										
CG2102753-004	Anonymous	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 249465)</b>										
CG2102750-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0509 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 250080)</b>										
CG2102753-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0598 mg/L	0.0676 mg/L	88.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 251414)</b>										
CG2102752-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.56 mg/L	2.5 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 252485)</b>										
CG2102753-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.113 mg/L	0.1 mg/L	113	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 252997)</b>										
CG2102762-001	RG_DW-01-03_WP_Q3-2021_NP	carbon, dissolved organic [DOC]	----	E358-L	25.0 mg/L	23.9 mg/L	104	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 253002)</b>										
CG2102762-001	RG_DW-01-03_WP_Q3-2021_NP	carbon, total organic [TOC]	----	E355-L	26.0 mg/L	23.9 mg/L	109	70.0	130	----
<b>Total Metals (QCLot: 250701)</b>										
CG2102732-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 250702)</b>										
CG2102732-001	Anonymous	aluminum, total	7429-90-5	E420	0.205 mg/L	0.2 mg/L	103	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 250702) - continued</b>										
CG2102732-001	Anonymous	antimony, total	7440-36-0	E420	0.0215 mg/L	0.02 mg/L	107	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0445 mg/L	0.04 mg/L	111	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00896 mg/L	0.01 mg/L	89.6	70.0	130	----
		boron, total	7440-42-8	E420	0.114 mg/L	0.1 mg/L	114	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		copper, total	7440-50-8	E420	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		iron, total	7439-89-6	E420	1.88 mg/L	2 mg/L	93.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, total	7440-02-0	E420	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		potassium, total	7440-09-7	E420	4.12 mg/L	4 mg/L	103	70.0	130	----
		selenium, total	7782-49-2	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		silicon, total	7440-21-3	E420	8.92 mg/L	10 mg/L	89.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00393 mg/L	0.004 mg/L	98.3	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	20.2 mg/L	20 mg/L	101	70.0	130	----
		thallium, total	7440-28-0	E420	0.00372 mg/L	0.004 mg/L	93.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		titanium, total	7440-32-6	E420	0.0422 mg/L	0.04 mg/L	106	70.0	130	----
		uranium, total	7440-61-1	E420	0.00387 mg/L	0.004 mg/L	96.6	70.0	130	----
		vanadium, total	7440-62-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	96.1	70.0	130	----
<b>Dissolved Metals (QCLot: 253021)</b>										
CG2102752-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.203 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 253021) - continued</b>										
CG2102752-002	Anonymous	bismuth, dissolved	7440-69-9	E421	0.00902 mg/L	0.01 mg/L	90.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0196 mg/L	0.02 mg/L	98.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.97 mg/L	2 mg/L	98.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.88 mg/L	4 mg/L	96.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0432 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.27 mg/L	10 mg/L	92.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.99 mg/L	2 mg/L	99.6	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.8 mg/L	20 mg/L	104	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.410 mg/L	0.4 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 253022)</b>										
CG2102752-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----

*EGW*

COC ID:

01-03\_Q3-2021

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	monica.bartha@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@enrisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teck.lab.results@sharepoint	X	X	
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	VPO00762695			

SAMPLE DETAILS								ANALYSIS REQUESTED								
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE	F	N	F	N	F	N	N	RESERVED
RG_DW-01-03_WP_Q3-2021_NP	RG_DW-01-03	WP	N	21-Jul-21	0835	G	5	ALS_Package-DOC	1	1			1	1	1	
								ALS_Package-TKN/TOC								
								HG-D-CVAF-VA								
								HG-T-CVAF-VA								
								TECKCOAL-MET-D-VA								
								TECKCOAL-MET-T-VA								
								TECKCOAL-ROUTINE-VA								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>Bartha</i>	7/22/21

SERVICE REQUEST (rush - subject to availability)					
Regular (default)	X	Sampler's Name	<i>Monica Bartha</i>	Mobile #	250-425-4784
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time	July 21, 2021
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103780**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000**  
                   **Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-09-01-WG**  
**Sampler** : **JM/SS**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **1**  
**No. of samples analysed** : **1**

**Page** : **1 of 7**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
                   **Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **02-Sep-2021 09:15**  
**Date Analysis Commenced** : **02-Sep-2021**  
**Issue Date** : **30-Sep-2021 12:00**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					GH_GA-MW-2_	----	----	----	----
					WG_2021-07-0				
					5_NP				
					Client sampling date / time	01-Sep-2021	---	---	---
					13:20	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2103780-001	-----	-----	-----	-----
					Result	---	---	---	---
<b>Physical Tests</b>									
acidity (as CaCO3)	---	E283	2.0	mg/L	9.4	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	215	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	215	---	---	---	---
conductivity	---	E100	2.0	µS/cm	1240	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	882	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	415	---	---	---	---
pH	---	E108	0.10	pH units	8.02	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	1050	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	7.1	---	---	---	---
turbidity	---	E121	0.10	NTU	2.91	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	263	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	6.66	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLDS</sup>	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.239 <sup>TKNI</sup>	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	8.91	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.152	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0012	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0104	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	513	---	---	---	---
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	2.38	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	2.00	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					GH_GA-MW-2_WG_2021-07-05_NP	----	----	----	----
Client sampling date / time					01-Sep-2021 13:20	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103780-001	-----	-----	-----	-----
					Result	----	----	----	----
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	15.8	----	----	----	----
cation sum	----	EC101	0.10	meq/L	18.2	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	115	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	7.06	----	----	----	----
<b>Total Metals</b>									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0436	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00148	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00028	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0325	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.019	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0635	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	184	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00016	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	2.76	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00966	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.100	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000100	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0194	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	51.9	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.169	----	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0397	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0111	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	1.41	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	21.8	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	3.64	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	0.000010	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	10.8	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					GH_GA-MW-2_ WG_2021-07-0 5_NP	----	----	----	----
					Client sampling date / time				
					01-Sep-2021 13:20	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103780-001	-----	-----	-----	-----
					Result	----	----	----	----
<b>Total Metals</b>									
strontium, total	7440-24-6	E420	0.00020	mg/L	0.696	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	180	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00080	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00718	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0146	----	----	----	----
<b>Dissolved Metals</b>									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0014	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00139	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00019	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0317	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0850 <sup>DLM</sup>	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	235	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.81	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00242	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0210	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	71.6 <sup>DTMF</sup>	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.132	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0395	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0120	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.69	----	----	----	----





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID					
					<b>GH_GA-MW-2_</b>	----	----	----	----	
					<b>WG_2021-07-0</b>					
					<b>5_NP</b>					
					Client sampling date / time	01-Sep-2021 13:20	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103780-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	18.8	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.68	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	13.4	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.818	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	173	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00728	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0170	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2103780</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : <b>Jeremy Enns</b> <b>Address</b> : <b>Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0</b> <b>Telephone</b> : <b>250 865 3305</b> <b>Project</b> : <b>GREENHILLS OPERATION</b> <b>PO</b> : <b>VPO00739453</b> <b>C-O-C number</b> : <b>2021-09-01-WG</b> <b>Sampler</b> : <b>JM/SS</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>Teck Coal Master Quote</b> <b>No. of samples received</b> : <b>1</b> <b>No. of samples analysed</b> : <b>1</b>	<b>Page</b> : <b>1 of 12</b> <b>Laboratory</b> : <b>Calgary - Environmental</b> <b>Account Manager</b> : <b>Justine Buma-a</b> <b>Address</b> : <b>2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</b> <b>Telephone</b> : <b>+1 403 407 1800</b> <b>Date Samples Received</b> : <b>02-Sep-2021 09:15</b> <b>Issue Date</b> : <b>30-Sep-2021 12:01</b>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### **Summary of Outliers**

#### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

#### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-2_WG_2021-07-05_NP	E298	01-Sep-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_GA-MW-2_WG_2021-07-05_NP	E235.Br-L	01-Sep-2021	----	----	----		03-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_GA-MW-2_WG_2021-07-05_NP	E235.Cl-L	01-Sep-2021	----	----	----		03-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> GH_GA-MW-2_WG_2021-07-05_NP	E378-U	01-Sep-2021	----	----	----		02-Sep-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> GH_GA-MW-2_WG_2021-07-05_NP	E235.F	01-Sep-2021	----	----	----		03-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_GA-MW-2_WG_2021-07-05_NP	E235.NO3-L	01-Sep-2021	----	----	----		03-Sep-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_GA-MW-2_WG_2021-07-05_NP	E235.NO2-L	01-Sep-2021	----	----	----		03-Sep-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> GH_GA-MW-2_WG_2021-07-05_NP	E235.SO4	01-Sep-2021	----	----	----		03-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-2_WG_2021-07-05_NP	E318	01-Sep-2021	07-Sep-2021	----	----		13-Sep-2021	28 days	12 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-2_WG_2021-07-05_NP	E372-U	01-Sep-2021	08-Sep-2021	----	----		08-Sep-2021	28 days	7 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> GH_GA-MW-2_WG_2021-07-05_NP	E421.Cr-L	01-Sep-2021	08-Sep-2021	----	----		08-Sep-2021	180 days	7 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> GH_GA-MW-2_WG_2021-07-05_NP	E509	01-Sep-2021	08-Sep-2021	----	----		08-Sep-2021	28 days	7 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> GH_GA-MW-2_WG_2021-07-05_NP	E421	01-Sep-2021	08-Sep-2021	----	----		08-Sep-2021	180 days	7 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> GH_GA-MW-2_WG_2021-07-05_NP	E358-L	01-Sep-2021	07-Sep-2021	----	----		11-Sep-2021	28 days	10 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-2_WG_2021-07-05_NP	E355-L	01-Sep-2021	07-Sep-2021	----	----		11-Sep-2021	28 days	10 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> GH_GA-MW-2_WG_2021-07-05_NP	E283	01-Sep-2021	----	----	----		09-Sep-2021	14 days	8 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE GH_GA-MW-2_WG_2021-07-05_NP	E290	01-Sep-2021	----	----	----		11-Sep-2021	14 days	10 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE GH_GA-MW-2_WG_2021-07-05_NP	E100	01-Sep-2021	----	----	----		11-Sep-2021	28 days	10 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_GA-MW-2_WG_2021-07-05_NP	E125	01-Sep-2021	----	----	----		10-Sep-2021	0.34 hrs	214 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE GH_GA-MW-2_WG_2021-07-05_NP	E108	01-Sep-2021	----	----	----		11-Sep-2021	0.25 hrs	238 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE GH_GA-MW-2_WG_2021-07-05_NP	E162	01-Sep-2021	----	----	----		07-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE GH_GA-MW-2_WG_2021-07-05_NP	E160-L	01-Sep-2021	----	----	----		07-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE GH_GA-MW-2_WG_2021-07-05_NP	E121	01-Sep-2021	----	----	----		02-Sep-2021	3 days	1 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) GH_GA-MW-2_WG_2021-07-05_NP	E420.Cr-L	01-Sep-2021	----	----	----		08-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
Pre-cleaned amber glass - total (lab preserved) GH_GA-MW-2_WG_2021-07-05_NP	E508-L	01-Sep-2021	----	----	----		09-Sep-2021	28 days	8 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_GA-MW-2_WG_2021-07-05_NP	E420	01-Sep-2021	----	----	----		08-Sep-2021	180 days	7 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	287787	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	289783	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	290477	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	283612	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	283613	1	18	5.5	5.0	✓
Conductivity in Water	E100	289781	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	286752	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	286325	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	286751	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	286061	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	283037	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	283610	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	283614	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	283615	1	18	5.5	5.0	✓
ORP by Electrode	E125	288810	1	15	6.6	5.0	✓
pH by Meter	E108	289782	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	283611	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	285367	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	286254	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	286039	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	287772	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	286253	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	286063	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	284475	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	283179	1	16	6.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	287787	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	289783	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	290477	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	283612	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	283613	1	18	5.5	5.0	✓
Conductivity in Water	E100	289781	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	286752	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	286325	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	286751	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	286061	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	283037	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	283610	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	283614	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	283615	1	18	5.5	5.0	✓
ORP by Electrode	E125	288810	1	15	6.6	5.0	✓
pH by Meter	E108	289782	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	283611	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	285367	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	286254	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	286039	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	287772	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	286253	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	286063	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	284475	1	16	6.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	285358	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	283179	1	16	6.2	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	287787	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	289783	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	290477	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	283612	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	283613	1	18	5.5	5.0	✓
Conductivity in Water	E100	289781	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	286752	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	286325	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	286751	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	286061	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	283037	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	283610	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	283614	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	283615	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	283611	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	285367	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	286254	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	286039	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	287772	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	286253	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	286063	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	284475	1	16	6.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	285358	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	283179	1	16	6.2	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	290477	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	283612	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	283613	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	286752	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	286325	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	286751	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	286061	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	283037	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	283610	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	283614	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	283615	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	283611	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	286254	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	286039	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	287772	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	286253	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	286063	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	284475	1	16	6.2	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

Page : 12 of 12  
Work Order : CG2103780  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2103780**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-09-01-WG  
**Sampler** : JM/SS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 02-Sep-2021 09:15  
**Date Analysis Commenced** : 02-Sep-2021  
**Issue Date** : 30-Sep-2021 12:00

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
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Saron Kim	Analyst	Metals, Burnaby, British Columbia
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 18  
Work Order : CG2103780  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 283179)</b>											
CG2103775-003	Anonymous	turbidity	----	E121	0.10	NTU	3.05	3.22	5.36%	15%	----
<b>Physical Tests (QC Lot: 285367)</b>											
CG2103772-006	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	208	208	0.240%	20%	----
<b>Physical Tests (QC Lot: 287787)</b>											
CG2103773-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	5.2	4.4	0.8	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 288810)</b>											
CG2103775-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	426	422	0.895%	15%	----
<b>Physical Tests (QC Lot: 289781)</b>											
CG2103773-001	Anonymous	conductivity	----	E100	2.0	µS/cm	793	794	0.126%	10%	----
<b>Physical Tests (QC Lot: 289782)</b>											
CG2103773-001	Anonymous	pH	----	E108	0.10	pH units	8.16	8.19	0.367%	4%	----
<b>Physical Tests (QC Lot: 289783)</b>											
CG2103773-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	209	205	1.93%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	209	205	1.93%	20%	----
<b>Anions and Nutrients (QC Lot: 283037)</b>											
CG2103772-008	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 283610)</b>											
CG2103764-012	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.192	0.171	0.021	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 283611)</b>											
CG2103764-012	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	761	774	1.70%	20%	----
<b>Anions and Nutrients (QC Lot: 283612)</b>											
CG2103764-012	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 283613)</b>											
CG2103764-012	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	6.06	6.03	0.623%	20%	----
<b>Anions and Nutrients (QC Lot: 283614)</b>											
CG2103764-012	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	5.80	5.90	1.63%	20%	----
<b>Anions and Nutrients (QC Lot: 283615)</b>											
CG2103764-012	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.191	0.201	5.26%	20%	----
<b>Anions and Nutrients (QC Lot: 284475)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 284475) - continued</b>											
CG2103775-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0114	0.0112	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 286039)</b>											
CG2103770-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.101	0.070	0.031	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 290477)</b>											
CG2103775-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.136	0.150	9.16%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 286061)</b>											
CG2103770-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.24	1.82	0.41	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 286063)</b>											
CG2103770-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.46	2.76	0.30	Diff <2x LOR	----
<b>Total Metals (QC Lot: 286253)</b>											
CG2103764-023	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0105	0.0108	2.10%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.094	0.095	0.0006	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	2.22 µg/L	0.00208	6.96%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	440	442	0.265%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	59.6 µg/L	0.0585	1.93%	20%	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	0.00236	0.00136	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	0.421	0.414	1.69%	20%	----
		lead, total	7439-92-1	E420	0.000100	mg/L	0.000107	0.000102	0.000005	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.114	0.110	3.90%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	206	201	2.47%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	1.20	1.17	2.64%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00142	0.00147	3.72%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.249	0.245	1.78%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	5.40	5.33	1.37%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.20	mg/L	3.61	3.47	4.14%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	5.68	5.90	3.76%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.430	0.438	1.96%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	497	499	0.485%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 286253) - continued</b>											
CG2103764-023	Anonymous	thallium, total	7440-28-0	E420	0.000020	mg/L	0.000110	0.000110	0.0000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.000020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.000060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0318	0.0318	0.0112%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.109	0.106	3.08%	20%	----
<b>Total Metals (QC Lot: 286254)</b>											
CG2103764-023	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 287772)</b>											
CG2103772-001	Anonymous	mercury, total	7439-97-6	E508-L	0.50	ng/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 286325)</b>											
CG2103773-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 286751)</b>											
CG2103773-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0012	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00035	0.00034	0.000004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00014	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0595	0.0634	6.38%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.016	0.017	0.0006	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0263 µg/L	0.0000266	0.0000004	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	115	123	6.44%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.78 µg/L	0.00081	0.00003	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0554	0.0594	6.99%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	53.4	56.2	5.18%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0225	0.0240	6.38%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00174	0.00176	1.42%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00820	0.00862	4.94%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.30	2.43	5.39%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	38.7 µg/L	0.0395	1.88%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.93	1.98	2.72%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 286751) - continued</b>											
CG2103773-001	Anonymous	sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.88	2.00	5.94%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.188	0.189	0.960%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	72.1	73.3	1.68%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000012	0.000010	0.000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00293	0.00296	0.875%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0019	0.0020	0.00006	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 286752)</b>											
CG2103773-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 283179)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 285358)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 285367)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 287787)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 289781)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 289783)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 283037)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 283610)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 283611)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 283612)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 283613)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 283614)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 283615)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 284475)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 286039)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 290477)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 290477) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 286061)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 286063)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 286253)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 286253) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 286254)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 287772)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 286325)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 286751)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Page : 10 of 18  
Work Order : CG2103780  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 286751) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 286752)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 283179)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.5	85.0	115	---
<b>Physical Tests (QCLot: 285358)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.7	85.0	115	---
<b>Physical Tests (QCLot: 285367)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 287787)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 288810)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Physical Tests (QCLot: 289781)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	96.0	90.0	110	---
<b>Physical Tests (QCLot: 289782)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 289783)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 283037)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	100	80.0	120	---
<b>Anions and Nutrients (QCLot: 283610)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 283611)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	94.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 283612)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 283613)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	95.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 283614)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	95.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 283615)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 284475)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	95.6	80.0	120	---
<b>Anions and Nutrients (QCLot: 286039)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 286039) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	93.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 290477)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	94.2	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 286061)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	88.5	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 286063)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	92.3	80.0	120	----
<b>Total Metals (QCLot: 286253)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	96.4	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	95.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.0	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	91.2	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.0	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	95.2	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.0	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	99.9	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	95.8	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	90.4	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	108	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.7	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 286253) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	90.5	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	93.9	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	100	80.0	120	----
<b>Total Metals (QCLot: 286254)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Total Metals (QCLot: 287772)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	106	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100.0	80.0	120	----
<b>Dissolved Metals (QCLot: 286751)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	108	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	92.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	105	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.8	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	111	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 286751) - continued</b>									
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.9	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	117	80.0	120	----
<b>Dissolved Metals (QCLot: 286752)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 283037)</b>										
CG2103773-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0484 mg/L	0.05 mg/L	96.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 283610)</b>										
CG2103764-013	Anonymous	fluoride	16984-48-8	E235.F	0.806 mg/L	1 mg/L	80.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 283611)</b>										
CG2103764-013	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	92.0 mg/L	100 mg/L	92.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 283612)</b>										
CG2103764-013	Anonymous	bromide	24959-67-9	E235.Br-L	0.471 mg/L	0.5 mg/L	94.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 283613)</b>										
CG2103764-013	Anonymous	chloride	16887-00-6	E235.Cl-L	92.4 mg/L	100 mg/L	92.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 283614)</b>										
CG2103764-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.28 mg/L	2.5 mg/L	91.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 283615)</b>										
CG2103764-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.480 mg/L	0.5 mg/L	95.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 284475)</b>										
CG2103775-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0681 mg/L	0.0676 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 286039)</b>										
CG2103770-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.48 mg/L	2.5 mg/L	99.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 290477)</b>										
CG2103775-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 286061)</b>										
CG2103770-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.6 mg/L	23.9 mg/L	94.6	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 286063)</b>										
CG2103770-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.7 mg/L	23.9 mg/L	103	70.0	130	----
<b>Total Metals (QCLot: 286253)</b>										
CG2103764-024	Anonymous	aluminum, total	7429-90-5	E420	0.196 mg/L	0.2 mg/L	98.3	70.0	130	----
		antimony, total	7440-36-0	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		barium, total	7440-39-3	E420	0.0207 mg/L	0.02 mg/L	103	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 286253) - continued</b>										
CG2103764-024	Anonymous	beryllium, total	7440-41-7	E420	0.0328 mg/L	0.04 mg/L	82.0	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0100 mg/L	0.01 mg/L	100	70.0	130	----
		boron, total	7440-42-8	E420	0.090 mg/L	0.1 mg/L	89.6	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00389 mg/L	0.004 mg/L	97.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		lithium, total	7439-93-2	E420	0.0899 mg/L	0.1 mg/L	89.9	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0470 mg/L	0.04 mg/L	118	70.0	130	----
		silicon, total	7440-21-3	E420	9.46 mg/L	10 mg/L	94.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00374 mg/L	0.004 mg/L	93.5	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00353 mg/L	0.004 mg/L	88.2	70.0	130	----
		tin, total	7440-31-5	E420	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		titanium, total	7440-32-6	E420	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		zinc, total	7440-66-6	E420	0.352 mg/L	0.4 mg/L	88.0	70.0	130	----
<b>Total Metals (QCLot: 286254)</b>										
CG2103764-024	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
<b>Total Metals (QCLot: 287772)</b>										
CG2103772-002	Anonymous	mercury, total	7439-97-6	E508-L	4.82 ng/L	5 ng/L	96.4	70.0	130	----
<b>Dissolved Metals (QCLot: 286325)</b>										
CG2103773-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 286751)</b>										
CG2103773-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.210 mg/L	0.2 mg/L	105	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 286751) - continued</b>										
CG2103773-002	Anonymous	antimony, dissolved	7440-36-0	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0223 mg/L	0.02 mg/L	112	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00886 mg/L	0.01 mg/L	88.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00398 mg/L	0.004 mg/L	99.5	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.95 mg/L	2 mg/L	97.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0375 mg/L	0.04 mg/L	93.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0450 mg/L	0.04 mg/L	112	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.95 mg/L	10 mg/L	99.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00387 mg/L	0.004 mg/L	96.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00382 mg/L	0.004 mg/L	95.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0428 mg/L	0.04 mg/L	107	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.110 mg/L	0.1 mg/L	110	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.415 mg/L	0.4 mg/L	104	70.0	130	----
<b>Dissolved Metals (QCLot: 286752)</b>										
CG2103773-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0420 mg/L	0.04 mg/L	105	70.0	130	----



COC ID: 2021-09-01-WG

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	teckcoal@equisonline.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	DL-Equis-GHO-Field@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:				X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:				
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:				
				Phone Number	403 407 1794			Email 6:				
								Email 7:				
								PO number	739453			

Environmental Division  
Calgary

Work Order Reference  
**CG2103780**



Telephone : - 1 403 407 1800

**AMPLE DETAILS**

**ANALYSIS REQUESTED**

Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED													
						H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4	Sodium Bisulphat	Z/N acetate, NaOH	H2SO4	H2SO4	Sodium bisulphat		
GII_GA-MW-2	WG	N	9/1/2021	13:20	G	7	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH/PAH/LEPH/HEPH	SULPHIDE	BOD	COD	Phenols	VOC/PHI/BTEX
							1	1	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	9/2 9/8

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	JM/SS	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature		September 1, 2021

*[Handwritten Signature]*



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2102959**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000**  
                   **Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-07-30-WG**  
**Sampler** : **SS/JM**  
**Site** : **---**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **2**  
**No. of samples analysed** : **2**

**Page** : **1 of 7**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
                   **Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **31-Jul-2021 08:30**  
**Date Analysis Commenced** : **01-Aug-2021**  
**Issue Date** : **15-Aug-2021 11:42**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

Samples Received with temperature >10 Degrees C. The samples ttemperature was 13C.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTS	Dissolved Sulfur concentration exceeds total. Negative bias on Total Sulfur suspected due to presence of volatile sulfur species lost during digestion.



## Analytical Results

Sub-Matrix: Water					Client sample ID						
(Matrix: Water)					GH_GA-MW-4_ WG_2021-07-0 5_NP		GH_GA-MW-3_ WG_2021-07-0 5_NP		----	----	----
Client sampling date / time					30-Jul-2021 16:45	30-Jul-2021 15:10	----	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102959-001	CG2102959-002	-----	-----	-----	-----	-----
					Result	Result	----	----	----	----	----
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	4.3	8.2	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	192	235	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	192	235	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	393	618	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	205	270	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	460	480	----	----	----	----	----
pH	----	E108	0.10	pH units	8.18	8.01	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	242	367	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.4	5.7	----	----	----	----	----
turbidity	----	E121	0.10	NTU	0.61	47.4	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	235	286	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	----
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0269	0.352	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.48	6.07	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.123	0.563	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.314	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.359	0.0098	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0381	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0017	0.0066	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0236	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	35.1	53.9	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.90	0.66	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.13	0.56	----	----	----	----	----
<b>Ion Balance</b>											



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					GH_GA-MW-4_ WG_2021-07-0 5_NP	GH_GA-MW-3_ WG_2021-07-0 5_NP	----	----	----
Client sampling date / time					30-Jul-2021 16:45	30-Jul-2021 15:10	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102959-001	CG2102959-002	-----	-----	-----
					Result	Result	---	---	---
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	4.64	6.02	----	----	----
cation sum	----	EC101	0.10	meq/L	4.38	7.00	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	94.4	116	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	2.88	7.53	----	----	----
<b>Total Metals</b>									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0059	0.0241	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	<0.00010	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0796	0.0920	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.012	0.289	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0053	0.0326	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	53.3	51.9	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00026	0.00030	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00069	0.00126	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.078	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000096	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0141	0.0965	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	17.7	35.4	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00028	0.00739	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00156	<0.000050	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00055	0.00110	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	0.990	2.55	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	2.28	3.59	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	2.58	5.20	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	0.000122	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	6.02	35.8	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.186	2.26	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_GA-MW-4_ WG_2021-07-0 5_NP	GH_GA-MW-3_ WG_2021-07-0 5_NP	----	----	----
Client sampling date / time					30-Jul-2021 16:45	30-Jul-2021 15:10	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102959-001	CG2102959-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	12.1	25.4	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	0.00042	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00137	0.000141	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0021	0.0017	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0831	0.0984	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLM</sup>	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.013	0.257	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	53.1	51.4	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00026	<0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00076	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0136	0.0886	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	17.6	34.5	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00017	0.00647	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00164	<0.000050	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00101	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.981	2.54	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	2.62	5.94	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.39	4.67	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_GA-MW-4_ WG_2021-07-0 5_NP	GH_GA-MW-3_ WG_2021-07-0 5_NP	----	----	----
Client sampling date / time					30-Jul-2021 16:45	30-Jul-2021 15:10	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102959-001	CG2102959-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.00	34.7	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.175	2.19	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	11.7	217 <sup>DTS</sup>	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00126	0.000173	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102959</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jeremy Enns	Account Manager	: Justine Buma-a
Address	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 865 3305	Telephone	: +1 403 407 1800
Project	: GREENHILLS OPERATION	Date Samples Received	: 31-Jul-2021 08:30
PO	: VPO00739453	Issue Date	: 15-Aug-2021 11:42
C-O-C number	: 2021-07-30-WG		
Sampler	: SS/JM		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-3_WG_2021-07-05_NP	E298	30-Jul-2021	05-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-4_WG_2021-07-05_NP	E298	30-Jul-2021	05-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_GA-MW-3_WG_2021-07-05_NP	E235.Br-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_GA-MW-4_WG_2021-07-05_NP	E235.Br-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_GA-MW-3_WG_2021-07-05_NP	E235.Cl-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_GA-MW-4_WG_2021-07-05_NP	E235.Cl-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> GH_GA-MW-3_WG_2021-07-05_NP	E378-U	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_GA-MW-4_WG_2021-07-05_NP	E378-U	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_GA-MW-3_WG_2021-07-05_NP	E235.F	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_GA-MW-4_WG_2021-07-05_NP	E235.F	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_GA-MW-3_WG_2021-07-05_NP	E235.NO3-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_GA-MW-4_WG_2021-07-05_NP	E235.NO3-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_GA-MW-3_WG_2021-07-05_NP	E235.NO2-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_GA-MW-4_WG_2021-07-05_NP	E235.NO2-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE GH_GA-MW-3_WG_2021-07-05_NP	E235.SO4	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE GH_GA-MW-4_WG_2021-07-05_NP	E235.SO4	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-3_WG_2021-07-05_NP	E318	30-Jul-2021	08-Aug-2021	----	----		08-Aug-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-4_WG_2021-07-05_NP	E318	30-Jul-2021	08-Aug-2021	----	----		08-Aug-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-3_WG_2021-07-05_NP	E372-U	30-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-4_WG_2021-07-05_NP	E372-U	30-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_GA-MW-3_WG_2021-07-05_NP	E421.Cr-L	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_GA-MW-4_WG_2021-07-05_NP	E421.Cr-L	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_GA-MW-3_WG_2021-07-05_NP	E509	30-Jul-2021	07-Aug-2021	----	----		07-Aug-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_GA-MW-4_WG_2021-07-05_NP	E509	30-Jul-2021	07-Aug-2021	----	----		07-Aug-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_GA-MW-3_WG_2021-07-05_NP	E421	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> GH_GA-MW-4_WG_2021-07-05_NP	E421	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> GH_GA-MW-4_WG_2021-07-05_NP	E358-L	30-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	4 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> GH_GA-MW-3_WG_2021-07-05_NP	E358-L	30-Jul-2021	03-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✓
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-3_WG_2021-07-05_NP	E355-L	30-Jul-2021	03-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✓
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-4_WG_2021-07-05_NP	E355-L	30-Jul-2021	03-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✓
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> GH_GA-MW-3_WG_2021-07-05_NP	E283	30-Jul-2021	----	----	----		07-Aug-2021	14 days	8 days	✓
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> GH_GA-MW-4_WG_2021-07-05_NP	E283	30-Jul-2021	----	----	----		07-Aug-2021	14 days	8 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> GH_GA-MW-3_WG_2021-07-05_NP	E290	30-Jul-2021	----	----	----		09-Aug-2021	14 days	10 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> GH_GA-MW-4_WG_2021-07-05_NP	E290	30-Jul-2021	----	----	----		09-Aug-2021	14 days	10 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_GA-MW-3_WG_2021-07-05_NP	E100	30-Jul-2021	----	----	----		09-Aug-2021	28 days	10 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_GA-MW-4_WG_2021-07-05_NP	E100	30-Jul-2021	----	----	----		09-Aug-2021	28 days	10 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_GA-MW-4_WG_2021-07-05_NP	E125	30-Jul-2021	----	----	----		10-Aug-2021	0.34 hrs	255 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_GA-MW-3_WG_2021-07-05_NP	E125	30-Jul-2021	----	----	----		10-Aug-2021	0.34 hrs	256 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_GA-MW-4_WG_2021-07-05_NP	E108	30-Jul-2021	----	----	----		09-Aug-2021	0.25 hrs	234 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_GA-MW-3_WG_2021-07-05_NP	E108	30-Jul-2021	----	----	----		09-Aug-2021	0.25 hrs	236 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_GA-MW-3_WG_2021-07-05_NP	E162	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_GA-MW-4_WG_2021-07-05_NP	E162	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] GH_GA-MW-3_WG_2021-07-05_NP	E160-L	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> GH_GA-MW-4_WG_2021-07-05_NP	E160-L	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> GH_GA-MW-3_WG_2021-07-05_NP	E121	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> GH_GA-MW-4_WG_2021-07-05_NP	E121	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_GA-MW-3_WG_2021-07-05_NP	E420.Cr-L	30-Jul-2021	----	----	----		05-Aug-2021	180 days	6 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_GA-MW-4_WG_2021-07-05_NP	E420.Cr-L	30-Jul-2021	----	----	----		05-Aug-2021	180 days	6 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_GA-MW-3_WG_2021-07-05_NP	E508-L	30-Jul-2021	----	----	----		08-Aug-2021	28 days	9 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_GA-MW-4_WG_2021-07-05_NP	E508-L	30-Jul-2021	----	----	----		08-Aug-2021	28 days	9 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_GA-MW-3_WG_2021-07-05_NP	E420	30-Jul-2021	----	----	----		05-Aug-2021	180 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_GA-MW-4_WG_2021-07-05_NP	E420	30-Jul-2021	----	----	----		05-Aug-2021	180 days	6 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 8 of 15  
Work Order : CG2102959  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

---



Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	261011	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	261931	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	259039	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	256598	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	256596	1	14	7.1	5.0	✓
Conductivity in Water	E100	261933	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	258865	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	260844	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	258866	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	257564	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	256594	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	256601	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	256599	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	256600	1	13	7.6	5.0	✓
ORP by Electrode	E125	262326	1	19	5.2	5.0	✓
pH by Meter	E108	261932	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	256597	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	257843	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	258833	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	259284	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	261466	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	258834	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	257565	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258973	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	256747	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	261011	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	261931	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	259039	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	256598	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	256596	1	14	7.1	5.0	✓
Conductivity in Water	E100	261933	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	258865	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	260844	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	258866	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	257564	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	256594	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	256601	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	256599	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	256600	1	13	7.6	5.0	✓
ORP by Electrode	E125	262326	1	19	5.2	5.0	✓
pH by Meter	E108	261932	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	256597	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	257843	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	258833	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	259284	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	261466	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	258834	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	257565	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258973	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	257837	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	256747	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	261011	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	261931	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	259039	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	256598	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	256596	1	14	7.1	5.0	✓
Conductivity in Water	E100	261933	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	258865	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	260844	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	258866	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	257564	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	256594	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	256601	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	256599	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	256600	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	256597	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	257843	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	258833	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	259284	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	261466	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	258834	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	257565	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258973	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	257837	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	256747	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	259039	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	256598	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	256596	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	258865	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	260844	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	258866	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	257564	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	256594	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	256601	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	256599	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	256600	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	256597	1	13	7.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	258833	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	259284	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	261466	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	258834	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	257565	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258973	1	19	5.2	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

Page : 15 of 15  
Work Order : CG2102959  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			

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## QUALITY CONTROL REPORT

**Work Order** : **CG2102959**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-07-30-WG  
**Sampler** : SS/JM  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 31-Jul-2021 08:30  
**Date Analysis Commenced** : 01-Aug-2021  
**Issue Date** : 15-Aug-2021 11:42

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
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Sara Niroomand		Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 18  
Work Order : CG2102959  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 256747)</b>											
CG2102958-021	Anonymous	turbidity	----	E121	0.10	NTU	1.38	1.30	5.99%	15%	----
<b>Physical Tests (QC Lot: 257843)</b>											
CG2102958-013	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 261011)</b>											
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	4.3	3.9	0.4	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 261931)</b>											
CG2102958-021	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	460	460	0.0653%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	460	460	0.0653%	20%	----
<b>Physical Tests (QC Lot: 261932)</b>											
CG2102958-021	Anonymous	pH	----	E108	0.10	pH units	7.82	7.83	0.128%	4%	----
<b>Physical Tests (QC Lot: 261933)</b>											
CG2102958-021	Anonymous	conductivity	----	E100	2.0	µS/cm	2120	2120	0.00%	10%	----
<b>Physical Tests (QC Lot: 262326)</b>											
CG2102958-021	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	322	319	0.936%	15%	----
<b>Anions and Nutrients (QC Lot: 256594)</b>											
CG2102958-021	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0024	0.0026	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 256596)</b>											
CG2102955-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	73.0	73.4	0.492%	20%	----
<b>Anions and Nutrients (QC Lot: 256597)</b>											
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	35.1	34.5	1.83%	20%	----
<b>Anions and Nutrients (QC Lot: 256598)</b>											
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 256599)</b>											
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.359	0.351	2.14%	20%	----
<b>Anions and Nutrients (QC Lot: 256600)</b>											
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 256601)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 256601) - continued</b>											
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.123	0.124	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 258973)</b>											
CG2102958-021	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 259039)</b>											
CG2102958-021	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.260	0.246	5.38%	20%	----
<b>Anions and Nutrients (QC Lot: 259284)</b>											
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.063	0.013	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 257564)</b>											
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.90	0.93	0.02	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 257565)</b>											
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.13	1.05	0.08	Diff <2x LOR	----
<b>Total Metals (QC Lot: 258833)</b>											
CG2102934-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 258834)</b>											
CG2102934-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00229	0.00229	0.308%	20%	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00029	0.00024	0.00005	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0163	0.0158	2.92%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.108	0.107	0.0005	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	3.01 µg/L	0.00302	0.0862%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	639	648	1.35%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	90.9 µg/L	0.0908	0.145%	20%	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	0.146	0.149	0.003	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	0.000107	0.000111	0.000004	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.918	0.914	0.474%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	287	287	0.100%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	0.818	0.843	3.02%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00444	0.00451	1.47%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.490	0.481	1.81%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	17.6	18.0	2.11%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 258834) - continued</b>											
CG2102934-001	Anonymous	selenium, total	7782-49-2	E420	0.100	mg/L	69.1 µg/L	0.0706	2.18%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	2.93	2.95	0.676%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	13.3	13.4	0.907%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.916	0.930	1.53%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	518	541	4.35%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.000367	0.000380	3.44%	20%	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0448	0.0454	1.36%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.187	0.189	0.956%	20%	----
<b>Total Metals (QC Lot: 261466)</b>											
CG2102958-008	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 258865)</b>											
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00026	0.00022	0.00004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 258866)</b>											
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00076	0.00038	0.00038	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00101	0.00087	0.00013	Diff <2x LOR	----
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0021	0.0014	0.0008	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	0.00014	0.000007	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0831	0.0850	2.29%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.013	0.012	0.0001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	0.0000065	0.0000015	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	53.1	54.4	2.44%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0136	0.0139	1.60%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	17.6	17.8	1.29%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00017	0.00018	0.00001	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 258866) - continued</b>											
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00164	0.00161	1.68%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.981	1.03	4.46%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	2.62 µg/L	0.00252	3.95%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.39	2.43	1.88%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.00	6.08	1.26%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.175	0.181	2.91%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	11.7	11.2	3.95%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00126	0.00130	3.26%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
	zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----	
<b>Dissolved Metals (QC Lot: 260844)</b>											
CG2102941-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 256747)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 257837)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 257843)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 261011)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 261931)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 261933)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 256594)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 256596)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 256597)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 256598)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 256599)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 256600)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 256601)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 258973)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 259039)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 259284)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 259284) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 257564)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 257565)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 258833)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 258834)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 258834) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 261466)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 258865)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 258866)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Page : 10 of 18  
Work Order : CG2102959  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 258866) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 260844)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 256747)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	95.4	85.0	115	---
<b>Physical Tests (QCLot: 257837)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	92.8	85.0	115	---
<b>Physical Tests (QCLot: 257843)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	93.6	85.0	115	---
<b>Physical Tests (QCLot: 261011)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 261931)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	99.8	85.0	115	---
<b>Physical Tests (QCLot: 261932)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 261933)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.2	90.0	110	---
<b>Physical Tests (QCLot: 262326)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Anions and Nutrients (QCLot: 256594)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	110	80.0	120	---
<b>Anions and Nutrients (QCLot: 256596)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 256597)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 256598)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.2	85.0	115	---
<b>Anions and Nutrients (QCLot: 256599)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 256600)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 256601)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 258973)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	106	80.0	120	---
<b>Anions and Nutrients (QCLot: 259039)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 259039) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 259284)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	85.9	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 257564)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	104	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 257565)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	98.7	80.0	120	----
<b>Total Metals (QCLot: 258833)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 258834)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.1	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.9	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	98.8	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.4	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.9	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	103	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	93.9	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 258834) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	105	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.1	80.0	120	----
<b>Total Metals (QCLot: 261466)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	93.2	80.0	120	----
<b>Dissolved Metals (QCLot: 258865)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	95.7	80.0	120	----
<b>Dissolved Metals (QCLot: 258866)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.3	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	94.9	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.2	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	94.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.9	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.3	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.2	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.1	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	98.0	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.4	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	104	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 258866) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.6	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	93.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.5	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	93.4	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 256594)</b>										
CG2102958-022	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0541 mg/L	0.05 mg/L	108	70.0	130	----
<b>Anions and Nutrients (QCLot: 256596)</b>										
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	chloride	16887-00-6	E235.Cl-L	80.1 mg/L	100 mg/L	80.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 256597)</b>										
CG2102959-002	GH_GA-MW-3_WG_2021-07-05_NP	sulfate (as SO4)	14808-79-8	E235.SO4	86.3 mg/L	100 mg/L	86.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 256598)</b>										
CG2102959-002	GH_GA-MW-3_WG_2021-07-05_NP	bromide	24959-67-9	E235.Br-L	0.556 mg/L	0.5 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 256599)</b>										
CG2102959-002	GH_GA-MW-3_WG_2021-07-05_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.19 mg/L	2.5 mg/L	87.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 256600)</b>										
CG2102959-002	GH_GA-MW-3_WG_2021-07-05_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.484 mg/L	0.5 mg/L	96.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 256601)</b>										
CG2102959-002	GH_GA-MW-3_WG_2021-07-05_NP	fluoride	16984-48-8	E235.F	0.975 mg/L	1 mg/L	97.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 258973)</b>										
CG2102958-022	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0613 mg/L	0.0676 mg/L	90.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 259039)</b>										
CG2102958-021	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 259284)</b>										
CG2102959-002	GH_GA-MW-3_WG_2021-07-05_NP	Kjeldahl nitrogen, total [TKN]	----	E318	1.91 mg/L	2.5 mg/L	76.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 257564)</b>										
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	carbon, dissolved organic [DOC]	----	E358-L	21.2 mg/L	23.9 mg/L	88.6	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 257565)</b>										
CG2102959-001	GH_GA-MW-4_WG_2021-07-05_NP	carbon, total organic [TOC]	----	E355-L	22.9 mg/L	23.9 mg/L	95.7	70.0	130	----
<b>Total Metals (QCLot: 258833)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 258833) - continued</b>										
CG2102941-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
<b>Total Metals (QCLot: 258834)</b>										
CG2102941-001	Anonymous	aluminum, total	7429-90-5	E420	0.195 mg/L	0.2 mg/L	97.6	70.0	130	----
		antimony, total	7440-36-0	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		barium, total	7440-39-3	E420	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0364 mg/L	0.04 mg/L	91.0	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00892 mg/L	0.01 mg/L	89.2	70.0	130	----
		boron, total	7440-42-8	E420	0.099 mg/L	0.1 mg/L	99.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00385 mg/L	0.004 mg/L	96.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		copper, total	7440-50-8	E420	0.0178 mg/L	0.02 mg/L	89.1	70.0	130	----
		iron, total	7439-89-6	E420	1.83 mg/L	2 mg/L	91.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0179 mg/L	0.02 mg/L	89.5	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, total	7440-21-3	E420	9.82 mg/L	10 mg/L	98.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00392 mg/L	0.004 mg/L	97.9	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00364 mg/L	0.004 mg/L	91.1	70.0	130	----
		tin, total	7440-31-5	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		titanium, total	7440-32-6	E420	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, total	7440-66-6	E420	ND mg/L	0.4 mg/L	ND	70.0	130	----
<b>Total Metals (QCLot: 261466)</b>										
CG2102958-010	Anonymous	mercury, total	7439-97-6	E508-L	5.01 ng/L	5 ng/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 258865)</b>										



Sub-Matrix: **Water**


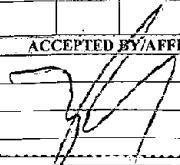
					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 258865) - continued</b>										
CG2102959-002	GH_GA-MW-3_WG_2021-07-05_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----
<b>Dissolved Metals (QCLot: 258866)</b>										
CG2102959-002	GH_GA-MW-3_WG_2021-07-05_NP	aluminum, dissolved	7429-90-5	E421	0.190 mg/L	0.2 mg/L	95.1	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0362 mg/L	0.04 mg/L	90.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0173 mg/L	0.02 mg/L	86.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00390 mg/L	0.004 mg/L	97.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0149 mg/L	0.02 mg/L	74.5	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.79 mg/L	2 mg/L	89.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0176 mg/L	0.02 mg/L	87.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0799 mg/L	0.1 mg/L	79.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0182 mg/L	0.02 mg/L	91.1	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0353 mg/L	0.04 mg/L	88.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.68 mg/L	4 mg/L	92.0	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0638 mg/L	0.08 mg/L	79.8	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.36 mg/L	10 mg/L	83.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00316 mg/L	0.004 mg/L	79.1	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00350 mg/L	0.004 mg/L	87.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00364 mg/L	0.004 mg/L	91.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0968 mg/L	0.1 mg/L	96.8	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.370 mg/L	0.4 mg/L	92.6	70.0	130	----
<b>Dissolved Metals (QCLot: 260844)</b>										
CG2102941-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000972 mg/L	0.0001 mg/L	97.2	70.0	130	----





COC ID: <b>2021-07-30-WG</b>				RUSH:							
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>				<b>OTHER INFO</b>			
Facility Name / Job#: Greenhills Operation				Lab Name: ALS Calgary				Report Format / Distribution			
Project Manager: Jeremy Enns				Lab Contact: Justine Burmaa				Excel <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EDD <input checked="" type="checkbox"/>			
Email: jeremy.enns@teck.com				Email: Justine.burmaa@alsglobal.com				Email 1: teckcoal@equisonline.com <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>			
Address: P.O. BOX 5000				Address: 2559 29 Street NE				Email 2: 01-Equils-GH0-Field@teck.com <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>			
City: Elkford Province: BC				City: Calgary Province: AB				Email 3: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
Postal Code: V0B1H0 Country: Canada				Postal Code: T1Y 7B5 Country: Can				Email 4: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
Phone Number: 250-865-3048				Phone Number: 403 407 1794				Email 5: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
								Email 6: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
								Email 7: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
								PO number: 739453			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Job No	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4	Sodium bisulphate	Zn acetate, NaOH	BOD	COD	Phenols	VOC/VPH/BTEX
GH_GA-MW-4_WG_2021-07-05_NP	GH_GA-MW-4	WG	7/30/2021	16:45	G	7	ALS_Package-DOC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GH_GA-MW-3_WG_2021-07-05_NP	GH_GA-MW-3	WG	7/30/2021	15:10	G	7	HG-D-CVAF-VA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							HG-T-U-CVAF-VA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							TECKCOAL-MET-D-VA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							TECKCOAL-MET-T-VA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							TECKCOAL-ROUTINE-VA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							ALS_Package-TKN/TOC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							EPH/PAH/LEPH/HEPH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							SULPHIDE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							BOD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							COD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							Phenols	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							VOC/VPH/BTEX	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Environmental Division</b> <b>Calgary</b> Work Order Reference <b>CG2102959</b>  Telephone: +1 403 407 1800	<b>RELINQUISHED BY/AFFILIATION</b>  	<b>DATE/TIME</b>  	<b>ACCEPTED BY/AFFILIATION</b> 	<b>DATE/TIME</b> 31/07/2021
	Regular (default) <input checked="" type="checkbox"/> (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name SS/JM	Mobile #	Date/Time July 30, 2021



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2104220**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000**  
**Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-09-17-WG**  
**Sampler** : **JM/SS**  
**Site** : **---**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **1**  
**No. of samples analysed** : **1**

**Page** : **1 of 6**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
**Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **18-Sep-2021 09:00**  
**Date Analysis Commenced** : **20-Sep-2021**  
**Issue Date** : **20-Oct-2021 11:27**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	GH_MW-ERSC-1_WG_2021-07-05_NP			
(Matrix: Water)					Client sampling date / time	17-Sep-2021 10:30			
Analyte	CAS Number	Method	LOR	Unit	CG2104220-001	Result	Result	Result	Result
<b>Physical Tests</b>									
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	177	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	177	---	---	---	---
conductivity	---	E100	2.0	µS/cm	706	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	374	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	476	---	---	---	---
pH	---	E108	0.10	pH units	8.21	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	508	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	---	---	---	---
turbidity	---	E121	0.10	NTU	0.38	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	216	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0142	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.49	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.122	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.276 <sup>TKN</sup>	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	3.05	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0040	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	212	---	---	---	---
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	<0.50	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	<0.50	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-ERSC-1_WG_2021-07-05_NP	----	----	----	----
Client sampling date / time					17-Sep-2021 10:30	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104220-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	8.27	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	7.69	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.0	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.63	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0061	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00011	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00015	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.135	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.014	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0380	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	89.0	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00020	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00065	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.020	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0134	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	33.6	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00768	----	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00171	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00076	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.03	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	26.0	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.82	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	4.04	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-ERSC-1_WG_2021-07-05_NP	----	----	----	----
Client sampling date / time					17-Sep-2021 10:30	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104220-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.405	----	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	72.6	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000018	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00130	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.140	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0429	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	92.5	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00016	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00022	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0138	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	34.8	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00705	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00159	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00076	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.05	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-ERSC-1_WG_2021-07-05_NP	----	----	----	----
Client sampling date / time					17-Sep-2021 10:30	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104220-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	27.4	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.83	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.25	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.345	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	68.2	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000022	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00138	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0024	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104220</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jeremy Enns	Account Manager	: Justine Buma-a
Address	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 865 3305	Telephone	: +1 403 407 1800
Project	: GREENHILLS OPERATION	Date Samples Received	: 18-Sep-2021 09:00
PO	: VPO00739453	Issue Date	: 20-Oct-2021 11:28
C-O-C number	: 2021-09-17-WG		
Sampler	: JM/SS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.





**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Laboratory Control Sample (LCS) Recoveries</b>								
Total Metals	QC-MRG2-3007360 02	----	antimony, total	7440-36-0	E420	122 % <sup>MES</sup>	80.0-120%	Recovery greater than upper control limit
Total Metals	QC-MRG2-3007360 02	----	strontium, total	7440-24-6	E420	122 % <sup>MES</sup>	80.0-120%	Recovery greater than upper control limit

**Result Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E298	17-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E235.Br-L	17-Sep-2021	----	----	----		20-Sep-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E235.Cl-L	17-Sep-2021	----	----	----		20-Sep-2021	28 days	3 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E378-U	17-Sep-2021	----	----	----		20-Sep-2021	3 days	3 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E235.F	17-Sep-2021	----	----	----		20-Sep-2021	28 days	3 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E235.NO3-L	17-Sep-2021	----	----	----		20-Sep-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E235.NO2-L	17-Sep-2021	----	----	----		20-Sep-2021	3 days	3 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E235.SO4	17-Sep-2021	----	----	----		20-Sep-2021	28 days	3 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E318	17-Sep-2021	24-Sep-2021	----	----		28-Sep-2021	28 days	11 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E372-U	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E421.Cr-L	17-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	6 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E509	17-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	7 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E421	17-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	6 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E358-L	17-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	13 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E355-L	17-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	13 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E283	17-Sep-2021	----	----	----		29-Sep-2021	14 days	12 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE GH_MW-ERSC-1_WG_2021-07-05_NP	E290	17-Sep-2021	----	----	----		28-Sep-2021	14 days	11 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE GH_MW-ERSC-1_WG_2021-07-05_NP	E100	17-Sep-2021	----	----	----		28-Sep-2021	28 days	11 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_MW-ERSC-1_WG_2021-07-05_NP	E125	17-Sep-2021	----	----	----		27-Sep-2021	0.25 hrs	242 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE GH_MW-ERSC-1_WG_2021-07-05_NP	E108	17-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	265 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE GH_MW-ERSC-1_WG_2021-07-05_NP	E162	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE GH_MW-ERSC-1_WG_2021-07-05_NP	E160-L	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE GH_MW-ERSC-1_WG_2021-07-05_NP	E121	17-Sep-2021	----	----	----		20-Sep-2021	3 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) GH_MW-ERSC-1_WG_2021-07-05_NP	E420.Cr-L	17-Sep-2021	----	----	----		24-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
Pre-cleaned amber glass - total (lab preserved) GH_MW-ERSC-1_WG_2021-07-05_NP	E508-L	17-Sep-2021	----	----	----		27-Sep-2021	28 days	10 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_MW-ERSC-1_WG_2021-07-05_NP	E420	17-Sep-2021	----	----	----		24-Sep-2021	180 days	7 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	306155	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304844	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	306153	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296933	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296934	1	16	6.2	5.0	✓
Conductivity in Water	E100	304842	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300105	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301261	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300106	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303951	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	297212	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	296931	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296935	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296936	1	16	6.2	5.0	✓
ORP by Electrode	E125	303222	1	16	6.2	5.0	✓
pH by Meter	E108	304843	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	296932	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	301372	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300736	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	302188	0	16	0.0	5.0	*
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303406	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300737	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303959	1	3	33.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299082	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	296955	1	9	11.1	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	306155	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304844	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	306153	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296933	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296934	1	16	6.2	5.0	✓
Conductivity in Water	E100	304842	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300105	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301261	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300106	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303951	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	297212	1	18	5.5	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	296931	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296935	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296936	1	16	6.2	5.0	✓
ORP by Electrode	E125	303222	1	16	6.2	5.0	✓
pH by Meter	E108	304843	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	296932	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	301372	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300736	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	302188	1	16	6.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303406	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300737	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303959	1	3	33.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299082	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	301367	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	296955	1	9	11.1	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	306155	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304844	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	306153	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296933	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296934	1	16	6.2	5.0	✓
Conductivity in Water	E100	304842	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300105	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301261	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300106	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303951	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	297212	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	296931	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296935	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296936	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	296932	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	301372	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300736	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	302188	1	16	6.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303406	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300737	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303959	1	3	33.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299082	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	301367	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	296955	1	9	11.1	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	306153	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296933	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296934	1	16	6.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300105	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301261	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300106	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303951	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	297212	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	296931	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296935	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296936	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	296932	1	16	6.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300736	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	302188	1	16	6.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303406	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300737	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303959	1	3	33.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299082	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

Page : 13 of 13  
Work Order : CG2104220  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2104220**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-09-17-WG  
**Sampler** : JM/SS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 18-Sep-2021 09:00  
**Date Analysis Commenced** : 20-Sep-2021  
**Issue Date** : 20-Oct-2021 11:27

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 296955)</b>											
CG2104219-001	Anonymous	turbidity	----	E121	0.10	NTU	8.50	8.57	0.844%	15%	----
<b>Physical Tests (QC Lot: 301372)</b>											
CG2104213-010	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1710	1670	2.66%	20%	----
<b>Physical Tests (QC Lot: 303222)</b>											
CG2104202-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	462	465	0.690%	15%	----
<b>Physical Tests (QC Lot: 304842)</b>											
CG2104219-004	Anonymous	conductivity	----	E100	2.0	µS/cm	1350	1350	0.444%	10%	----
<b>Physical Tests (QC Lot: 304843)</b>											
CG2104219-004	Anonymous	pH	----	E108	0.10	pH units	8.35	8.35	0.00%	4%	----
<b>Physical Tests (QC Lot: 304844)</b>											
CG2104219-004	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	280	291	3.89%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	14.4	14.4	0.00%	20%	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	294	305	3.70%	20%	----
<b>Physical Tests (QC Lot: 306155)</b>											
CG2104218-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	6.5	5.0	1.5	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296931)</b>											
CG2104216-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.168	0.163	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296932)</b>											
CG2104216-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	517	513	0.861%	20%	----
<b>Anions and Nutrients (QC Lot: 296933)</b>											
CG2104216-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296934)</b>											
CG2104216-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	0.94	0.93	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296935)</b>											
CG2104216-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	73.6	73.4	0.306%	20%	----
<b>Anions and Nutrients (QC Lot: 296936)</b>											
CG2104216-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.230	0.236	2.62%	20%	----
<b>Anions and Nutrients (QC Lot: 297212)</b>											
CG2104214-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0037	0.0035	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 299082)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 299082) - continued</b>											
CG2104219-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0229	0.0220	4.02%	20%	----
<b>Anions and Nutrients (QC Lot: 306153)</b>											
CG2104219-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.265	0.268	0.976%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 303951)</b>											
CG2104213-008	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 303959)</b>											
CG2104219-003	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.86	4.54	0.33	Diff <2x LOR	----
<b>Total Metals (QC Lot: 300736)</b>											
CG2104170-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00013	0.000006	Diff <2x LOR	----
<b>Total Metals (QC Lot: 300737)</b>											
CG2104170-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0034	0.0004	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00019	0.00020	0.000005	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0668	0.0664	0.596%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.014	0.013	0.0001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.113 µg/L	0.000110	2.19%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	89.2	87.2	2.34%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0335	0.0330	1.47%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	40.6	41.0	0.850%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00116	0.00127	9.74%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00219	0.00226	3.02%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00373	0.00366	0.00007	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.15	1.17	1.72%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	26.7 µg/L	0.0271	1.66%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.16	2.13	1.11%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	6.25	6.29	0.640%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.224	0.227	1.06%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	64.7	66.3	2.44%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 300737) - continued</b>											
CG2104170-001	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.000030	mg/L	<0.000030	<0.000030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00280	0.00278	0.974%	20%	----
		vanadium, total	7440-62-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0054	0.0057	0.0003	Diff <2x LOR	----
<b>Total Metals (QC Lot: 303406)</b>											
CG2104208-001	Anonymous	mercury, total	7439-97-6	E508-L	0.000050	ng/L	<0.000050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 300105)</b>											
CG2104202-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.000010	mg/L	0.00012	0.00012	0.000006	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 300106)</b>											
CG2104202-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0013	0.0011	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.000010	mg/L	0.0152	0.0152	0.550%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0129 µg/L	0.0000110	0.0000019	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	43.9	44.2	0.799%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.000010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0021	0.0021	0.00002	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	12.4	12.6	1.38%	20%	----
		manganese, dissolved	7439-96-5	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00102	0.000970	5.22%	20%	----
		nickel, dissolved	7440-02-0	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.266	0.273	0.007	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	1.32 µg/L	0.00134	1.93%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.57	1.56	0.623%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.478	0.482	0.004	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.000020	mg/L	0.123	0.120	2.51%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 300106) - continued</b>											
CG2104202-001	Anonymous	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	17.8	18.1	1.97%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00149	0.00147	1.75%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0034	0.0038	0.0004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 301261)</b>											
CG2104212-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 296955)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 301367)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 301372)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 304842)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 304844)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 306155)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 296931)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 296932)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 296933)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 296934)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 296935)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 296936)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 297212)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 299082)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 302188)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 306153)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 306153) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 303951)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 303959)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 300736)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 300737)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 300737) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 303406)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 300105)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 300106)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Page : 10 of 17  
Work Order : CG2104220  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 300106) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 301261)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 296955)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.4	85.0	115	---
<b>Physical Tests (QCLot: 301367)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	90.9	85.0	115	---
<b>Physical Tests (QCLot: 301372)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	93.1	85.0	115	---
<b>Physical Tests (QCLot: 303222)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Physical Tests (QCLot: 304842)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.4	90.0	110	---
<b>Physical Tests (QCLot: 304843)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 304844)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 306155)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	110	85.0	115	---
<b>Anions and Nutrients (QCLot: 296931)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 296932)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 296933)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	106	85.0	115	---
<b>Anions and Nutrients (QCLot: 296934)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 296935)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	110	90.0	110	---
<b>Anions and Nutrients (QCLot: 296936)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 297212)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	100	80.0	120	---
<b>Anions and Nutrients (QCLot: 299082)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	93.8	80.0	120	---
<b>Anions and Nutrients (QCLot: 302188)</b>									



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 302188) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	90.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 306153)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 303951)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 303959)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	93.8	80.0	120	----
<b>Total Metals (QCLot: 300736)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
<b>Total Metals (QCLot: 300737)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	110	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	# 122	80.0	120	MES
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	115	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.0	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	115	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	94.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	95.7	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	107	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	111	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.4	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	109	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	# 122	80.0	120	MES
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	101	80.0	120	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 300737) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	105	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	110	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	97.9	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 303406)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	93.2	80.0	120	----
<b>Dissolved Metals (QCLot: 300105)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
<b>Dissolved Metals (QCLot: 300106)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.0	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.5	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	106	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.2	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.2	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	104	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 300106) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.0	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.1	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.0	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.4	80.0	120	----

### Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 296931)</b>										
CG2104216-002	Anonymous	fluoride	16984-48-8	E235.F	0.864 mg/L	1 mg/L	86.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 296932)</b>										
CG2104216-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 296933)</b>										
CG2104216-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.506 mg/L	0.5 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 296934)</b>										
CG2104216-002	Anonymous	chloride	16887-00-6	E235.Cl-L	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 296935)</b>										
CG2104216-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 296936)</b>										
CG2104216-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.502 mg/L	0.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 297212)</b>										
CG2104214-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0565 mg/L	0.05 mg/L	113	70.0	130	----
<b>Anions and Nutrients (QCLot: 299082)</b>										
CG2104219-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0639 mg/L	0.0676 mg/L	94.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 302188)</b>										
CG2104214-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.41 mg/L	2.5 mg/L	96.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 306153)</b>										
CG2104229-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 303951)</b>										
CG2104213-008	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	26.3 mg/L	23.9 mg/L	110	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 303959)</b>										
CG2104219-003	Anonymous	carbon, total organic [TOC]	----	E355-L	24.8 mg/L	23.9 mg/L	104	70.0	130	----
<b>Total Metals (QCLot: 300736)</b>										
CG2104185-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
<b>Total Metals (QCLot: 300737)</b>										
CG2104185-001	Anonymous	aluminum, total	7429-90-5	E420	0.192 mg/L	0.2 mg/L	95.9	70.0	130	----
		antimony, total	7440-36-0	E420	0.0209 mg/L	0.02 mg/L	105	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 300737) - continued</b>										
CG2104185-001	Anonymous	arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0358 mg/L	0.04 mg/L	89.5	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00978 mg/L	0.01 mg/L	97.8	70.0	130	----
		boron, total	7440-42-8	E420	0.092 mg/L	0.1 mg/L	92.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0187 mg/L	0.02 mg/L	93.5	70.0	130	----
		iron, total	7439-89-6	E420	1.92 mg/L	2 mg/L	96.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0187 mg/L	0.02 mg/L	93.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0878 mg/L	0.1 mg/L	87.8	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0376 mg/L	0.04 mg/L	93.9	70.0	130	----
		potassium, total	7440-09-7	E420	3.83 mg/L	4 mg/L	95.8	70.0	130	----
		selenium, total	7782-49-2	E420	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		silicon, total	7440-21-3	E420	8.52 mg/L	10 mg/L	85.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00416 mg/L	0.004 mg/L	104	70.0	130	----
		sodium, total	17341-25-2	E420	1.92 mg/L	2 mg/L	95.9	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	18.2 mg/L	20 mg/L	91.3	70.0	130	----
		thallium, total	7440-28-0	E420	0.00363 mg/L	0.004 mg/L	90.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, total	7440-61-1	E420	0.00392 mg/L	0.004 mg/L	97.9	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.383 mg/L	0.4 mg/L	95.7	70.0	130	----
<b>Total Metals (QCLot: 303406)</b>										
CG2104209-001	Anonymous	mercury, total	7439-97-6	E508-L	4.51 ng/L	5 ng/L	90.1	70.0	130	----
<b>Dissolved Metals (QCLot: 300105)</b>										
CG2104202-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
<b>Dissolved Metals (QCLot: 300106)</b>										
CG2104202-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.199 mg/L	0.2 mg/L	99.5	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 300106) - continued</b>										
CG2104202-002	Anonymous	arsenic, dissolved	7440-38-2	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0366 mg/L	0.04 mg/L	91.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00831 mg/L	0.01 mg/L	83.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	93.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0183 mg/L	0.02 mg/L	91.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0178 mg/L	0.02 mg/L	89.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.88 mg/L	2 mg/L	94.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0177 mg/L	0.02 mg/L	88.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0345 mg/L	0.04 mg/L	86.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.71 mg/L	10 mg/L	97.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00370 mg/L	0.004 mg/L	92.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00354 mg/L	0.004 mg/L	88.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0373 mg/L	0.04 mg/L	93.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0996 mg/L	0.1 mg/L	99.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.355 mg/L	0.4 mg/L	88.6	70.0	130	----
<b>Dissolved Metals (QCLot: 301261)</b>										
CG2104212-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000962 mg/L	0.0001 mg/L	96.2	70.0	130	----

COC ID: **2021-09-17-WG**

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	teckcoal@equisonline.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	DL-Equis-GHO-Field@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:				
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:				
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:				
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:				
								Email 7:				
								PO number	<b>739453</b>			

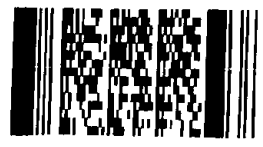
SAMPLE DETAILS							ANALYSIS REQUESTED																	
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Filter	Y	Y	N	Y	N	N	N		N									
							H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4	Sodium bisulphate	ZN acetate, NAOH		H2SO4	H2SO4	Sodium bisulphate					
							ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH/PAH/LEPH/HEPH	SULPHIDE	BOD	COD	Phenols	VOC/PH/BTEX					
GH_MW-ERSC-1_WG_2021-07-05_NP	GH_MW-ERSC-1	WG	N	9/17/2021	10:30	G	7	1	1	1	1	1	1	1										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME

*Handwritten:* JW 9/17/21 0900

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	JM/SS	Mobile #
Regular (default) X				
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				
		Sampler's Signature		Date/Time
				September 17, 2021

Environmental Division  
Calgary  
Work Order Reference  
**CG2104220**



*Handwritten:* 92



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103707**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000**  
**Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-08-30-WG**  
**Sampler** : **RG/SS**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **2**  
**No. of samples analysed** : **2**

**Page** : **1 of 7**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
**Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **31-Aug-2021 09:00**  
**Date Analysis Commenced** : **31-Aug-2021**  
**Issue Date** : **30-Sep-2021 11:48**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID						
(Matrix: Water)					GH_MW-GHC-1 A_WG_2021-07 -05_NP		GH_MW-GHC-1 B_WG_2021-07 -05_NP		----	----	----
Client sampling date / time					30-Aug-2021 14:00	30-Aug-2021 15:20	----	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103707-001	CG2103707-002	-----	-----	-----	-----	
					Result	Result	---	---	---	---	
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	5.1	5.9	----	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	251	240	----	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	251	240	----	----	----	----	
conductivity	----	E100	2.0	µS/cm	1000	1330	----	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	668	946	----	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	366	416	----	----	----	----	
pH	----	E108	0.10	pH units	7.97	7.96	----	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	773	1130	----	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	15.2	----	----	----	----	
turbidity	----	E121	0.10	NTU	0.68	9.00	----	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	306	293	----	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0198	----	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250	0.290	----	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.87	15.9	----	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.515	<0.100	----	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.055	0.105	----	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0847	0.0436	----	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050	<0.0050	----	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0037	<0.0010	----	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0053	0.0102	----	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	355	598	----	----	----	----	
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.19	2.04	----	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.33	2.22	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-GHC-1 A_WG_2021-07 -05_NP	GH_MW-GHC-1 B_WG_2021-07 -05_NP	---	---	---
Client sampling date / time					30-Aug-2021 14:00	30-Aug-2021 15:20	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103707-001 Result	CG2103707-002 Result	----- ---	----- ---	----- ---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	12.5	17.7	---	---	---	
cation sum	----	EC101	0.10	meq/L	13.6	19.2	---	---	---	
ion balance (cations/anions ratio)	----	EC101	0.010	%	109	108	---	---	---	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.21	4.06	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0104	0.0668	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	0.00106	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0856	0.0330	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	0.033	0.045	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0194	0.0252	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	164	248	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00010	0.00016	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	0.41	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00164	0.00073	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	0.044	0.862	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000058	0.000141	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0180	0.0243	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	54.1	58.7	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00036	0.175	---	---	---	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	0.00054	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000761	0.00101	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00073	0.00221	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	1.57	2.35	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	3.75	0.099	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	4.86	6.71	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000022	0.000045	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	4.95	4.97	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-GHC-1 A_WG_2021-07 -05_NP	GH_MW-GHC-1 B_WG_2021-07 -05_NP	---	---	---
Client sampling date / time					30-Aug-2021 14:00	30-Aug-2021 15:20	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103707-001 Result	CG2103707-002 Result	----- ---	----- ---	----- ---	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.511	0.740	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	126	215	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000023	0.000016	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00090 <sup>DLM</sup>	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00310	0.00188	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	0.0446	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	<0.0010	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00096	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0927	0.0328	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.035	0.050	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0238	0.0222	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	172	277	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.37	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00175	0.00034	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.574	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000052	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0182	0.0266	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	57.9	61.9	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00014	0.182	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000796	0.00119	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00075	0.00198	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.57	2.41	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-GHC-1 A_WG_2021-07 -05_NP	GH_MW-GHC-1 B_WG_2021-07 -05_NP	----	----	----
Client sampling date / time					30-Aug-2021 14:00	30-Aug-2021 15:20	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103707-001 Result	CG2103707-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	4.17	0.112	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.02	6.99	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.06	5.29	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.563	0.816	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	132	211	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000025	0.000021	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00334	0.00218	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0032	0.0459	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103707</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jeremy Enns	Account Manager	: Justine Buma-a
Address	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 865 3305	Telephone	: +1 403 407 1800
Project	: GREENHILLS OPERATION	Date Samples Received	: 31-Aug-2021 09:00
PO	: VPO00739453	Issue Date	: 30-Sep-2021 11:48
C-O-C number	: 2021-08-30-WG		
Sampler	: RG/SS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E298	30-Aug-2021	09-Sep-2021	----	----		09-Sep-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E298	30-Aug-2021	09-Sep-2021	----	----		09-Sep-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E235.Br-L	30-Aug-2021	----	----	----		01-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E235.Br-L	30-Aug-2021	----	----	----		01-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E235.Cl-L	30-Aug-2021	----	----	----		01-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E235.Cl-L	30-Aug-2021	----	----	----		01-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E378-U	30-Aug-2021	----	----	----		31-Aug-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_MW-GHC-1B_WG_2021-07-05_NP	E378-U	30-Aug-2021	----	----	----		31-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_MW-GHC-1A_WG_2021-07-05_NP	E235.F	30-Aug-2021	----	----	----		01-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_MW-GHC-1B_WG_2021-07-05_NP	E235.F	30-Aug-2021	----	----	----		01-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_MW-GHC-1A_WG_2021-07-05_NP	E235.NO3-L	30-Aug-2021	----	----	----		01-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_MW-GHC-1B_WG_2021-07-05_NP	E235.NO3-L	30-Aug-2021	----	----	----		01-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_MW-GHC-1A_WG_2021-07-05_NP	E235.NO2-L	30-Aug-2021	----	----	----		01-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_MW-GHC-1B_WG_2021-07-05_NP	E235.NO2-L	30-Aug-2021	----	----	----		01-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE GH_MW-GHC-1A_WG_2021-07-05_NP	E235.SO4	30-Aug-2021	----	----	----		01-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE GH_MW-GHC-1B_WG_2021-07-05_NP	E235.SO4	30-Aug-2021	----	----	----		01-Sep-2021	28 days	2 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E318	30-Aug-2021	04-Sep-2021	----	----		09-Sep-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E318	30-Aug-2021	04-Sep-2021	----	----		09-Sep-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E372-U	30-Aug-2021	07-Sep-2021	----	----		07-Sep-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E372-U	30-Aug-2021	07-Sep-2021	----	----		07-Sep-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E421.Cr-L	30-Aug-2021	05-Sep-2021	----	----		06-Sep-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E421.Cr-L	30-Aug-2021	05-Sep-2021	----	----		06-Sep-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E509	30-Aug-2021	03-Sep-2021	----	----		03-Sep-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E509	30-Aug-2021	03-Sep-2021	----	----		03-Sep-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E421	30-Aug-2021	05-Sep-2021	----	----		06-Sep-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Container / Client Sample ID(s)				Rec	Actual				Rec		Actual
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E421	30-Aug-2021	05-Sep-2021	----	----		06-Sep-2021	180 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E358-L	30-Aug-2021	05-Sep-2021	----	----		09-Sep-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E358-L	30-Aug-2021	05-Sep-2021	----	----		09-Sep-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E355-L	30-Aug-2021	05-Sep-2021	----	----		09-Sep-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E355-L	30-Aug-2021	05-Sep-2021	----	----		09-Sep-2021	28 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E283	30-Aug-2021	----	----	----		07-Sep-2021	14 days	8 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E283	30-Aug-2021	----	----	----		07-Sep-2021	14 days	8 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E290	30-Aug-2021	----	----	----		07-Sep-2021	14 days	8 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E290	30-Aug-2021	----	----	----		07-Sep-2021	14 days	8 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE GH_MW-GHC-1A_WG_2021-07-05_NP	E100	30-Aug-2021	----	----	----		07-Sep-2021	28 days	8 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE GH_MW-GHC-1B_WG_2021-07-05_NP	E100	30-Aug-2021	----	----	----		07-Sep-2021	28 days	8 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_MW-GHC-1B_WG_2021-07-05_NP	E125	30-Aug-2021	----	----	----		07-Sep-2021	0.34 hrs	187 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_MW-GHC-1A_WG_2021-07-05_NP	E125	30-Aug-2021	----	----	----		07-Sep-2021	0.34 hrs	189 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE GH_MW-GHC-1B_WG_2021-07-05_NP	E108	30-Aug-2021	----	----	----		07-Sep-2021	0.25 hrs	187 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE GH_MW-GHC-1A_WG_2021-07-05_NP	E108	30-Aug-2021	----	----	----		07-Sep-2021	0.25 hrs	189 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE GH_MW-GHC-1A_WG_2021-07-05_NP	E162	30-Aug-2021	----	----	----		03-Sep-2021	7 days	4 days		✓
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE GH_MW-GHC-1B_WG_2021-07-05_NP	E162	30-Aug-2021	----	----	----		03-Sep-2021	7 days	4 days		✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE GH_MW-GHC-1A_WG_2021-07-05_NP	E160-L	30-Aug-2021	----	----	----		03-Sep-2021	7 days	4 days		✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E160-L	30-Aug-2021	----	----	----		03-Sep-2021	7 days	4 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E121	30-Aug-2021	----	----	----		31-Aug-2021	3 days	1 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E121	30-Aug-2021	----	----	----		31-Aug-2021	3 days	1 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E420.Cr-L	30-Aug-2021	----	----	----		04-Sep-2021	180 days	5 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E420.Cr-L	30-Aug-2021	----	----	----		04-Sep-2021	180 days	5 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E508-L	30-Aug-2021	----	----	----		04-Sep-2021	28 days	5 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E508-L	30-Aug-2021	----	----	----		04-Sep-2021	28 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_MW-GHC-1A_WG_2021-07-05_NP	E420	30-Aug-2021	----	----	----		04-Sep-2021	180 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_MW-GHC-1B_WG_2021-07-05_NP	E420	30-Aug-2021	----	----	----		04-Sep-2021	180 days	5 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 8 of 15  
Work Order : CG2103707  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	285564	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	285558	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	287548	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	281418	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	281419	1	13	7.6	5.0	✓
Conductivity in Water	E100	285557	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	284382	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	284207	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	284381	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	285007	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	280745	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	281416	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	281420	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	281421	1	14	7.1	5.0	✓
ORP by Electrode	E125	284551	1	20	5.0	5.0	✓
pH by Meter	E108	285556	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	281417	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	283578	1	19	5.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	284287	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	284599	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	284691	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	284286	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	285009	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	283870	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	280831	1	8	12.5	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	285564	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	285558	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	287548	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	281418	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	281419	1	13	7.6	5.0	✓
Conductivity in Water	E100	285557	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	284382	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	284207	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	284381	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	285007	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	280745	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	281416	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	281420	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	281421	1	14	7.1	5.0	✓
ORP by Electrode	E125	284551	1	20	5.0	5.0	✓
pH by Meter	E108	285556	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	281417	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	283578	1	19	5.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	284287	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	284599	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	284691	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	284286	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	285009	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	283870	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	283574	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	280831	1	8	12.5	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	285564	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	285558	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	287548	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	281418	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	281419	1	13	7.6	5.0	✓
Conductivity in Water	E100	285557	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	284382	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	284207	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	284381	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	285007	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	280745	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	281416	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	281420	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	281421	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	281417	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	283578	1	19	5.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	284287	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	284599	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	284691	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	284286	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	285009	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	283870	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	283574	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	280831	1	8	12.5	5.0	✓





Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	287548	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	281418	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	281419	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	284382	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	284207	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	284381	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	285007	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	280745	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	281416	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	281420	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	281421	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	281417	1	13	7.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	284287	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	284599	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	284691	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	284286	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	285009	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	283870	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

Page : 15 of 15  
Work Order : CG2103707  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2103707**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-08-30-WG  
**Sampler** : RG/SS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 31-Aug-2021 09:00  
**Date Analysis Commenced** : 31-Aug-2021  
**Issue Date** : 30-Sep-2021 11:48

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
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Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 18  
Work Order : CG2103707  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 280831)</b>											
CG2103700-013	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 283578)</b>											
CG2103699-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	664	652	1.75%	20%	----
<b>Physical Tests (QC Lot: 284551)</b>											
CG2103700-014	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	473	476	0.527%	15%	----
<b>Physical Tests (QC Lot: 285556)</b>											
CG2103699-001	Anonymous	pH	----	E108	0.10	pH units	7.84	7.87	0.382%	4%	----
<b>Physical Tests (QC Lot: 285557)</b>											
CG2103699-001	Anonymous	conductivity	----	E100	2.0	µS/cm	835	826	1.08%	10%	----
<b>Physical Tests (QC Lot: 285558)</b>											
CG2103700-013	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 285564)</b>											
CG2103700-001	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	24.9	21.0	3.9	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 280745)</b>											
CG2103700-011	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0227	0.0228	0.538%	20%	----
<b>Anions and Nutrients (QC Lot: 281416)</b>											
CG2103700-012	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.243	0.237	0.006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 281417)</b>											
CG2103700-012	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	966	966	0.0210%	20%	----
<b>Anions and Nutrients (QC Lot: 281418)</b>											
CG2103700-012	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	2.21	2.34	0.132	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 281419)</b>											
CG2103700-012	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	12.9	12.5	3.49%	20%	----
<b>Anions and Nutrients (QC Lot: 281420)</b>											
CG2103700-012	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.0629	0.0572	0.0057	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 281421)</b>											
CG2103700-012	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 283870)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 283870) - continued</b>											
CG2103700-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0027	<0.0020	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284599)</b>											
CG2103700-009	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.316	0.363	0.047	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 287548)</b>											
CG2103700-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.208	0.187	10.4%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 285007)</b>											
CG2103697-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	8.50	8.98	5.51%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 285009)</b>											
CG2103697-003	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	8.96	9.23	2.99%	20%	----
<b>Total Metals (QC Lot: 284286)</b>											
VA21B8509-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.246	0.244	0.467%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00011	0.00011	0.0000002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0416	0.0420	1.16%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00399	0.00396	0.521%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.050	0.050	0.0002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.000154	0.000153	0.672%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	3.77	3.82	1.21%	20%	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00027	0.00028	0.000003	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00379	0.00381	0.00002	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.385	0.380	1.34%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.00559	0.00573	2.42%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	0.457	0.448	2.02%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0116	0.0114	1.32%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000059	0.000060	0.000001	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00061	0.00060	0.00001	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.834	0.832	0.287%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000088	0.000062	0.000027	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.88	4.79	1.80%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000029	0.000028	0.0000010	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	1.32	1.35	2.54%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.00941	0.00931	1.01%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	1.82	1.85	0.02	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 284286) - continued</b>											
VA21B8509-001	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.000030	mg/L	0.00319	0.00339	6.12%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000012	0.000012	0.0000003	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.000050	mg/L	0.00067	0.00063	0.00003	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0189	0.0190	0.00008	Diff <2x LOR	----
<b>Total Metals (QC Lot: 284287)</b>											
VA21B8509-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00028	0.00027	0.00001	Diff <2x LOR	----
<b>Total Metals (QC Lot: 284691)</b>											
CG2103676-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 284207)</b>											
CG2103698-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 284381)</b>											
CG2103706-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0015	0.0012	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.000010	mg/L	0.0535	0.0546	2.05%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	78.3	73.8	6.00%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.146	0.144	1.02%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0064	0.0058	0.0005	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	20.0	20.3	1.54%	20%	----
		manganese, dissolved	7439-96-5	E421	0.000010	mg/L	0.0548	0.0542	1.08%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00477	0.00472	0.986%	20%	----
		nickel, dissolved	7440-02-0	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.600	0.589	1.95%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.48	2.47	0.360%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 284381) - continued</b>											
CG2103706-001	Anonymous	sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.88	2.84	1.66%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.344	0.327	4.88%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	32.9	33.0	0.428%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000288	0.000272	5.87%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 284382)</b>											
CG2103706-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 280831)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 283574)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 283578)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 285557)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 285558)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 285564)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 280745)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 281416)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 281417)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 281418)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 281419)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 281420)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 281421)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 283870)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 284599)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 287548)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 287548) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 285007)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 285009)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 284286)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 284286) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 284287)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 284691)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 284207)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 284381)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 284381) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 284382)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 280831)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.6	85.0	115	---
<b>Physical Tests (QCLot: 283574)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	96.6	85.0	115	---
<b>Physical Tests (QCLot: 283578)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 284551)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.0	95.4	104	---
<b>Physical Tests (QCLot: 285556)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 285557)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.2	90.0	110	---
<b>Physical Tests (QCLot: 285558)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	92.8	85.0	115	---
<b>Physical Tests (QCLot: 285564)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 280745)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	96.8	80.0	120	---
<b>Anions and Nutrients (QCLot: 281416)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 281417)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 281418)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 281419)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 281420)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 281421)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 283870)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	99.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 284599)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 284599) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	93.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 287548)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.6	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 285007)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	99.3	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 285009)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 284286)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.0	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	97.6	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	94.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	92.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.0	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.2	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.2	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.6	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.1	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	99.0	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.7	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.0	80.0	120	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 284286) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	95.3	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 284287)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
<b>Total Metals (QCLot: 284691)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	89.0	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.0	80.0	120	----
<b>Dissolved Metals (QCLot: 284381)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	99.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.6	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 284381) - continued</b>									
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 284382)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 280745)</b>										
CG2103700-012	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0562 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 281416)</b>										
CG2103700-013	Anonymous	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 281417)</b>										
CG2103700-013	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	125 mg/L	100 mg/L	125	75.0	125	----
<b>Anions and Nutrients (QCLot: 281418)</b>										
CG2103700-013	Anonymous	bromide	24959-67-9	E235.Br-L	0.588 mg/L	0.5 mg/L	118	75.0	125	----
<b>Anions and Nutrients (QCLot: 281419)</b>										
CG2103700-013	Anonymous	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 281420)</b>										
CG2103700-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.60 mg/L	2.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 281421)</b>										
CG2103700-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.614 mg/L	0.5 mg/L	123	75.0	125	----
<b>Anions and Nutrients (QCLot: 283870)</b>										
CG2103700-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0636 mg/L	0.0676 mg/L	94.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 284599)</b>										
CG2103700-011	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.17 mg/L	2.5 mg/L	86.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 287548)</b>										
CG2103700-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0991 mg/L	0.1 mg/L	99.1	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 285007)</b>										
CG2103697-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.0 mg/L	23.9 mg/L	96.3	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 285009)</b>										
CG2103697-003	Anonymous	carbon, total organic [TOC]	----	E355-L	24.0 mg/L	23.9 mg/L	101	70.0	130	----
<b>Total Metals (QCLot: 284286)</b>										
VA21B8510-001	Anonymous	aluminum, total	7429-90-5	E420	0.194 mg/L	0.2 mg/L	96.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		barium, total	7440-39-3	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 284286) - continued</b>										
VA21B8510-001	Anonymous	beryllium, total	7440-41-7	E420	0.0371 mg/L	0.04 mg/L	92.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00955 mg/L	0.01 mg/L	95.5	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	1.93 mg/L	2 mg/L	96.4	70.0	130	----
		lead, total	7439-92-1	E420	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0944 mg/L	0.1 mg/L	94.4	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		nickel, total	7440-02-0	E420	0.0377 mg/L	0.04 mg/L	94.2	70.0	130	----
		potassium, total	7440-09-7	E420	4.08 mg/L	4 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	----
		silicon, total	7440-21-3	E420	9.38 mg/L	10 mg/L	93.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00382 mg/L	0.004 mg/L	95.6	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		titanium, total	7440-32-6	E420	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		uranium, total	7440-61-1	E420	0.00406 mg/L	0.004 mg/L	102	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0994 mg/L	0.1 mg/L	99.4	70.0	130	----
		zinc, total	7440-66-6	E420	0.386 mg/L	0.4 mg/L	96.6	70.0	130	----
<b>Total Metals (QCLot: 284287)</b>										
VA21B8510-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
<b>Total Metals (QCLot: 284691)</b>										
CG2103676-002	Anonymous	mercury, total	7439-97-6	E508-L	4.26 ng/L	5 ng/L	85.2	70.0	130	----
<b>Dissolved Metals (QCLot: 284207)</b>										
CG2103698-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000978 mg/L	0.0001 mg/L	97.8	70.0	130	----
<b>Dissolved Metals (QCLot: 284381)</b>										
CG2103706-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.207 mg/L	0.2 mg/L	104	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 284381) - continued</b>										
CG2103706-002	Anonymous	antimony, dissolved	7440-36-0	E421	0.0221 mg/L	0.02 mg/L	110	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0215 mg/L	0.02 mg/L	107	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00984 mg/L	0.01 mg/L	98.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00459 mg/L	0.004 mg/L	115	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.06 mg/L	2 mg/L	103	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0223 mg/L	0.02 mg/L	112	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.30 mg/L	4 mg/L	107	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0449 mg/L	0.04 mg/L	112	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.97 mg/L	10 mg/L	99.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00424 mg/L	0.004 mg/L	106	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00410 mg/L	0.004 mg/L	102	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0220 mg/L	0.02 mg/L	110	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0428 mg/L	0.04 mg/L	107	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.422 mg/L	0.4 mg/L	106	70.0	130	----
<b>Dissolved Metals (QCLot: 284382)</b>										
CG2103706-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0415 mg/L	0.04 mg/L	104	70.0	130	----

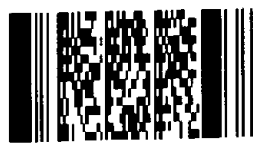


COC ID: 2021-08-30-WG

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job# Greenhills Operation				Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD	
Project Manager Jeremy Enns				Lab Contact Justine Burmaa		Email 1: teckcoal@equisonline.com		X	X	X	
Email <a href="mailto:jeremy.enns@teck.com">jeremy.enns@teck.com</a>				Email Justine.burmaa@alsglobal.com		Email 2: DL-Eguls-GHO-File@teck.com		X	X	X	
Address P.O. BOX 5000				Address 2559 29 Street NE		Email 3:				X	
City Elkford				City Calgary		Email 4:		X	X	X	
Province BC		Province AB		Email 5:		Email 6:		X	X	X	
Country Canada		Country Can		Email 7:		Email 7:		X	X	X	
Environmental Division 048				Postal Code T1Y 7B5		Phone Number 403 407 1794		PO number 739453			

Environmental Division  
Calgary  
Work Order Reference  
**CG2103707**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED													
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	Preproc.	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH/PAH/LEPH/HEPH	SULPHIDE	BOD	COD	Phenols	VOC/NPH/BTEX	
GH_MW-GHC-1A	WG	N	8/30/2021	14:00	G	7		1	1	1	1	1	1	1							
GH_MW-GHC-1B	WG	N	8/30/2021	15:20	G	7		1	1	1	1	1	1	1							

GH\_MW-GHC-1A\_WG\_2021-07-05\_NP  
GH\_MW-GHC-1B\_WG\_2021-07-05\_NP

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
		9:00	GT	Aug 31

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	RG/SS	Mobile #
Regular (default)	X			
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Sampler's Signature		August 30, 2021

**600**

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103809**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000**  
                   **Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-09-02-WG**  
**Sampler** : **JM/HS**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **1**  
**No. of samples analysed** : **1**

**Page** : 1 of 7  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
                   **Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **03-Sep-2021 08:40**  
**Date Analysis Commenced** : **03-Sep-2021**  
**Issue Date** : **19-Oct-2021 13:51**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.



## Analytical Results

Sub-Matrix: Water					Client sample ID	GH_MW-PC_W G_2021-07-05_ NP			
(Matrix: Water)					Client sampling date / time	02-Sep-2021 12:50			
Analyte	CAS Number	Method	LOR	Unit	CG2103809-001	Result	Result	Result	Result
<b>Physical Tests</b>									
acidity (as CaCO3)	---	E283	2.0	mg/L	6.1	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	236	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	236	---	---	---	---
conductivity	---	E100	2.0	µS/cm	957	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	620	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	278	---	---	---	---
pH	---	E108	0.10	pH units	7.80	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	842	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	30.3	---	---	---	---
turbidity	---	E121	0.10	NTU	16.1	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	288	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0077	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.16	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.255	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.190	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.48	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0048	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0283	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	425	---	---	---	---
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	1.25	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	1.70	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					GH_MW-PC_W G_2021-07-05_ NP	----	----	----	----
					Client sampling date / time	02-Sep-2021 12:50	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103809-001	-----	-----	-----	-----
					Result	----	----	----	----
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	13.7	----	----	----	----
cation sum	----	EC101	0.10	meq/L	12.4	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	90.5	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	4.98	----	----	----	----
<b>Total Metals</b>									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.691	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00013	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00066	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.159	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	0.067	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0714	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	115	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00130	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	0.78	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.0156	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.885	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000677	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0100	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	70.7	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0336	----	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00364	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00277	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00174	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	1.42	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	59.4	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	4.06	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	0.000178	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	1.04	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					GH_MW-PC_W G_2021-07-05_ NP	----	----	----	----
					Client sampling date / time				
					02-Sep-2021 12:50	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103809-001	-----	-----	-----	-----
					Result	----	----	----	----
<b>Total Metals</b>									
strontium, total	7440-24-6	E420	0.00020	mg/L	0.182	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	145	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000019	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	0.00012	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0142	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00470	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00180	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0083	----	----	----	----
<b>Dissolved Metals</b>									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0026	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.110	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0430	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	117	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00028	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00527	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0085	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	79.6	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00206	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00257	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00074	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.19	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					GH_MW-PC_W G_2021-07-05_ NP	----	----	----	----
					Client sampling date / time	02-Sep-2021 12:50	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103809-001	-----	-----	-----	-----
					Result	----	----	----	----
<b>Dissolved Metals</b>									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	58.0	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.92	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.941	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.150	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	129	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00472	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0027	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103809</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jeremy Enns	Account Manager	: Justine Buma-a
Address	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 865 3305	Telephone	: +1 403 407 1800
Project	: GREENHILLS OPERATION	Date Samples Received	: 03-Sep-2021 08:40
PO	: VPO00739453	Issue Date	: 19-Oct-2021 13:51
C-O-C number	: 2021-09-02-WG		
Sampler	: JM/HS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Laboratory Control Sample (LCS) Recoveries</b>								
Total Metals	QC-MRG2-2873630 02	----	strontium, total	7440-24-6	E420	122 % <sup>MES</sup>	80.0-120%	Recovery greater than upper control limit

**Result Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-PC_WG_2021-07-05_NP	E298	02-Sep-2021	15-Sep-2021	----	----		15-Sep-2021	28 days	13 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-PC_WG_2021-07-05_NP	E235.Br-L	02-Sep-2021	----	----	----		04-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-PC_WG_2021-07-05_NP	E235.Cl-L	02-Sep-2021	----	----	----		04-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> GH_MW-PC_WG_2021-07-05_NP	E378-U	02-Sep-2021	----	----	----		03-Sep-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> GH_MW-PC_WG_2021-07-05_NP	E235.F	02-Sep-2021	----	----	----		04-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-PC_WG_2021-07-05_NP	E235.NO3-L	02-Sep-2021	----	----	----		04-Sep-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-PC_WG_2021-07-05_NP	E235.NO2-L	02-Sep-2021	----	----	----		04-Sep-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> GH_MW-PC_WG_2021-07-05_NP	E235.SO4	02-Sep-2021	----	----	----		04-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-PC_WG_2021-07-05_NP	E318	02-Sep-2021	09-Sep-2021	----	----		13-Sep-2021	28 days	11 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-PC_WG_2021-07-05_NP	E372-U	02-Sep-2021	08-Sep-2021	----	----		08-Sep-2021	28 days	6 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> GH_MW-PC_WG_2021-07-05_NP	E421.Cr-L	02-Sep-2021	09-Sep-2021	----	----		09-Sep-2021	180 days	7 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> GH_MW-PC_WG_2021-07-05_NP	E509	02-Sep-2021	08-Sep-2021	----	----		08-Sep-2021	28 days	6 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> GH_MW-PC_WG_2021-07-05_NP	E421	02-Sep-2021	09-Sep-2021	----	----		09-Sep-2021	180 days	7 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> GH_MW-PC_WG_2021-07-05_NP	E358-L	02-Sep-2021	12-Sep-2021	----	----		13-Sep-2021	28 days	11 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-PC_WG_2021-07-05_NP	E355-L	02-Sep-2021	12-Sep-2021	----	----		13-Sep-2021	28 days	11 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> GH_MW-PC_WG_2021-07-05_NP	E283	02-Sep-2021	----	----	----		11-Sep-2021	14 days	9 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_MW-PC_WG_2021-07-05_NP	E290	02-Sep-2021	----	----	----		13-Sep-2021	14 days	11 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> GH_MW-PC_WG_2021-07-05_NP	E100	02-Sep-2021	----	----	----		13-Sep-2021	28 days	11 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> GH_MW-PC_WG_2021-07-05_NP	E125	02-Sep-2021	----	----	----		13-Sep-2021	0.25 hrs	264 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> GH_MW-PC_WG_2021-07-05_NP	E108	02-Sep-2021	----	----	----		13-Sep-2021	0.25 hrs	267 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> GH_MW-PC_WG_2021-07-05_NP	E162	02-Sep-2021	----	----	----		07-Sep-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_MW-PC_WG_2021-07-05_NP	E160-L	02-Sep-2021	----	----	----		07-Sep-2021	7 days	5 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_MW-PC_WG_2021-07-05_NP	E121	02-Sep-2021	----	----	----		04-Sep-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> GH_MW-PC_WG_2021-07-05_NP	E420.Cr-L	02-Sep-2021	----	----	----		09-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_MW-PC_WG_2021-07-05_NP	E508-L	02-Sep-2021	----	----	----		12-Sep-2021	28 days	10 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_MW-PC_WG_2021-07-05_NP	E420	02-Sep-2021	----	----	----		09-Sep-2021	180 days	7 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	289967	1	4	25.0	5.0	✓
Alkalinity Species by Titration	E290	290835	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	292442	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	284478	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	284479	1	10	10.0	5.0	✓
Conductivity in Water	E100	290834	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	288257	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	286559	1	5	20.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	288256	1	11	9.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	290128	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	284014	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	284482	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	284480	1	10	10.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	284481	1	10	10.0	5.0	✓
ORP by Electrode	E125	289935	1	5	20.0	5.0	✓
pH by Meter	E108	290836	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	284477	1	12	8.3	5.0	✓
TDS by Gravimetry	E162	285370	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	287364	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	287914	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	290061	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	287363	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	290129	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	285667	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	284455	1	13	7.6	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	289967	1	4	25.0	5.0	✓
Alkalinity Species by Titration	E290	290835	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	292442	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	284478	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	284479	1	10	10.0	5.0	✓
Conductivity in Water	E100	290834	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	288257	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	286559	1	5	20.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	288256	1	11	9.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	290128	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	284014	1	16	6.2	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	284482	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	284480	1	10	10.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	284481	1	10	10.0	5.0	✓
ORP by Electrode	E125	289935	1	5	20.0	5.0	✓
pH by Meter	E108	290836	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	284477	1	12	8.3	5.0	✓
TDS by Gravimetry	E162	285370	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	287364	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	287914	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	290061	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	287363	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	290129	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	285667	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	285361	1	17	5.8	5.0	✓
Turbidity by Nephelometry	E121	284455	1	13	7.6	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	289967	1	4	25.0	5.0	✓
Alkalinity Species by Titration	E290	290835	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	292442	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	284478	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	284479	1	10	10.0	5.0	✓
Conductivity in Water	E100	290834	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	288257	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	286559	1	5	20.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	288256	1	11	9.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	290128	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	284014	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	284482	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	284480	1	10	10.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	284481	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	284477	1	12	8.3	5.0	✓
TDS by Gravimetry	E162	285370	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	287364	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	287914	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	290061	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	287363	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	290129	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	285667	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	285361	1	17	5.8	5.0	✓
Turbidity by Nephelometry	E121	284455	1	13	7.6	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	292442	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	284478	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	284479	1	10	10.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	288257	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	286559	1	5	20.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	288256	2	11	18.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	290128	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	284014	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	284482	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	284480	1	10	10.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	284481	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	284477	1	12	8.3	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	287364	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	287914	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	290061	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	287363	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	290129	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	285667	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

Page : 13 of 13  
Work Order : CG2103809  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2103809**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-09-02-WG  
**Sampler** : JM/HS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 03-Sep-2021 08:40  
**Date Analysis Commenced** : 03-Sep-2021  
**Issue Date** : 19-Oct-2021 13:51

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
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Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 17  
Work Order : CG2103809  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 284455)</b>											
CG2103794-004	Anonymous	turbidity	----	E121	0.10	NTU	1.43	1.45	1.94%	15%	----
<b>Physical Tests (QC Lot: 285370)</b>											
CG2103799-006	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	204	210	2.90%	20%	----
<b>Physical Tests (QC Lot: 289935)</b>											
CG2103801-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	282	272	3.40%	15%	----
<b>Physical Tests (QC Lot: 289967)</b>											
CG2103801-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.6	<2.0	0.6	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 290834)</b>											
CG2103799-001	Anonymous	conductivity	----	E100	2.0	µS/cm	587	591	0.679%	10%	----
<b>Physical Tests (QC Lot: 290835)</b>											
CG2103799-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	183	183	0.328%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	15.2	15.2	0.00%	20%	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	198	198	0.303%	20%	----
<b>Physical Tests (QC Lot: 290836)</b>											
CG2103809-001	GH_MW-PC-WG_2021-07-05_NP	pH	----	E108	0.10	pH units	7.80	7.97	2.16%	4%	----
<b>Anions and Nutrients (QC Lot: 284014)</b>											
CG2103799-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0018	0.0018	0.00007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284477)</b>											
CG2103800-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	1420	1420	0.00228%	20%	----
<b>Anions and Nutrients (QC Lot: 284478)</b>											
CG2103800-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284479)</b>											
CG2103800-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	3.81	3.62	0.19	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284480)</b>											
CG2103800-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.0298	0.0263	0.0035	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284481)</b>											
CG2103800-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284482)</b>											
CG2103800-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.116	0.113	0.003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 285667)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 285667) - continued</b>											
CG2103801-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0074	0.0057	0.0017	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 287914)</b>											
CG2103791-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 292442)</b>											
CG2103799-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0085	0.0087	0.0002	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 290128)</b>											
CG2103800-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.14	3.25	0.12	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 290129)</b>											
CG2103800-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.37	3.39	0.01	Diff <2x LOR	----
<b>Total Metals (QC Lot: 287363)</b>											
CG2103795-014	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00026	0.00025	0.000008	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0122	0.0115	5.69%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.098	0.100	0.003	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	0.175 µg/L	0.000168	4.13%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	481	488	1.39%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	52.6 µg/L	0.0516	2.01%	20%	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	0.223	0.213	4.67%	20%	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.131	0.135	2.79%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	233	227	2.47%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	1.14	1.12	1.89%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00129	0.00129	0.302%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.267	0.260	2.61%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	6.33	6.29	0.704%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.20	mg/L	3.74	3.75	0.330%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	5.84	5.80	0.666%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.576	0.566	1.62%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	580	572	1.51%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 287363) - continued</b>											
CG2103795-014	Anonymous	thallium, total	7440-28-0	E420	0.000020	mg/L	0.000102	0.000103	0.000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.000020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.000060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0340	0.0346	1.76%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.0793	0.0771	2.82%	20%	----
<b>Total Metals (QC Lot: 287364)</b>											
CG2103795-014	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 290061)</b>											
CG2103794-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	0.00415 µg/L	3.24	0.91	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 286559)</b>											
CG2103796-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 288256)</b>											
CG2103794-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00030	0.00029	0.0000007	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00017	0.00018	0.000002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0266	0.0269	1.32%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.011	0.011	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0234 µg/L	0.0000196	0.0000037	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	178	178	0.0857%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0223	0.0222	0.683%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	146	143	1.94%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00027	0.00030	0.00003	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00130	0.00136	4.37%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00400	0.00407	0.00007	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.84	2.83	0.318%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	167 µg/L	0.174	4.47%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.83	1.91	3.87%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 288256) - continued</b>											
CG2103794-001	Anonymous	sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.86	3.80	1.63%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.182	0.181	0.505%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	260	269	3.52%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000023	0.000022	0.000001	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00799	0.00788	1.35%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 288257)</b>											
CG2103794-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 284455)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 285361)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 285370)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 289967)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 290834)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 290835)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 284014)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 284477)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 284478)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 284479)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 284480)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 284481)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 284482)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 285667)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 287914)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 292442)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 292442) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 290128)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 290129)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 287363)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 287363) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 287364)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 290061)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 286559)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 288256)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Page : 10 of 17  
Work Order : CG2103809  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 288256) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 288257)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 284455)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.4	85.0	115	---
<b>Physical Tests (QCLot: 285361)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	90.3	85.0	115	---
<b>Physical Tests (QCLot: 285370)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	98.1	85.0	115	---
<b>Physical Tests (QCLot: 289935)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Physical Tests (QCLot: 289967)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 290834)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	95.9	90.0	110	---
<b>Physical Tests (QCLot: 290835)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 290836)</b>									
pH	---	E108	---	pH units	7 pH units	99.7	98.6	101	---
<b>Anions and Nutrients (QCLot: 284014)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	97.0	80.0	120	---
<b>Anions and Nutrients (QCLot: 284477)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 284478)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.2	85.0	115	---
<b>Anions and Nutrients (QCLot: 284479)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	96.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 284480)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	96.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 284481)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	96.7	90.0	110	---
<b>Anions and Nutrients (QCLot: 284482)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	94.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 285667)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	88.0	80.0	120	---
<b>Anions and Nutrients (QCLot: 287914)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Anions and Nutrients (QCLot: 287914) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 292442)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	115	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 290128)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	104	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 290129)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	109	80.0	120	----
<b>Total Metals (QCLot: 287363)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	109	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	114	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.9	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	91.5	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	92.1	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	96.3	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	105	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	95.1	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	90.8	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.1	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	110	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	99.3	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	106	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	# 122	80.0	120	MES
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 287363) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	96.5	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	107	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 287364)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
<b>Total Metals (QCLot: 290061)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	99.4	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.8	80.0	120	----
<b>Dissolved Metals (QCLot: 288256)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	108	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.2	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	112	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	110	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.4	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.9	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	93.3	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	111	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	111	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.8	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	115	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	110	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	94.4	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 288256) - continued</b>									
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	109	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.9	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	109	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	113	80.0	120	----
<b>Dissolved Metals (QCLot: 288257)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	107	80.0	120	----

### Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 284014)</b>										
CG2103799-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0489 mg/L	0.05 mg/L	97.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 284477)</b>										
CG2103800-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 284478)</b>										
CG2103800-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.530 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 284479)</b>										
CG2103800-006	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 284480)</b>										
CG2103800-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.57 mg/L	2.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 284481)</b>										
CG2103800-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.527 mg/L	0.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 284482)</b>										
CG2103800-006	Anonymous	fluoride	16984-48-8	E235.F	0.973 mg/L	1 mg/L	97.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 285667)</b>										
CG2103801-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0680 mg/L	0.0676 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 287914)</b>										
CG2103801-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.58 mg/L	2.5 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 292442)</b>										
CG2103799-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 290128)</b>										
CG2103800-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.2 mg/L	23.9 mg/L	97.0	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 290129)</b>										
CG2103800-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.2 mg/L	23.9 mg/L	101	70.0	130	----
<b>Total Metals (QCLot: 287363)</b>										
CG2103795-015	Anonymous	aluminum, total	7429-90-5	E420	0.407 mg/L	0.4 mg/L	102	70.0	130	----
		antimony, total	7440-36-0	E420	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----
		barium, total	7440-39-3	E420	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 287363) - continued</b>										
CG2103795-015	Anonymous	beryllium, total	7440-41-7	E420	0.0787 mg/L	0.08 mg/L	98.4	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0186 mg/L	0.02 mg/L	92.8	70.0	130	----
		boron, total	7440-42-8	E420	0.182 mg/L	0.2 mg/L	91.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00764 mg/L	0.008 mg/L	95.5	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, total	7440-50-8	E420	0.0362 mg/L	0.04 mg/L	90.4	70.0	130	----
		iron, total	7439-89-6	E420	3.84 mg/L	4 mg/L	96.0	70.0	130	----
		lead, total	7439-92-1	E420	0.0364 mg/L	0.04 mg/L	90.9	70.0	130	----
		lithium, total	7439-93-2	E420	0.198 mg/L	0.2 mg/L	99.1	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	8.06 mg/L	8 mg/L	101	70.0	130	----
		selenium, total	7782-49-2	E420	0.0904 mg/L	0.08 mg/L	113	70.0	130	----
		silicon, total	7440-21-3	E420	18.9 mg/L	20 mg/L	94.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00793 mg/L	0.008 mg/L	99.1	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00712 mg/L	0.008 mg/L	89.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
		titanium, total	7440-32-6	E420	0.0804 mg/L	0.08 mg/L	100	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		zinc, total	7440-66-6	E420	0.719 mg/L	0.8 mg/L	89.9	70.0	130	----
<b>Total Metals (QCLot: 287364)</b>										
CG2103795-015	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0790 mg/L	0.08 mg/L	98.7	70.0	130	----
<b>Total Metals (QCLot: 290061)</b>										
CG2103794-002	Anonymous	mercury, total	7439-97-6	E508-L	5.04 ng/L	5 ng/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 286559)</b>										
CG2103801-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000996 mg/L	0.0001 mg/L	99.6	70.0	130	----
<b>Dissolved Metals (QCLot: 288256)</b>										
CG2103794-002	Anonymous	copper, dissolved	7440-50-8	E421	0.0183 mg/L	0.02 mg/L	91.5	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 288256) - continued</b>										
CG2103794-002	Anonymous	zinc, dissolved	7440-66-6	E421	0.380 mg/L	0.4 mg/L	95.1	70.0	130	----
CG2103794-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.190 mg/L	0.2 mg/L	95.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0381 mg/L	0.04 mg/L	95.4	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00812 mg/L	0.01 mg/L	81.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.091 mg/L	0.1 mg/L	91.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00374 mg/L	0.004 mg/L	93.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.88 mg/L	2 mg/L	94.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0171 mg/L	0.02 mg/L	85.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0926 mg/L	0.1 mg/L	92.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0346 mg/L	0.04 mg/L	86.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.13 mg/L	4 mg/L	103	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.54 mg/L	10 mg/L	95.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00355 mg/L	0.004 mg/L	88.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00352 mg/L	0.004 mg/L	87.9	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.1000 mg/L	0.1 mg/L	100.0	70.0	130	----
<b>Dissolved Metals (QCLot: 288257)</b>										
CG2103794-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0377 mg/L	0.04 mg/L	94.4	70.0	130	----

COC ID: **2021-09-02-WG**

RUSH:

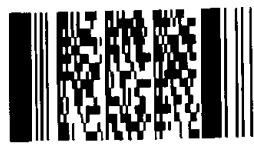
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF		EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	teckcoal@equisonline.com		X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	Dt-Equis-GHD-Field@teck.com		X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:					
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:					
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:					
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:					
								Email 7:					
								PO number	<b>739453</b>				

SAMPLE DETAILS								ANALYSIS REQUESTED															
File	Priority	ANALYSIS	Field Matrix	Hazardous Material (Ycs/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Y	Y	N	Y	N	N	N		N						
GH_MW-PC_WG_2021-07-05_NP		ALS_Package-DOC	WG	N	9/2/2021	12:50	G	7	1	1	1	1	1	1	1								
		HG-D-CVAF-VA																					
		HG-T-U-CVAF-VA																					
		TECKCOAL-MET-D-VA																					
		TECKCOAL-MET-T-VA																					
		TECKCOAL-ROUTINE-VA																					
		ALS_Package-TKN/TOC																					
		EPH/PAH/LEPH/HEPH																					
		SULPHIDE																					
		BOD																					
		COD																					
		Phenols																					
		VOC/PH/BTEX																					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>AS</i>	9/3 - 8:00

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	JM/HS	Mobile #
Regular (default)	X			
Days - 50% surcharge				
Days - 100% surcharge				
Weekend - Contact ALS				
Environmental Division Calgary		Sampler's Signature	Date/Time	September 2, 2021

Work Order Reference  
**CG2103809**



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103833**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000**  
                   **Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-09-03-WG**  
**Sampler** : **JM/HS**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **4**  
**No. of samples analysed** : **4**

**Page** : **1 of 7**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
                   **Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **04-Sep-2021 08:35**  
**Date Analysis Commenced** : **05-Sep-2021**  
**Issue Date** : **07-Oct-2021 07:46**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

**Samples Received with temperature >10 Degrees C. Samples received at 13C.**

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-RLP-2_ WG_2021-07-0 5_NP	GH_MW-TD_W G_2021-07-05_ NP	GH_FOX3_WG_ 2021-07-05_NP	GH_JDW3_WG_ 2021-07-05_N P	----
Client sampling date / time					03-Sep-2021 15:50	03-Sep-2021 14:40	03-Sep-2021 14:40	03-Sep-2021 14:40	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103833-001	CG2103833-002	CG2103833-003	CG2103833-004	-----	
					Result	Result	Result	Result	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	6.8	5.1	5.8	<2.0	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	343	344	345	<1.0	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	343	344	345	<1.0	----	
conductivity	----	E100	2.0	µS/cm	1080	746	749	<2.0	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	570	350	351	<0.50	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	258	321	387	486	----	
pH	----	E108	0.10	pH units	8.17	8.18	8.15	5.49	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	751	451	448	<10	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	5.6	<1.0	<1.0	<1.0	----	
turbidity	----	E121	0.10	NTU	29.6	1.34	1.64	<0.10	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	418	419	421	<1.0	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.582	0.125	0.127	<0.0050	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.050	<0.050	<0.050	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	17.0	0.31	0.33	<0.10	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.716	0.266	0.273	<0.020	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.724	0.125	0.136	<0.050	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0910	0.0057	<0.0050	<0.0050	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0010	<0.0010	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0034	<0.0020	<0.0020	<0.0020	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	273	82.2	82.1	<0.30	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	9.52	<0.50	<0.50	<0.50	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	10.2	<0.50	<0.50	<0.50	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-RLP-2_WG_2021-07-05_NP	GH_MW-TD_WG_2021-07-05_NP	GH_FOX3_WG_2021-07-05_NP	GH_JDW3_WG_2021-07-05_NP	----
Client sampling date / time					03-Sep-2021 15:50	03-Sep-2021 14:40	03-Sep-2021 14:40	03-Sep-2021 14:40	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103833-001	CG2103833-002	CG2103833-003	CG2103833-004	-----	
					Result	Result	Result	Result	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	13.1	8.61	8.63	<0.10	----	
cation sum	----	EC101	0.10	meq/L	12.4	8.40	8.42	<0.10	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	94.6	97.6	97.6	100	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.74	1.23	1.23	<0.010	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0235	<0.0030	<0.0030	<0.0030	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00078	0.00019	0.00016	<0.00010	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.140	0.0226	0.0229	<0.00010	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.035	0.395	0.404	<0.010	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0249	0.203	0.251	<0.0050	----	
calcium, total	7440-70-2	E420	0.050	mg/L	149	90.7	88.6	<0.050	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00021	<0.00010	<0.00010	<0.00010	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	2.03	0.25	0.26	<0.10	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
iron, total	7439-89-6	E420	0.010	mg/L	4.02	0.134	0.128	<0.010	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000088	<0.000050	<0.000050	<0.000050	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0412	0.0438	0.0450	<0.0010	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	53.7	36.3	36.5	<0.0050	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	1.94	0.462	0.480	<0.00010	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00066	<0.00050	<0.00050	<0.00050	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00599	0.00285	0.00266	<0.000050	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00694	<0.00050	<0.00050	<0.00050	----	
potassium, total	7440-09-7	E420	0.050	mg/L	4.12	2.68	2.70	<0.050	----	
selenium, total	7782-49-2	E420	0.050	µg/L	0.374	<0.050	<0.050	<0.050	----	
silicon, total	7440-21-3	E420	0.10	mg/L	7.21	6.67	6.64	<0.10	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, total	17341-25-2	E420	0.050	mg/L	14.0	29.3	29.3	<0.050	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-RLP-2_WG_2021-07-05_NP	GH_MW-TD_WG_2021-07-05_NP	GH_FOX3_WG_2021-07-05_NP	GH_JDW3_WG_2021-07-05_NP	----
Client sampling date / time					03-Sep-2021 15:50	03-Sep-2021 14:40	03-Sep-2021 14:40	03-Sep-2021 14:40	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103833-001	CG2103833-002	CG2103833-003	CG2103833-004	-----	
					Result	Result	Result	Result	----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.372	1.35	1.31	<0.00020	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	96.8	30.5	30.9	<0.50	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000021	0.000082	0.000086	<0.000010	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00063	<0.00030	<0.00030	<0.00030	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00263	0.000573	0.000607	<0.000010	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00163	<0.00050	<0.00050	<0.00050	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0034	<0.0030	<0.0030	<0.0030	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0059	<0.0010	<0.0010	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00078	0.00016	0.00014	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.140	0.0222	0.0222	<0.00010	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.029	0.360	0.366	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0217	0.0636	0.0559	<0.0050	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	137	80.5	80.4	<0.050	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00020	<0.00010	<0.00010	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	2.04	0.24	0.25	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	3.98	0.142	0.144	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000144	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0366	0.0434	0.0423	<0.0010	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	55.4	36.3	36.4	<0.0050	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	2.00	0.494	0.505	<0.00010	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00585	0.00258	0.00268	<0.000050	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00696	<0.00050	<0.00050	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.16	2.75	2.70	<0.050	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-RLP-2_WG_2021-07-05_NP	GH_MW-TD_WG_2021-07-05_NP	GH_FOX3_WG_2021-07-05_NP	GH_JDW3_WG_2021-07-05_NP	----
Client sampling date / time					03-Sep-2021 15:50	03-Sep-2021 14:40	03-Sep-2021 14:40	03-Sep-2021 14:40	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103833-001	CG2103833-002	CG2103833-003	CG2103833-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.314	<0.050	<0.050	<0.050	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	7.26	6.67	6.74	<0.050	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	14.3	29.8	30.3	<0.050	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.349	1.22	1.22	<0.00020	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	102	30.2	32.1	<0.50	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000010	0.000076	0.000083	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00039	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00250	0.000531	0.000560	<0.000010	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00141	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0042	<0.0010	0.0014	<0.0010	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103833</b>	Page	: 1 of 20
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jeremy Enns	Account Manager	: Justine Buma-a
Address	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 865 3305	Telephone	: +1 403 407 1800
Project	: GREENHILLS OPERATION	Date Samples Received	: 04-Sep-2021 08:35
PO	: VPO00739453	Issue Date	: 07-Oct-2021 07:46
C-O-C number	: 2021-09-03-WG		
Sampler	: JM/HS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_FOX3_WG_2021-07-05_NP	E298	03-Sep-2021	15-Sep-2021	----	----		15-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_JDW3_WG_2021-07-05_NP	E298	03-Sep-2021	15-Sep-2021	----	----		15-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-RLP-2_WG_2021-07-05_NP	E298	03-Sep-2021	15-Sep-2021	----	----		15-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-TD_WG_2021-07-05_NP	E298	03-Sep-2021	15-Sep-2021	----	----		15-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_FOX3_WG_2021-07-05_NP	E235.Br-L	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_JDW3_WG_2021-07-05_NP	E235.Br-L	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-RLP-2_WG_2021-07-05_NP	E235.Br-L	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE GH_MW-TD_WG_2021-07-05_NP	E235.Br-L	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE GH_FOX3_WG_2021-07-05_NP	E235.Cl-L	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE GH_JDW3_WG_2021-07-05_NP	E235.Cl-L	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE GH_MW-RLP-2_WG_2021-07-05_NP	E235.Cl-L	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE GH_MW-TD_WG_2021-07-05_NP	E235.Cl-L	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE GH_FOX3_WG_2021-07-05_NP	E378-U	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE GH_JDW3_WG_2021-07-05_NP	E378-U	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE GH_MW-RLP-2_WG_2021-07-05_NP	E378-U	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE GH_MW-TD_WG_2021-07-05_NP	E378-U	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_FOX3_WG_2021-07-05_NP	E235.F	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_JDW3_WG_2021-07-05_NP	E235.F	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_MW-RLP-2_WG_2021-07-05_NP	E235.F	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_MW-TD_WG_2021-07-05_NP	E235.F	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_FOX3_WG_2021-07-05_NP	E235.NO3-L	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_JDW3_WG_2021-07-05_NP	E235.NO3-L	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_MW-RLP-2_WG_2021-07-05_NP	E235.NO3-L	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_MW-TD_WG_2021-07-05_NP	E235.NO3-L	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_FOX3_WG_2021-07-05_NP	E235.NO2-L	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_JDW3_WG_2021-07-05_NP	E235.NO2-L	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_MW-RLP-2_WG_2021-07-05_NP	E235.NO2-L	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_MW-TD_WG_2021-07-05_NP	E235.NO2-L	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_FOX3_WG_2021-07-05_NP	E235.SO4	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_JDW3_WG_2021-07-05_NP	E235.SO4	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_MW-RLP-2_WG_2021-07-05_NP	E235.SO4	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_MW-TD_WG_2021-07-05_NP	E235.SO4	03-Sep-2021	----	----	----		05-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_FOX3_WG_2021-07-05_NP	E318	03-Sep-2021	13-Sep-2021	----	----		15-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_JDW3_WG_2021-07-05_NP	E318	03-Sep-2021	13-Sep-2021	----	----		15-Sep-2021	28 days	12 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-RLP-2_WG_2021-07-05_NP	E318	03-Sep-2021	13-Sep-2021	----	----		15-Sep-2021	28 days	12 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-TD_WG_2021-07-05_NP	E318	03-Sep-2021	13-Sep-2021	----	----		15-Sep-2021	28 days	12 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_FOX3_WG_2021-07-05_NP	E372-U	03-Sep-2021	08-Sep-2021	----	----		08-Sep-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_JDW3_WG_2021-07-05_NP	E372-U	03-Sep-2021	08-Sep-2021	----	----		08-Sep-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-RLP-2_WG_2021-07-05_NP	E372-U	03-Sep-2021	08-Sep-2021	----	----		08-Sep-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-TD_WG_2021-07-05_NP	E372-U	03-Sep-2021	08-Sep-2021	----	----		08-Sep-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_FOX3_WG_2021-07-05_NP	E421.Cr-L	03-Sep-2021	09-Sep-2021	----	----		11-Sep-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_JDW3_WG_2021-07-05_NP	E421.Cr-L	03-Sep-2021	09-Sep-2021	----	----		11-Sep-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-RLP-2_WG_2021-07-05_NP	E421.Cr-L	03-Sep-2021	09-Sep-2021	----	----		11-Sep-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-TD_WG_2021-07-05_NP	E421.Cr-L	03-Sep-2021	09-Sep-2021	----	----		11-Sep-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_FOX3_WG_2021-07-05_NP	E509	03-Sep-2021	09-Sep-2021	----	----		09-Sep-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_JDW3_WG_2021-07-05_NP	E509	03-Sep-2021	09-Sep-2021	----	----		09-Sep-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_MW-RLP-2_WG_2021-07-05_NP	E509	03-Sep-2021	09-Sep-2021	----	----		09-Sep-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_MW-TD_WG_2021-07-05_NP	E509	03-Sep-2021	09-Sep-2021	----	----		09-Sep-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_FOX3_WG_2021-07-05_NP	E421	03-Sep-2021	09-Sep-2021	----	----		11-Sep-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_JDW3_WG_2021-07-05_NP	E421	03-Sep-2021	09-Sep-2021	----	----		11-Sep-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-RLP-2_WG_2021-07-05_NP	E421	03-Sep-2021	09-Sep-2021	----	----		11-Sep-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-TD_WG_2021-07-05_NP	E421	03-Sep-2021	09-Sep-2021	----	----		11-Sep-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_FOX3_WG_2021-07-05_NP	E358-L	03-Sep-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_JDW3_WG_2021-07-05_NP	E358-L	03-Sep-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_MW-RLP-2_WG_2021-07-05_NP	E358-L	03-Sep-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_MW-TD_WG_2021-07-05_NP	E358-L	03-Sep-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_FOX3_WG_2021-07-05_NP	E355-L	03-Sep-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_JDW3_WG_2021-07-05_NP	E355-L	03-Sep-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-RLP-2_WG_2021-07-05_NP	E355-L	03-Sep-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-TD_WG_2021-07-05_NP	E355-L	03-Sep-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_FOX3_WG_2021-07-05_NP	E283	03-Sep-2021	----	----	----		13-Sep-2021	14 days	10 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Acidity by Titration</b>										
HDPE GH_JDW3_WG_2021-07-05_NP	E283	03-Sep-2021	----	----	----		13-Sep-2021	14 days	10 days	✔
<b>Physical Tests : Acidity by Titration</b>										
HDPE GH_MW-RLP-2_WG_2021-07-05_NP	E283	03-Sep-2021	----	----	----		13-Sep-2021	14 days	10 days	✔
<b>Physical Tests : Acidity by Titration</b>										
HDPE GH_MW-TD_WG_2021-07-05_NP	E283	03-Sep-2021	----	----	----		13-Sep-2021	14 days	10 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE GH_FOX3_WG_2021-07-05_NP	E290	03-Sep-2021	----	----	----		14-Sep-2021	14 days	11 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE GH_JDW3_WG_2021-07-05_NP	E290	03-Sep-2021	----	----	----		14-Sep-2021	14 days	11 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE GH_MW-RLP-2_WG_2021-07-05_NP	E290	03-Sep-2021	----	----	----		14-Sep-2021	14 days	11 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE GH_MW-TD_WG_2021-07-05_NP	E290	03-Sep-2021	----	----	----		14-Sep-2021	14 days	11 days	✔
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_FOX3_WG_2021-07-05_NP	E100	03-Sep-2021	----	----	----		14-Sep-2021	28 days	11 days	✔
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_JDW3_WG_2021-07-05_NP	E100	03-Sep-2021	----	----	----		14-Sep-2021	28 days	11 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE GH_MW-RLP-2_WG_2021-07-05_NP	E100	03-Sep-2021	----	----	----		14-Sep-2021	28 days	11 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE GH_MW-TD_WG_2021-07-05_NP	E100	03-Sep-2021	----	----	----		14-Sep-2021	28 days	11 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_MW-RLP-2_WG_2021-07-05_NP	E125	03-Sep-2021	----	----	----		14-Sep-2021	0.34 hrs	258 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_FOX3_WG_2021-07-05_NP	E125	03-Sep-2021	----	----	----		14-Sep-2021	0.34 hrs	260 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_JDW3_WG_2021-07-05_NP	E125	03-Sep-2021	----	----	----		14-Sep-2021	0.34 hrs	260 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_MW-TD_WG_2021-07-05_NP	E125	03-Sep-2021	----	----	----		14-Sep-2021	0.34 hrs	260 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE GH_MW-RLP-2_WG_2021-07-05_NP	E108	03-Sep-2021	----	----	----		14-Sep-2021	0.25 hrs	259 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE GH_FOX3_WG_2021-07-05_NP	E108	03-Sep-2021	----	----	----		14-Sep-2021	0.25 hrs	260 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE GH_JDW3_WG_2021-07-05_NP	E108	03-Sep-2021	----	----	----		14-Sep-2021	0.25 hrs	260 hrs		* EHTR-FM





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : pH by Meter</b>										
HDPE GH_MW-TD_WG_2021-07-05_NP	E108	03-Sep-2021	----	----	----		14-Sep-2021	0.25 hrs	260 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_FOX3_WG_2021-07-05_NP	E162	03-Sep-2021	----	----	----		08-Sep-2021	7 days	5 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_JDW3_WG_2021-07-05_NP	E162	03-Sep-2021	----	----	----		08-Sep-2021	7 days	5 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_MW-RLP-2_WG_2021-07-05_NP	E162	03-Sep-2021	----	----	----		08-Sep-2021	7 days	5 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_MW-TD_WG_2021-07-05_NP	E162	03-Sep-2021	----	----	----		08-Sep-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] GH_FOX3_WG_2021-07-05_NP	E160-L	03-Sep-2021	----	----	----		08-Sep-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] GH_JDW3_WG_2021-07-05_NP	E160-L	03-Sep-2021	----	----	----		08-Sep-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] GH_MW-RLP-2_WG_2021-07-05_NP	E160-L	03-Sep-2021	----	----	----		08-Sep-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] GH_MW-TD_WG_2021-07-05_NP	E160-L	03-Sep-2021	----	----	----		08-Sep-2021	7 days	5 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_FOX3_WG_2021-07-05_NP	E121	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_JDW3_WG_2021-07-05_NP	E121	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_MW-RLP-2_WG_2021-07-05_NP	E121	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_MW-TD_WG_2021-07-05_NP	E121	03-Sep-2021	----	----	----		05-Sep-2021	3 days	2 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> GH_FOX3_WG_2021-07-05_NP	E420.Cr-L	03-Sep-2021	----	----	----		10-Sep-2021	180 days	7 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> GH_JDW3_WG_2021-07-05_NP	E420.Cr-L	03-Sep-2021	----	----	----		10-Sep-2021	180 days	7 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> GH_MW-RLP-2_WG_2021-07-05_NP	E420.Cr-L	03-Sep-2021	----	----	----		10-Sep-2021	180 days	7 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> GH_MW-TD_WG_2021-07-05_NP	E420.Cr-L	03-Sep-2021	----	----	----		10-Sep-2021	180 days	7 days	✔	
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_FOX3_WG_2021-07-05_NP	E508-L	03-Sep-2021	----	----	----		13-Sep-2021	28 days	10 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_JDW3_WG_2021-07-05_NP	E508-L	03-Sep-2021	----	----	----		13-Sep-2021	28 days	10 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_MW-RLP-2_WG_2021-07-05_NP	E508-L	03-Sep-2021	----	----	----		13-Sep-2021	28 days	10 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_MW-TD_WG_2021-07-05_NP	E508-L	03-Sep-2021	----	----	----		13-Sep-2021	28 days	10 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_FOX3_WG_2021-07-05_NP	E420	03-Sep-2021	----	----	----		10-Sep-2021	180 days	7 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_JDW3_WG_2021-07-05_NP	E420	03-Sep-2021	----	----	----		10-Sep-2021	180 days	7 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_MW-RLP-2_WG_2021-07-05_NP	E420	03-Sep-2021	----	----	----		10-Sep-2021	180 days	7 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_MW-TD_WG_2021-07-05_NP	E420	03-Sep-2021	----	----	----		10-Sep-2021	180 days	7 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	290695	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	291545	2	28	7.1	5.0	✔
Ammonia by Fluorescence	E298	292443	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	284931	2	22	9.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	284932	2	22	9.0	5.0	✔
Conductivity in Water	E100	291543	2	28	7.1	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	287664	1	18	5.5	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	287801	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	287665	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	290861	1	16	6.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	285017	1	17	5.8	5.0	✔
Fluoride in Water by IC	E235.F	284935	2	22	9.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	284933	2	21	9.5	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	284934	2	21	9.5	5.0	✔
ORP by Electrode	E125	290717	2	40	5.0	5.0	✔
pH by Meter	E108	291544	2	28	7.1	5.0	✔
Sulfate in Water by IC	E235.SO4	284930	2	22	9.0	5.0	✔
TDS by Gravimetry	E162	286346	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	287254	1	13	7.6	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	290363	1	17	5.8	5.0	✔
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	290711	1	18	5.5	5.0	✔
Total Metals in Water by CRC ICPMS	E420	287255	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	290863	1	16	6.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	285669	1	18	5.5	5.0	✔
Turbidity by Nephelometry	E121	285025	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	290695	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	291545	2	28	7.1	5.0	✔
Ammonia by Fluorescence	E298	292443	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	284931	2	22	9.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	284932	2	22	9.0	5.0	✔
Conductivity in Water	E100	291543	2	28	7.1	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	287664	1	18	5.5	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	287801	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	287665	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	290861	1	16	6.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	285017	1	17	5.8	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	284935	2	22	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	284933	2	21	9.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	284934	2	21	9.5	5.0	✓
ORP by Electrode	E125	290717	2	40	5.0	5.0	✓
pH by Meter	E108	291544	2	28	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	284930	2	22	9.0	5.0	✓
TDS by Gravimetry	E162	286346	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	287254	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	290363	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	290711	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	287255	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	290863	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	285669	1	18	5.5	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	286341	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	285025	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	290695	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	291545	2	28	7.1	5.0	✓
Ammonia by Fluorescence	E298	292443	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	284931	2	22	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	284932	2	22	9.0	5.0	✓
Conductivity in Water	E100	291543	2	28	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	287664	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	287801	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	287665	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	290861	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	285017	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	284935	2	22	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	284933	2	21	9.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	284934	2	21	9.5	5.0	✓
Sulfate in Water by IC	E235.SO4	284930	2	22	9.0	5.0	✓
TDS by Gravimetry	E162	286346	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	287254	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	290363	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	290711	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	287255	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	290863	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	285669	1	18	5.5	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	286341	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	285025	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	292443	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	284931	1	22	4.5	5.0	✖
Chloride in Water by IC (Low Level)	E235.Cl-L	284932	1	22	4.5	5.0	✖
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	287664	1	18	5.5	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	287801	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	287665	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	290861	1	16	6.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	285017	1	17	5.8	5.0	✔
Fluoride in Water by IC	E235.F	284935	1	22	4.5	5.0	✖
Nitrate in Water by IC (Low Level)	E235.NO3-L	284933	1	21	4.7	5.0	✖
Nitrite in Water by IC (Low Level)	E235.NO2-L	284934	1	21	4.7	5.0	✖
Sulfate in Water by IC	E235.SO4	284930	1	22	4.5	5.0	✖
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	287254	1	13	7.6	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	290363	1	17	5.8	5.0	✔
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	290711	1	18	5.5	5.0	✔
Total Metals in Water by CRC ICPMS	E420	287255	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	290863	1	16	6.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	285669	1	18	5.5	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2103833**

**Page** : 1 of 19

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-09-03-WG  
**Sampler** : JM/HS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 04-Sep-2021 08:35  
**Date Analysis Commenced** : 05-Sep-2021  
**Issue Date** : 07-Oct-2021 07:46

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
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Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 285025)</b>											
CG2103827-002	Anonymous	turbidity	----	E121	0.10	NTU	0.50	0.57	0.07	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 286346)</b>											
CG2103827-002	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	3400	3370	0.738%	20%	----
<b>Physical Tests (QC Lot: 290695)</b>											
CG2103833-001	GH_MW-RLP-2_WG_2021-07-05_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	6.8	6.4	0.5	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 290717)</b>											
CG2103826-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	375	380	1.32%	15%	----
<b>Physical Tests (QC Lot: 290718)</b>											
CG2103833-002	GH_MW-TD_WG_2021-07-05_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	321	316	1.51%	15%	----
<b>Physical Tests (QC Lot: 291543)</b>											
CG2103826-002	Anonymous	conductivity	----	E100	2.0	µS/cm	4180	4140	0.962%	10%	----
<b>Physical Tests (QC Lot: 291544)</b>											
CG2103826-002	Anonymous	pH	----	E108	0.10	pH units	7.89	7.90	0.127%	4%	----
<b>Physical Tests (QC Lot: 291545)</b>											
CG2103826-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	514	516	0.214%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	514	516	0.214%	20%	----
<b>Physical Tests (QC Lot: 291546)</b>											
CG2103833-002	GH_MW-TD_WG_2021-07-05_NP	conductivity	----	E100	2.0	µS/cm	746	754	1.07%	10%	----
<b>Physical Tests (QC Lot: 291547)</b>											
CG2103833-002	GH_MW-TD_WG_2021-07-05_NP	pH	----	E108	0.10	pH units	8.18	8.22	0.488%	4%	----
<b>Physical Tests (QC Lot: 291548)</b>											
CG2103833-002	GH_MW-TD_WG_2021-07-05_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	344	344	0.204%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	344	344	0.204%	20%	----
<b>Anions and Nutrients (QC Lot: 284930)</b>											
CG2103823-012	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	940	940	0.0280%	20%	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 284931)</b>											
CG2103823-012	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	0.450	0.444	0.007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284932)</b>											
CG2103823-012	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	7.06	6.94	1.74%	20%	----
<b>Anions and Nutrients (QC Lot: 284933)</b>											
CG2103823-012	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.0367	0.0341	0.0026	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284934)</b>											
CG2103823-012	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0072	0.0072	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284935)</b>											
CG2103823-012	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.286	0.288	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284936)</b>											
CG2103833-003	GH_FOX3_WG_2021-07-05_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.273	0.265	3.04%	20%	----
<b>Anions and Nutrients (QC Lot: 284937)</b>											
CG2103833-003	GH_FOX3_WG_2021-07-05_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	82.1	82.1	0.0322%	20%	----
<b>Anions and Nutrients (QC Lot: 284938)</b>											
CG2103833-003	GH_FOX3_WG_2021-07-05_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.33	0.31	0.03	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284939)</b>											
CG2103833-003	GH_FOX3_WG_2021-07-05_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284940)</b>											
CG2103833-003	GH_FOX3_WG_2021-07-05_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284941)</b>											
CG2103833-003	GH_FOX3_WG_2021-07-05_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 285017)</b>											
CG2103832-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 285669)</b>											
CG2103830-008	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0209	0.0212	1.22%	20%	----
<b>Anions and Nutrients (QC Lot: 290363)</b>											
CG2103833-001	GH_MW-RLP-2_WG_2021-07-05_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.724	0.750	3.54%	20%	----
<b>Anions and Nutrients (QC Lot: 292443)</b>											
CG2103811-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0500	mg/L	0.527	0.497	5.88%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 290861)</b>											
CG2103826-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 290863)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Organic / Inorganic Carbon (QC Lot: 290863) - continued</b>											
CG2103826-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.56	0.51	0.06	Diff <2x LOR	----
<b>Total Metals (QC Lot: 287254)</b>											
CG2103823-014	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 287255)</b>											
CG2103823-014	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0032	<0.0030	0.0002	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00014	0.00014	0.000006	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00128	0.00132	3.09%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0139	0.0134	4.06%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.021	0.021	0.00008	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0090 µg/L	0.0000073	0.0000017	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	260	258	1.02%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.12 µg/L	0.00012	0.0000004	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.356	0.353	1.09%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0326	0.0317	2.67%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	160	161	0.471%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0704	0.0726	3.22%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000748	0.000753	0.612%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00055	<0.00050	0.00005	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	4.10	4.12	0.593%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	1.47 µg/L	0.00143	2.74%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.69	3.66	0.643%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	4.86	4.74	2.42%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.318	0.321	1.03%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	289	286	1.14%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00914	0.00896	2.04%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00073	0.00075	0.00002	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 290711)</b>											
CG2103833-001	GH_MW-RLP-2_WG_2021-07-05_NP	mercury, total	7439-97-6	E508-L	0.00050	ng/L	0.00066 µg/L	0.60	0.05	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 287664)</b>											
CG2103823-012	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 287665)</b>											
CG2103823-012	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00019	0.00019	0.00000006	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00104	0.00107	3.01%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0123	0.0128	3.42%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.031	0.031	0.00008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0211 µg/L	0.0000219	0.0000008	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	236	239	1.04%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	11.8 µg/L	0.0120	1.94%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.572	0.584	1.96%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0490	0.0476	2.91%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	152	158	3.61%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.331	0.339	2.24%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00600	0.00602	0.209%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0388	0.0398	2.44%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.84	5.97	2.19%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	1.82 µg/L	0.00180	1.33%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.84	2.76	2.87%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.67	7.83	2.11%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.459	0.468	1.96%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	306	296	3.30%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000066	0.000068	0.000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0113	0.0115	1.46%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0129	0.0132	1.85%	20%	----

Page : 7 of 19  
 Work Order : CG2103833  
 Client : Teck Coal Limited  
 Project : GREENHILLS OPERATION



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 287801)</b>											
CG2103827-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 285025)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 286341)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 286346)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 290695)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 291543)</b>						
conductivity	----	E100	1	µS/cm	1.3	----
<b>Physical Tests (QCLot: 291545)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 291546)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 291548)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 284930)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 284931)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 284932)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 284933)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 284934)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 284935)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 284936)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 284937)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 284938)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 284939)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 284940)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 284941)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 285017)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 285669)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 290363)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 292443)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 290861)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 290863)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Total Metals (QCLot: 287254)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 287255)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 287255) - continued</b>						
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 290711)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	---
<b>Dissolved Metals (QCLot: 287664)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 287665)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 287665) - continued</b>						
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 287801)</b>						
mercury, dissolved	7439-97-6	E509	0.00005	mg/L	<0.000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 285025)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	97.5	85.0	115	---
<b>Physical Tests (QCLot: 286341)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	95.9	85.0	115	---
<b>Physical Tests (QCLot: 286346)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.0	85.0	115	---
<b>Physical Tests (QCLot: 290695)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	108	85.0	115	---
<b>Physical Tests (QCLot: 290717)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Physical Tests (QCLot: 290718)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Physical Tests (QCLot: 291543)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.9	90.0	110	---
<b>Physical Tests (QCLot: 291544)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 291545)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	99.1	85.0	115	---
<b>Physical Tests (QCLot: 291546)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.3	90.0	110	---
<b>Physical Tests (QCLot: 291547)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 291548)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	98.9	85.0	115	---
<b>Anions and Nutrients (QCLot: 284930)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	95.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 284931)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 284932)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	96.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 284933)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 284934)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 284934) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.6	90.0	110	----
<b>Anions and Nutrients (QCLot: 284935)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 284936)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 284937)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	95.8	90.0	110	----
<b>Anions and Nutrients (QCLot: 284938)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	96.0	90.0	110	----
<b>Anions and Nutrients (QCLot: 284939)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	----
<b>Anions and Nutrients (QCLot: 284940)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.7	90.0	110	----
<b>Anions and Nutrients (QCLot: 284941)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.0	90.0	110	----
<b>Anions and Nutrients (QCLot: 285017)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	98.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 285669)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	87.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 290363)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	92.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 292443)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	107	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 290861)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 290863)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Total Metals (QCLot: 287254)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	95.9	80.0	120	----
<b>Total Metals (QCLot: 287255)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	95.7	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	99.2	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	100.0	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 287255) - continued</b>									
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.7	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.8	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.0	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.2	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	93.4	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.9	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	93.4	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	96.1	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	95.0	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	96.7	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	98.3	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.4	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.0	80.0	120	----
<b>Total Metals (QCLot: 290711)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	82.8	80.0	120	----
<b>Dissolved Metals (QCLot: 287664)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 287665)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.6	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.1	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	94.7	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 287665) - continued</b>									
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	86.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	93.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.2	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	89.2	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.3	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.5	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.8	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.2	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	107	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	92.2	80.0	120	----





## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 284930)</b>										
CG2103832-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	93.7 mg/L	100 mg/L	93.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 284931)</b>										
CG2103832-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.528 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 284932)</b>										
CG2103832-004	Anonymous	chloride	16887-00-6	E235.Cl-L	93.8 mg/L	100 mg/L	93.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 284933)</b>										
CG2103832-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.38 mg/L	2.5 mg/L	95.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 284934)</b>										
CG2103832-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.484 mg/L	0.5 mg/L	96.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 284935)</b>										
CG2103832-004	Anonymous	fluoride	16984-48-8	E235.F	0.925 mg/L	1 mg/L	92.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 285017)</b>										
CG2103832-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0529 mg/L	0.05 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 285669)</b>										
CG2103830-009	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0661 mg/L	0.0676 mg/L	97.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 290363)</b>										
CG2103833-002	GH_MW-TD_WG_2021-07-05_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.47 mg/L	2.5 mg/L	98.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 292443)</b>										
CG2103811-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.118 mg/L	0.1 mg/L	118	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 290861)</b>										
CG2103826-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.1 mg/L	23.9 mg/L	101	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 290863)</b>										
CG2103826-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.2 mg/L	23.9 mg/L	105	70.0	130	----
<b>Total Metals (QCLot: 287254)</b>										
CG2103823-015	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0819 mg/L	0.08 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 287255)</b>										
CG2103823-015	Anonymous	aluminum, total	7429-90-5	E420	0.408 mg/L	0.4 mg/L	102	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 287255) - continued</b>										
CG2103823-015	Anonymous	antimony, total	7440-36-0	E420	0.0432 mg/L	0.04 mg/L	108	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		barium, total	7440-39-3	E420	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0816 mg/L	0.08 mg/L	102	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0179 mg/L	0.02 mg/L	89.6	70.0	130	----
		boron, total	7440-42-8	E420	0.203 mg/L	0.2 mg/L	101	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00802 mg/L	0.008 mg/L	100	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		copper, total	7440-50-8	E420	0.0384 mg/L	0.04 mg/L	96.1	70.0	130	----
		iron, total	7439-89-6	E420	3.91 mg/L	4 mg/L	97.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0370 mg/L	0.04 mg/L	92.6	70.0	130	----
		lithium, total	7439-93-2	E420	0.186 mg/L	0.2 mg/L	93.1	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0437 mg/L	0.04 mg/L	109	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	9.27 mg/L	8 mg/L	116	70.0	130	----
		selenium, total	7782-49-2	E420	0.0930 mg/L	0.08 mg/L	116	70.0	130	----
		silicon, total	7440-21-3	E420	19.5 mg/L	20 mg/L	97.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00775 mg/L	0.008 mg/L	96.9	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00757 mg/L	0.008 mg/L	94.7	70.0	130	----
		tin, total	7440-31-5	E420	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		titanium, total	7440-32-6	E420	0.0839 mg/L	0.08 mg/L	105	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.218 mg/L	0.2 mg/L	109	70.0	130	----
		zinc, total	7440-66-6	E420	0.733 mg/L	0.8 mg/L	91.6	70.0	130	----
<b>Total Metals (QCLot: 290711)</b>										
CG2103833-002	GH_MW-TD_WG_2021-07-05_NP	mercury, total	7439-97-6	E508-L	3.83 ng/L	5 ng/L	76.7	70.0	130	----
<b>Dissolved Metals (QCLot: 287664)</b>										
CG2103823-014	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 287665)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 287665) - continued</b>										
CG2103823-014	Anonymous	aluminum, dissolved	7429-90-5	E421	0.196 mg/L	0.2 mg/L	98.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0359 mg/L	0.04 mg/L	89.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00704 mg/L	0.01 mg/L	70.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	88.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00409 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	97.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0899 mg/L	0.1 mg/L	89.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0375 mg/L	0.04 mg/L	93.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0833 mg/L	0.08 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.03 mg/L	10 mg/L	90.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00758 mg/L	0.008 mg/L	94.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00373 mg/L	0.004 mg/L	93.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.402 mg/L	0.4 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 287801)</b>										
CG2103827-004	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000941 mg/L	0.0001 mg/L	94.1	70.0	130	----

Page : 19 of 19  
Work Order : CG2103833  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

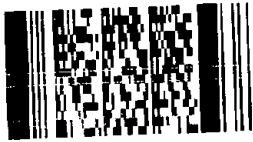
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COC ID: **2021-09-03-WG**

RUSH:

Environmental Division  
Calgary  
Work Order Reference  
**CG2103833**



1 800 467 1300

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Burna-a			Email 1:	teckcoal@equisonline.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burnaa@alsglobal.com			Email 2:	DL-Equis-GHD-Field@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:				
		Province	BC	City	Calgary	Province	AB	Email 4:				
		Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:				
				Phone Number	403 407 1794			Email 6:				
								Email 7:				
								PO number	739453			

DETAILS								ANALYSIS REQUESTED													
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	File	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	
						ANALYSIS	H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4	Sodium bisulphate	ZN acetate, NAOH	BOD	COD	Phenols	VOC/PH/TEX	Sodium bisulphate	
GH_MW-RLP-2_WG_2021-07-05_NP	GH_MW-RLP-2	WG	N	9/3/2021	13:50	G	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GH_MW-TD_WG_2021-07-05_NP	GH_MW-TD	WG	N	9/3/2021	14:40	G	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GH_FOX3_WG_2021-07-05_NP	GH_MW-TD	FD	N	9/3/2021	14:40	G	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GH_JDW3_WG_2021-07-05_NP	GH_MW-TD	FB	N	9/3/2021	14:40	G	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	09/04 8:35

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	<input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge		For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name	JM/HS	Mobile #	
Sampler's Signature		Date/Time	September 3, 2021

*[Handwritten Signature]*



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103664**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000**  
**Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **8/27/2021-WG**  
**Sampler** : **HS/RG**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **3**  
**No. of samples analysed** : **3**

**Page** : **1 of 7**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
**Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **28-Aug-2021 09:40**  
**Date Analysis Commenced** : **29-Aug-2021**  
**Issue Date** : **30-Sep-2021 11:39**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID		GH_POTW10_		GH_POTW15_		GH_POTW09_			
(Matrix: Water)							WG_2021-07-0		WG_2021-07-0		WG_2021-07-0			
							5_NP		5_NP		5_NP			
Client sampling date / time					27-Aug-2021		27-Aug-2021		27-Aug-2021		----		----	
					12:30		12:40		11:55		----		----	
Analyte	CAS Number	Method	LOR	Unit	CG2103664-001	CG2103664-002	CG2103664-003	-----	-----	-----	-----	-----	-----	
					Result	Result	Result	----	----	----	----	----	----	
<b>Physical Tests</b>														
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	8.5	<2.0	----	----					
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	185	198	231	----	----					
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----					
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----					
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	185	198	231	----	----					
conductivity	----	E100	2.0	µS/cm	724	919	762	----	----					
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	387	494	422	----	----					
oxidation-reduction potential [ORP]	----	E125	0.10	mV	284	255	221	----	----					
pH	----	E108	0.10	pH units	7.98	7.91	8.05	----	----					
solids, total dissolved [TDS]	----	E162	10	mg/L	487	647	504	----	----					
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	3.8	<1.0	----	----					
turbidity	----	E121	0.10	NTU	6.31	14.6	0.74	----	----					
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	225	242	282	----	----					
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----					
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----					
<b>Anions and Nutrients</b>														
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0587	0.0478	0.0505	----	----					
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	0.122	<0.050	----	----					
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	8.16	31.4	5.90	----	----					
fluoride	16984-48-8	E235.F	0.020	mg/L	0.718	0.139	0.676	----	----					
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.132	0.090	0.052	----	----					
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.664	0.0050	0.0135	----	----					
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0197	<0.0010	<0.0010	----	----					
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0.0011	----	----					
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	----	----					
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	193	259	183	----	----					
<b>Organic / Inorganic Carbon</b>														
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.25	1.88	1.50	----	----					
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.48	2.08	1.56	----	----					





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_POTW10_WG_2021-07-05_NP	GH_POTW15_WG_2021-07-05_NP	GH_POTW09_WG_2021-07-05_NP	----	----
Client sampling date / time					27-Aug-2021 12:30	27-Aug-2021 12:40	27-Aug-2021 11:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103664-001	CG2103664-002	CG2103664-003	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	8.03	10.2	8.63	----	----	
cation sum	----	EC101	0.10	meq/L	8.03	10.4	8.83	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	102	102	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	0.971	1.14	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00124	0.00169	0.00054	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0179	0.0207	0.0329	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.039	0.021	0.021	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0052	0.0101	0.0115	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	91.3	127	101	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.14	0.21	0.18	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0.00625	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.696	0.863	0.159	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000083	0.000118	0.000150	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0177	0.0162	0.0140	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	41.9	45.4	42.8	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0482	0.195	0.178	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00298	0.00260	0.00263	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00119	0.00093	0.00138	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.75	1.58	1.64	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	3.70	<0.050	1.04	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	4.89	4.38	4.96	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	5.18	11.0	7.54	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_POTW10_WG_2021-07-05_NP	GH_POTW15_WG_2021-07-05_NP	GH_POTW09_WG_2021-07-05_NP	----	----
Client sampling date / time					27-Aug-2021 12:30	27-Aug-2021 12:40	27-Aug-2021 11:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103664-001	CG2103664-002	CG2103664-003	-----	-----	
					Result	Result	Result	----	----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.583	0.426	0.388	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	69.1	92.7	65.6	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	0.000017	0.000018	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000718	0.00150	0.00234	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0.0111	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00106	0.00157	0.00048	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0176	0.0202	0.0330	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.037	0.020	0.021	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0077	0.0109	0.0116	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	87.8	124	100	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.13	0.21	0.17	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0.00113	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.471	0.848	0.151	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0174	0.0162	0.0136	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	40.7	44.7	41.9	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0469	0.197	0.176	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00272	0.00230	0.00234	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00163	0.00149	0.00101	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.70	1.58	1.60	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_POTW10_ WG_2021-07-0 5_NP	GH_POTW15_ WG_2021-07-0 5_NP	GH_POTW09_ WG_2021-07-0 5_NP	----	----
Client sampling date / time					27-Aug-2021 12:30	27-Aug-2021 12:40	27-Aug-2021 11:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103664-001 Result	CG2103664-002 Result	CG2103664-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	3.99	0.080	1.18	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.85	4.32	4.85	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.42	11.8	7.69	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.515	0.372	0.351	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	65.9	89.4	63.4	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000014	0.000018	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000609	0.00128	0.00205	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0019	0.0040	0.0080	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103664</b>	Page	: 1 of 17
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jeremy Enns	Account Manager	: Justine Buma-a
Address	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 865 3305	Telephone	: +1 403 407 1800
Project	: GREENHILLS OPERATION	Date Samples Received	: 28-Aug-2021 09:40
PO	: VPO00739453	Issue Date	: 30-Sep-2021 11:39
C-O-C number	: 8/27/2021-WG		
Sampler	: HS/RG		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_POTW09_WG_2021-07-05_NP	E298	27-Aug-2021	08-Sep-2021	----	----		08-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_POTW10_WG_2021-07-05_NP	E298	27-Aug-2021	08-Sep-2021	----	----		08-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_POTW15_WG_2021-07-05_NP	E298	27-Aug-2021	08-Sep-2021	----	----		08-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_POTW09_WG_2021-07-05_NP	E235.Br-L	27-Aug-2021	----	----	----		29-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_POTW10_WG_2021-07-05_NP	E235.Br-L	27-Aug-2021	----	----	----		29-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_POTW15_WG_2021-07-05_NP	E235.Br-L	27-Aug-2021	----	----	----		29-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_POTW09_WG_2021-07-05_NP	E235.Cl-L	27-Aug-2021	----	----	----		29-Aug-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
	Rec	Actual		Rec	Actual					
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE GH_POTW10_WG_2021-07-05_NP	E235.Cl-L	27-Aug-2021	----	----	----		29-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE GH_POTW15_WG_2021-07-05_NP	E235.Cl-L	27-Aug-2021	----	----	----		29-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE GH_POTW09_WG_2021-07-05_NP	E378-U	27-Aug-2021	----	----	----		30-Aug-2021	3 days	3 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE GH_POTW10_WG_2021-07-05_NP	E378-U	27-Aug-2021	----	----	----		30-Aug-2021	3 days	3 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE GH_POTW15_WG_2021-07-05_NP	E378-U	27-Aug-2021	----	----	----		30-Aug-2021	3 days	3 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE GH_POTW09_WG_2021-07-05_NP	E235.F	27-Aug-2021	----	----	----		29-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE GH_POTW10_WG_2021-07-05_NP	E235.F	27-Aug-2021	----	----	----		29-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE GH_POTW15_WG_2021-07-05_NP	E235.F	27-Aug-2021	----	----	----		29-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE GH_POTW09_WG_2021-07-05_NP	E235.NO3-L	27-Aug-2021	----	----	----		29-Aug-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_POTW10_WG_2021-07-05_NP	E235.NO3-L	27-Aug-2021	----	----	----		29-Aug-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_POTW15_WG_2021-07-05_NP	E235.NO3-L	27-Aug-2021	----	----	----		29-Aug-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_POTW09_WG_2021-07-05_NP	E235.NO2-L	27-Aug-2021	----	----	----		29-Aug-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_POTW10_WG_2021-07-05_NP	E235.NO2-L	27-Aug-2021	----	----	----		29-Aug-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_POTW15_WG_2021-07-05_NP	E235.NO2-L	27-Aug-2021	----	----	----		29-Aug-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_POTW09_WG_2021-07-05_NP	E235.SO4	27-Aug-2021	----	----	----		29-Aug-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_POTW10_WG_2021-07-05_NP	E235.SO4	27-Aug-2021	----	----	----		29-Aug-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_POTW15_WG_2021-07-05_NP	E235.SO4	27-Aug-2021	----	----	----		29-Aug-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW09_WG_2021-07-05_NP	E318	27-Aug-2021	03-Sep-2021	----	----		09-Sep-2021	28 days	13 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW10_WG_2021-07-05_NP	E318	27-Aug-2021	03-Sep-2021	----	----		09-Sep-2021	28 days	13 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW15_WG_2021-07-05_NP	E318	27-Aug-2021	03-Sep-2021	----	----		09-Sep-2021	28 days	13 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW09_WG_2021-07-05_NP	E372-U	27-Aug-2021	02-Sep-2021	----	----		03-Sep-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW10_WG_2021-07-05_NP	E372-U	27-Aug-2021	02-Sep-2021	----	----		03-Sep-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW15_WG_2021-07-05_NP	E372-U	27-Aug-2021	02-Sep-2021	----	----		03-Sep-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW09_WG_2021-07-05_NP	E421.Cr-L	27-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW10_WG_2021-07-05_NP	E421.Cr-L	27-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW15_WG_2021-07-05_NP	E421.Cr-L	27-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_POTW09_WG_2021-07-05_NP	E509	27-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	28 days	6 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_POTW10_WG_2021-07-05_NP	E509	27-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_POTW15_WG_2021-07-05_NP	E509	27-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW09_WG_2021-07-05_NP	E421	27-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW10_WG_2021-07-05_NP	E421	27-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW15_WG_2021-07-05_NP	E421	27-Aug-2021	02-Sep-2021	----	----		02-Sep-2021	180 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_POTW09_WG_2021-07-05_NP	E358-L	27-Aug-2021	03-Sep-2021	----	----		05-Sep-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_POTW10_WG_2021-07-05_NP	E358-L	27-Aug-2021	03-Sep-2021	----	----		05-Sep-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_POTW15_WG_2021-07-05_NP	E358-L	27-Aug-2021	03-Sep-2021	----	----		05-Sep-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW09_WG_2021-07-05_NP	E355-L	27-Aug-2021	03-Sep-2021	----	----		05-Sep-2021	28 days	9 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW10_WG_2021-07-05_NP	E355-L	27-Aug-2021	03-Sep-2021	----	----		05-Sep-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW15_WG_2021-07-05_NP	E355-L	27-Aug-2021	03-Sep-2021	----	----		05-Sep-2021	28 days	9 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_POTW09_WG_2021-07-05_NP	E283	27-Aug-2021	----	----	----		03-Sep-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_POTW10_WG_2021-07-05_NP	E283	27-Aug-2021	----	----	----		03-Sep-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_POTW15_WG_2021-07-05_NP	E283	27-Aug-2021	----	----	----		03-Sep-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_POTW09_WG_2021-07-05_NP	E290	27-Aug-2021	----	----	----		04-Sep-2021	14 days	8 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_POTW10_WG_2021-07-05_NP	E290	27-Aug-2021	----	----	----		04-Sep-2021	14 days	8 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_POTW15_WG_2021-07-05_NP	E290	27-Aug-2021	----	----	----		04-Sep-2021	14 days	8 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> GH_POTW09_WG_2021-07-05_NP	E100	27-Aug-2021	----	----	----		04-Sep-2021	28 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_POTW10_WG_2021-07-05_NP	E100	27-Aug-2021	----	----	----		04-Sep-2021	28 days	8 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_POTW15_WG_2021-07-05_NP	E100	27-Aug-2021	----	----	----		04-Sep-2021	28 days	8 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_POTW10_WG_2021-07-05_NP	E125	27-Aug-2021	----	----	----		03-Sep-2021	0.34 hrs	164 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_POTW15_WG_2021-07-05_NP	E125	27-Aug-2021	----	----	----		03-Sep-2021	0.34 hrs	165 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_POTW09_WG_2021-07-05_NP	E125	27-Aug-2021	----	----	----		03-Sep-2021	0.34 hrs	166 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_POTW09_WG_2021-07-05_NP	E108	27-Aug-2021	----	----	----		04-Sep-2021	0.25 hrs	191 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_POTW10_WG_2021-07-05_NP	E108	27-Aug-2021	----	----	----		04-Sep-2021	0.25 hrs	191 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_POTW15_WG_2021-07-05_NP	E108	27-Aug-2021	----	----	----		04-Sep-2021	0.25 hrs	191 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_POTW09_WG_2021-07-05_NP	E162	27-Aug-2021	----	----	----		02-Sep-2021	7 days	6 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> GH_POTW10_WG_2021-07-05_NP	E162	27-Aug-2021	----	----	----		02-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> GH_POTW15_WG_2021-07-05_NP	E162	27-Aug-2021	----	----	----		02-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_POTW09_WG_2021-07-05_NP	E160-L	27-Aug-2021	----	----	----		02-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_POTW10_WG_2021-07-05_NP	E160-L	27-Aug-2021	----	----	----		02-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_POTW15_WG_2021-07-05_NP	E160-L	27-Aug-2021	----	----	----		02-Sep-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_POTW09_WG_2021-07-05_NP	E121	27-Aug-2021	----	----	----		30-Aug-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_POTW10_WG_2021-07-05_NP	E121	27-Aug-2021	----	----	----		30-Aug-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_POTW15_WG_2021-07-05_NP	E121	27-Aug-2021	----	----	----		30-Aug-2021	3 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> GH_POTW15_WG_2021-07-05_NP	E420.Cr-L	27-Aug-2021	----	----	----		03-Sep-2021	180 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_POTW09_WG_2021-07-05_NP	E420.Cr-L	27-Aug-2021	----	----	----		03-Sep-2021	180 days	7 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_POTW10_WG_2021-07-05_NP	E420.Cr-L	27-Aug-2021	----	----	----		03-Sep-2021	180 days	7 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_POTW09_WG_2021-07-05_NP	E508-L	27-Aug-2021	----	----	----		02-Sep-2021	28 days	6 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_POTW10_WG_2021-07-05_NP	E508-L	27-Aug-2021	----	----	----		02-Sep-2021	28 days	6 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_POTW15_WG_2021-07-05_NP	E508-L	27-Aug-2021	----	----	----		02-Sep-2021	28 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_POTW15_WG_2021-07-05_NP	E420	27-Aug-2021	----	----	----		03-Sep-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_POTW09_WG_2021-07-05_NP	E420	27-Aug-2021	----	----	----		03-Sep-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_POTW10_WG_2021-07-05_NP	E420	27-Aug-2021	----	----	----		03-Sep-2021	180 days	7 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	283778	2	29	6.9	5.0	✓
Alkalinity Species by Titration	E290	284520	2	29	6.9	5.0	✓
Ammonia by Fluorescence	E298	286434	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	279376	1	6	16.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	279377	1	6	16.6	5.0	✓
Conductivity in Water	E100	284518	2	29	6.9	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	282491	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	283262	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	282490	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	284109	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	279652	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	279380	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	279378	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	279379	1	6	16.6	5.0	✓
ORP by Electrode	E125	283584	2	40	5.0	5.0	✓
pH by Meter	E108	284519	2	29	6.9	5.0	✓
Sulfate in Water by IC	E235.SO4	279375	1	6	16.6	5.0	✓
TDS by Gravimetry	E162	282452	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	282397	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	283821	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	283027	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	282396	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	284110	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	281648	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	279539	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	283778	2	29	6.9	5.0	✓
Alkalinity Species by Titration	E290	284520	2	29	6.9	5.0	✓
Ammonia by Fluorescence	E298	286434	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	279376	1	6	16.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	279377	1	6	16.6	5.0	✓
Conductivity in Water	E100	284518	2	29	6.9	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	282491	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	283262	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	282490	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	284109	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	279652	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	279380	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	279378	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	279379	1	6	16.6	5.0	✓
ORP by Electrode	E125	283584	2	40	5.0	5.0	✓
pH by Meter	E108	284519	2	29	6.9	5.0	✓
Sulfate in Water by IC	E235.SO4	279375	1	6	16.6	5.0	✓
TDS by Gravimetry	E162	282452	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	282397	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	283821	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	283027	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	282396	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	284110	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	281648	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	282446	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	279539	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	283778	2	29	6.9	5.0	✓
Alkalinity Species by Titration	E290	284520	2	29	6.9	5.0	✓
Ammonia by Fluorescence	E298	286434	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	279376	1	6	16.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	279377	1	6	16.6	5.0	✓
Conductivity in Water	E100	284518	2	29	6.9	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	282491	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	283262	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	282490	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	284109	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	279652	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	279380	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	279378	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	279379	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	279375	1	6	16.6	5.0	✓
TDS by Gravimetry	E162	282452	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	282397	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	283821	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	283027	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	282396	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	284110	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	281648	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	282446	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	279539	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	286434	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	279376	1	6	16.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	279377	1	6	16.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	282491	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	283262	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	282490	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	284109	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	279652	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	279380	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	279378	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	279379	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	279375	1	6	16.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	282397	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	283821	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	283027	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	282396	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	284110	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	281648	2	40	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

Page : 17 of 17  
Work Order : CG2103664  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2103664**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 8/27/2021-WG  
**Sampler** : HS/RG  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 28-Aug-2021 09:40  
**Date Analysis Commenced** : 29-Aug-2021  
**Issue Date** : 30-Sep-2021 11:39

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 18  
Work Order : CG2103664  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 279539)</b>											
CG2103658-001	Anonymous	turbidity	----	E121	0.10	NTU	0.83	0.77	0.06	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 282452)</b>											
CG2103661-002	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 283584)</b>											
CG2103661-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	409	408	0.465%	15%	----
<b>Physical Tests (QC Lot: 283585)</b>											
CG2103664-002	GH_POTW15_WG_2021-07-05_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	255	252	0.868%	15%	----
<b>Physical Tests (QC Lot: 283778)</b>											
CG2103661-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 283779)</b>											
CG2103664-002	GH_POTW15_WG_2021-07-05_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	8.5	8.2	0.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 284518)</b>											
CG2103661-002	Anonymous	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 284519)</b>											
CG2103661-002	Anonymous	pH	----	E108	0.10	pH units	5.35	5.22	2.46%	4%	----
<b>Physical Tests (QC Lot: 284520)</b>											
CG2103661-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 284521)</b>											
CG2103664-002	GH_POTW15_WG_2021-07-05_NP	conductivity	----	E100	2.0	µS/cm	919	927	0.867%	10%	----
<b>Physical Tests (QC Lot: 284522)</b>											
CG2103664-002	GH_POTW15_WG_2021-07-05_NP	pH	----	E108	0.10	pH units	7.91	7.88	0.380%	4%	----
<b>Physical Tests (QC Lot: 284523)</b>											
CG2103664-002	GH_POTW15_WG_2021-07-05_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	198	201	1.45%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	198	201	1.45%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 279375)</b>											
CG2103664-001	GH_POTW10_WG_2021-07-05_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	193	193	0.0802%	20%	----
<b>Anions and Nutrients (QC Lot: 279376)</b>											
CG2103664-001	GH_POTW10_WG_2021-07-05_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 279377)</b>											
CG2103664-001	GH_POTW10_WG_2021-07-05_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	8.16	8.12	0.463%	20%	----
<b>Anions and Nutrients (QC Lot: 279378)</b>											
CG2103664-001	GH_POTW10_WG_2021-07-05_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.664	0.661	0.362%	20%	----
<b>Anions and Nutrients (QC Lot: 279379)</b>											
CG2103664-001	GH_POTW10_WG_2021-07-05_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0197	0.0193	2.05%	20%	----
<b>Anions and Nutrients (QC Lot: 279380)</b>											
CG2103664-001	GH_POTW10_WG_2021-07-05_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.718	0.738	2.75%	20%	----
<b>Anions and Nutrients (QC Lot: 279652)</b>											
CG2103662-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 281648)</b>											
CG2103661-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 281649)</b>											
CG2103664-002	GH_POTW15_WG_2021-07-05_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 283821)</b>											
CG2103664-001	GH_POTW10_WG_2021-07-05_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.132	0.126	0.006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 286434)</b>											
CG2103662-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.125	mg/L	1.93	1.92	0.264%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 284109)</b>											
CG2103664-001	GH_POTW10_WG_2021-07-05_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.25	1.46	0.20	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 284110)</b>											
CG2103664-001	GH_POTW10_WG_2021-07-05_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.48	1.42	0.06	Diff <2x LOR	----
<b>Total Metals (QC Lot: 282396)</b>											
CG2103638-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0046	0.0065	0.0019	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	0.00015	0.000002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00174	0.00170	2.19%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	3.93	3.96	0.737%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 282396) - continued</b>											
CG2103638-001	Anonymous	bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.027	0.026	0.0004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	<0.0100 µg/L	<0.0000050	0.0000050	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	56.9	56.9	0.0446%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	1.06 µg/L	0.00108	1.86%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	2.24	2.21	1.14%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000053	0.000054	0.000001	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.578	0.560	3.06%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	34.2	34.9	1.89%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0318	0.0323	1.33%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0208	0.0209	0.274%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00067	0.00072	0.00005	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	24.3	24.7	1.86%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.79	2.83	1.44%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	33.7	33.9	0.517%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.248	0.246	0.785%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000137	0.000128	6.53%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0032	0.0034	0.0002	Diff <2x LOR	----
<b>Total Metals (QC Lot: 282397)</b>											
CG2103638-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 283027)</b>											
CG2103664-001	GH_POTW10_WG_2021-07-05_NP	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 282490)</b>											
CG2103662-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0030	0.0026	0.0005	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00282	0.00276	2.16%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0145	0.0147	1.28%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 282490) - continued</b>											
CG2103662-001	Anonymous	beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.114	0.109	0.005	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	3.25 µg/L	0.00308	5.46%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	561	537	4.37%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	64.7 µg/L	0.0622	3.83%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00081	0.00081	0.000001	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.813	0.770	5.42%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	231	223	3.56%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.689	0.669	2.87%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00703	0.00665	5.52%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.359	0.354	1.66%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	13.6	13.3	2.50%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	4.28 µg/L	0.00458	6.93%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	3.00	2.96	1.39%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	15.2	14.6	3.67%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.634	0.604	4.75%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	437	426	2.65%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000238	0.000225	5.37%	20%	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0392	0.0376	4.15%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.183	0.180	1.21%	20%	----
<b>Dissolved Metals (QC Lot: 282491)</b>											
CG2103662-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 283262)</b>											
CG2103661-004	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 279539)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 282446)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 282452)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 283778)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 283779)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 284518)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 284520)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 284521)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 284523)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 279375)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 279376)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 279377)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 279378)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 279379)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 279380)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 279652)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 281648)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 281649)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 283821)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 286434)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 284109)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 284110)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Total Metals (QCLot: 282396)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 282396) - continued</b>						
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 282397)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 283027)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	---
<b>Dissolved Metals (QCLot: 282490)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 282490) - continued</b>						
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 282491)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 283262)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 279539)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	---
<b>Physical Tests (QCLot: 282446)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	95.0	85.0	115	---
<b>Physical Tests (QCLot: 282452)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.6	85.0	115	---
<b>Physical Tests (QCLot: 283584)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.9	95.4	104	---
<b>Physical Tests (QCLot: 283585)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Physical Tests (QCLot: 283778)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 283779)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 284518)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.6	90.0	110	---
<b>Physical Tests (QCLot: 284519)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 284520)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	90.9	85.0	115	---
<b>Physical Tests (QCLot: 284521)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	---
<b>Physical Tests (QCLot: 284522)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 284523)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	92.6	85.0	115	---
<b>Anions and Nutrients (QCLot: 279375)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	97.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 279376)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	106	85.0	115	---
<b>Anions and Nutrients (QCLot: 279377)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 279378)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 279378) - continued</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 279379)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 279380)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.6	90.0	110	----
<b>Anions and Nutrients (QCLot: 279652)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	98.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 281648)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	97.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 281649)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	92.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 283821)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	91.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 286434)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	108	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 284109)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	88.3	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 284110)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	88.5	80.0	120	----
<b>Total Metals (QCLot: 282396)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	99.3	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.9	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.4	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.3	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	98.9	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.7	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	100	80.0	120	----





Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 282396) - continued</b>									
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.8	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	98.8	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.3	80.0	120	----
<b>Total Metals (QCLot: 282397)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Total Metals (QCLot: 283027)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	90.0	80.0	120	----
<b>Dissolved Metals (QCLot: 282490)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.9	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	95.0	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	94.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.5	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.3	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.8	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	106	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 282490) - continued</b>									
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	96.7	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.7	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	94.5	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	91.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	90.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.5	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.6	80.0	120	----
<b>Dissolved Metals (QCLot: 282491)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.2	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.6	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 279375)</b>										
CG2103664-002	GH_POTW15_WG_2021-07-05_NP	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 279376)</b>										
CG2103664-002	GH_POTW15_WG_2021-07-05_NP	bromide	24959-67-9	E235.Br-L	0.458 mg/L	0.5 mg/L	91.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 279377)</b>										
CG2103664-002	GH_POTW15_WG_2021-07-05_NP	chloride	16887-00-6	E235.Cl-L	89.8 mg/L	100 mg/L	89.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 279378)</b>										
CG2103664-002	GH_POTW15_WG_2021-07-05_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.25 mg/L	2.5 mg/L	90.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 279379)</b>										
CG2103664-002	GH_POTW15_WG_2021-07-05_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.461 mg/L	0.5 mg/L	92.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 279380)</b>										
CG2103664-002	GH_POTW15_WG_2021-07-05_NP	fluoride	16984-48-8	E235.F	0.856 mg/L	1 mg/L	85.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 279652)</b>										
CG2103662-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0546 mg/L	0.05 mg/L	109	70.0	130	----
<b>Anions and Nutrients (QCLot: 281648)</b>										
CG2103661-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0504 mg/L	0.0676 mg/L	74.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 281649)</b>										
CG2103664-003	GH_POTW09_WG_2021-07-05_NP	phosphorus, total	7723-14-0	E372-U	0.0509 mg/L	0.0676 mg/L	75.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 283821)</b>										
CG2103664-002	GH_POTW15_WG_2021-07-05_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.66 mg/L	2.5 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 286434)</b>										
CG2103662-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 284109)</b>										
CG2103664-001	GH_POTW10_WG_2021-07-05_NP	carbon, dissolved organic [DOC]	----	E358-L	21.7 mg/L	23.9 mg/L	90.7	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 284110)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Organic / Inorganic Carbon (QCLot: 284110) - continued</b>										
CG2103664-001	GH_POTW10_WG_2021-07-05_NP	carbon, total organic [TOC]	----	E355-L	23.1 mg/L	23.9 mg/L	96.8	70.0	130	----
<b>Total Metals (QCLot: 282396)</b>										
CG2103638-002	Anonymous	aluminum, total	7429-90-5	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, total	7440-36-0	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00981 mg/L	0.01 mg/L	98.1	70.0	130	----
		boron, total	7440-42-8	E420	0.096 mg/L	0.1 mg/L	96.5	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		iron, total	7439-89-6	E420	1.87 mg/L	2 mg/L	93.4	70.0	130	----
		lead, total	7439-92-1	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		lithium, total	7439-93-2	E420	0.0942 mg/L	0.1 mg/L	94.2	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		potassium, total	7440-09-7	E420	4.17 mg/L	4 mg/L	104	70.0	130	----
		selenium, total	7782-49-2	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		silicon, total	7440-21-3	E420	9.48 mg/L	10 mg/L	94.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, total	17341-25-2	E420	2.07 mg/L	2 mg/L	104	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	19.9 mg/L	20 mg/L	99.6	70.0	130	----
		thallium, total	7440-28-0	E420	0.00394 mg/L	0.004 mg/L	98.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		titanium, total	7440-32-6	E420	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		uranium, total	7440-61-1	E420	0.00418 mg/L	0.004 mg/L	104	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.388 mg/L	0.4 mg/L	97.0	70.0	130	----
<b>Total Metals (QCLot: 282397)</b>										
CG2103638-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 283027)</b>										
CG2103664-002	GH_POTW15_WG_2021-07-05_NP	mercury, total	7439-97-6	E508-L	5.87 ng/L	5 ng/L	117	70.0	130	----
<b>Dissolved Metals (QCLot: 282490)</b>										
CG2103662-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.393 mg/L	0.4 mg/L	98.4	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0402 mg/L	0.04 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0372 mg/L	0.04 mg/L	92.9	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0800 mg/L	0.08 mg/L	100.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0168 mg/L	0.02 mg/L	84.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00805 mg/L	0.008 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0355 mg/L	0.04 mg/L	88.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.75 mg/L	4 mg/L	93.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0360 mg/L	0.04 mg/L	89.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0861 mg/L	0.08 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	19.1 mg/L	20 mg/L	95.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00783 mg/L	0.008 mg/L	97.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00714 mg/L	0.008 mg/L	89.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0805 mg/L	0.08 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.725 mg/L	0.8 mg/L	90.6	70.0	130	----
<b>Dissolved Metals (QCLot: 282491)</b>										
CG2103662-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0778 mg/L	0.08 mg/L	97.3	70.0	130	----

Page : 18 of 18  
 Work Order : CG2103664  
 Client : Teck Coal Limited  
 Project : GREENHILLS OPERATION



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 283262)</b>										
CG2103661-005	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000991 mg/L	0.0001 mg/L	99.1	70.0	130	----

COC ID: 8/27/2021-WG

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job# Greenhills Operation				Lab Name ALS Calgary				Report Format / Distribution				
Project Manager Jeremy Enns				Lab Contact Justine Buma-a				Email 1: PL-Equis-GHO-Field@teck.com		Excel	PDF	EDD
Email jeremy.enns@teck.com				Email Justine.burnaa@alsglobal.com				Email 2: teckcoal@equisonline.com		X	X	X
City Elkford		Province BC		City Calgary		Province AB		Email 6:				
Postal Code V0B1H0		Country Canada		Postal Code T1Y 7B5		Country Can		Email 7:				
Environmental Division Calgary Work Order Reference <b>CG2103664</b>				Phone Number 403 407 1794				Email 8:				
								Email 9:				
								PO number 739453				



Telephone : +1 403 407 1800

SAMPLE DETAILS							ANALYSIS REQUESTED												
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Filter	Preserv.	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-IKN/IOC	EPH	BOD/COLOUR	TSS/TURBIDITY	SULPHIDE	SULPHATE
GH_POTW10_WG_2021-07-02_NP_07-05	N	8/27/2021	12:30	G	7	N	NONE	1	1	1	1	1	1	1					
GH_POTW15_WG_2021-08-02_NP_07-05	N	8/27/2021	12:40	G	7	N	HNO3	1	1	1	1	1	1	1					
GH_POTW09_WG_2021-08-02_NP_07-05	N	8/27/2021	11:55	G	7	N	NONE	1	1	1	1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	28/07/21 1:45

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	HS/RC	Mobile #
Regular (default) X	Priority (2-3 business days) - 50% surcharge			
	Emergency (1 Business Day) - 100% surcharge	Sampler's Signature		Date/Time
	For Emergency <1 Day, ASAP or Weekend - Contact ALS			August 27, 2021



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2104553**  
**Client** : **Teck Coal Limited**  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
                   Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 9/30/2021-WG  
**Sampler** : SS/RG  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 01-Oct-2021 09:00  
**Date Analysis Commenced** : 01-Oct-2021  
**Issue Date** : 28-Oct-2021 12:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dwayne Bennett	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					GH_POTW17_ WG_2021-07-0 5_NP	GH_POTW06_ WG_2021-07-0 5_NP	----	----	----
Client sampling date / time					30-Sep-2021 12:00	30-Sep-2021 12:05	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2104553-001	CG2104553-002	-----	-----	-----
					Result	Result	---	---	---
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	2.5	2.2	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	252	291	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	307	355	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	8.2	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	4.9	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	252	299	----	----	----
conductivity	----	E100	2.0	µS/cm	890	1290	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	578	771	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	511	434	----	----	----
pH	----	E108	0.10	pH units	8.29	8.31	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	766	990	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.5	1.3	----	----	----
turbidity	----	E121	0.10	NTU	8.38	2.42	----	----	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0239	0.0173	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250	<0.250	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	19.0	13.5	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.197	0.108	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.237	0.336	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.421	0.884	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050	<0.0050	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0240	0.0028	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	315	448	----	----	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.44	1.16	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.86	1.22	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_POTW17_ WG_2021-07-0 5_NP	GH_POTW06_ WG_2021-07-0 5_NP	----	----	----
Client sampling date / time					30-Sep-2021 12:00	30-Sep-2021 12:05	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104553-001 Result	CG2104553-002 Result	-----	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	12.2	15.8	----	----	----	
cation sum	----	EC101	0.10	meq/L	12.0	15.8	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	98.4	100	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.826	<0.010	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	0.00010	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00069	0.00013	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0307	0.0532	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.021	0.016	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0217	0.0434	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	141	175	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00097	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.11	<0.10	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00196	0.0814	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.873	0.211	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000159	0.00585	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0157	0.0138	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	63.4	91.0	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0749	0.00401	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00179	0.00109	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00877	0.00206	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.69	1.70	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	10.5	26.0	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	4.27	4.28	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	0.000024	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	9.06	8.02	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_POTW17_ WG_2021-07-0 5_NP	GH_POTW06_ WG_2021-07-0 5_NP	----	----	----
Client sampling date / time					30-Sep-2021 12:00	30-Sep-2021 12:05	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104553-001 Result	CG2104553-002 Result	-----	-----	-----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.373	0.295	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	121	180	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	0.00291	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00198	0.00340	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0049	0.0261	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00059	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0329	0.0538	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.020	0.015	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0217	0.0451	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	132	166	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.10	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00062	0.00221	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.177	0.029	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000050	0.000603	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0146	0.0130	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	60.2	86.6	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0771	0.00230	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00186	0.000821	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00351	0.00126	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.65	1.69	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_POTW17_ WG_2021-07-0 5_NP	GH_POTW06_ WG_2021-07-0 5_NP	----	----	----
Client sampling date / time					30-Sep-2021 12:00	30-Sep-2021 12:05	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104553-001 Result	CG2104553-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	11.1	28.0	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.25	3.98	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	8.92	7.83	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.378	0.300	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	116	162	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00200	0.00337	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0026	0.0079	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104553</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jeremy Enns	Account Manager	: Justine Buma-a
Address	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 865 3305	Telephone	: +1 403 407 1800
Project	: GREENHILLS OPERATION	Date Samples Received	: 01-Oct-2021 09:00
PO	: VPO00739453	Issue Date	: 28-Oct-2021 12:26
C-O-C number	: 9/30/2021-WG		
Sampler	: SS/RG		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW06_WG_2021-07-05_NP	E298	30-Sep-2021	18-Oct-2021	----	----		18-Oct-2021	28 days	18 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW17_WG_2021-07-05_NP	E298	30-Sep-2021	18-Oct-2021	----	----		18-Oct-2021	28 days	18 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_POTW06_WG_2021-07-05_NP	E235.Br-L	30-Sep-2021	----	----	----		02-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_POTW17_WG_2021-07-05_NP	E235.Br-L	30-Sep-2021	----	----	----		02-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_POTW06_WG_2021-07-05_NP	E235.Cl-L	30-Sep-2021	----	----	----		02-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_POTW17_WG_2021-07-05_NP	E235.Cl-L	30-Sep-2021	----	----	----		02-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> GH_POTW06_WG_2021-07-05_NP	E378-U	30-Sep-2021	----	----	----		01-Oct-2021	3 days	1 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE GH_POTW17_WG_2021-07-05_NP	E378-U	30-Sep-2021	----	----	----		01-Oct-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE GH_POTW06_WG_2021-07-05_NP	E235.F	30-Sep-2021	----	----	----		02-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE GH_POTW17_WG_2021-07-05_NP	E235.F	30-Sep-2021	----	----	----		02-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE GH_POTW06_WG_2021-07-05_NP	E235.NO3-L	30-Sep-2021	----	----	----		02-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE GH_POTW17_WG_2021-07-05_NP	E235.NO3-L	30-Sep-2021	----	----	----		02-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE GH_POTW06_WG_2021-07-05_NP	E235.NO2-L	30-Sep-2021	----	----	----		02-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE GH_POTW17_WG_2021-07-05_NP	E235.NO2-L	30-Sep-2021	----	----	----		02-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE GH_POTW06_WG_2021-07-05_NP	E235.SO4	30-Sep-2021	----	----	----		02-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE GH_POTW17_WG_2021-07-05_NP	E235.SO4	30-Sep-2021	----	----	----		02-Oct-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW06_WG_2021-07-05_NP	E318	30-Sep-2021	05-Oct-2021	----	----		05-Oct-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW17_WG_2021-07-05_NP	E318	30-Sep-2021	05-Oct-2021	----	----		05-Oct-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW06_WG_2021-07-05_NP	E372-U	30-Sep-2021	07-Oct-2021	----	----		07-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW17_WG_2021-07-05_NP	E372-U	30-Sep-2021	07-Oct-2021	----	----		07-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW06_WG_2021-07-05_NP	E421.Cr-L	30-Sep-2021	06-Oct-2021	----	----		07-Oct-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW17_WG_2021-07-05_NP	E421.Cr-L	30-Sep-2021	06-Oct-2021	----	----		07-Oct-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_POTW06_WG_2021-07-05_NP	E509	30-Sep-2021	08-Oct-2021	----	----		08-Oct-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_POTW17_WG_2021-07-05_NP	E509	30-Sep-2021	08-Oct-2021	----	----		08-Oct-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW06_WG_2021-07-05_NP	E421	30-Sep-2021	06-Oct-2021	----	----		07-Oct-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW17_WG_2021-07-05_NP	E421	30-Sep-2021	06-Oct-2021	----	----		07-Oct-2021	180 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_POTW06_WG_2021-07-05_NP	E358-L	30-Sep-2021	10-Oct-2021	----	----		10-Oct-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_POTW17_WG_2021-07-05_NP	E358-L	30-Sep-2021	10-Oct-2021	----	----		10-Oct-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW06_WG_2021-07-05_NP	E355-L	30-Sep-2021	10-Oct-2021	----	----		10-Oct-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW17_WG_2021-07-05_NP	E355-L	30-Sep-2021	10-Oct-2021	----	----		10-Oct-2021	28 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_POTW06_WG_2021-07-05_NP	E283	30-Sep-2021	----	----	----		03-Oct-2021	14 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_POTW17_WG_2021-07-05_NP	E283	30-Sep-2021	----	----	----		03-Oct-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_POTW06_WG_2021-07-05_NP	E290	30-Sep-2021	----	----	----		06-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_POTW17_WG_2021-07-05_NP	E290	30-Sep-2021	----	----	----		06-Oct-2021	14 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_POTW06_WG_2021-07-05_NP	E100	30-Sep-2021	----	----	----		06-Oct-2021	28 days	6 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_POTW17_WG_2021-07-05_NP	E100	30-Sep-2021	----	----	----		06-Oct-2021	28 days	6 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_POTW06_WG_2021-07-05_NP	E125	30-Sep-2021	----	----	----		07-Oct-2021	0.25 hrs	172 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_POTW17_WG_2021-07-05_NP	E125	30-Sep-2021	----	----	----		07-Oct-2021	0.25 hrs	172 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_POTW06_WG_2021-07-05_NP	E108	30-Sep-2021	----	----	----		06-Oct-2021	0.25 hrs	144 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_POTW17_WG_2021-07-05_NP	E108	30-Sep-2021	----	----	----		06-Oct-2021	0.25 hrs	144 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_POTW06_WG_2021-07-05_NP	E162	30-Sep-2021	----	----	----		05-Oct-2021	7 days	5 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_POTW17_WG_2021-07-05_NP	E162	30-Sep-2021	----	----	----		05-Oct-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] GH_POTW06_WG_2021-07-05_NP	E160-L	30-Sep-2021	----	----	----		05-Oct-2021	7 days	5 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> GH_POTW17_WG_2021-07-05_NP	E160-L	30-Sep-2021	----	----	----		05-Oct-2021	7 days	5 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> GH_POTW06_WG_2021-07-05_NP	E121	30-Sep-2021	----	----	----		02-Oct-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> GH_POTW17_WG_2021-07-05_NP	E121	30-Sep-2021	----	----	----		02-Oct-2021	3 days	2 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_POTW06_WG_2021-07-05_NP	E420.Cr-L	30-Sep-2021	----	----	----		07-Oct-2021	180 days	7 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_POTW17_WG_2021-07-05_NP	E420.Cr-L	30-Sep-2021	----	----	----		07-Oct-2021	180 days	7 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_POTW06_WG_2021-07-05_NP	E508-L	30-Sep-2021	----	----	----		06-Oct-2021	28 days	6 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_POTW17_WG_2021-07-05_NP	E508-L	30-Sep-2021	----	----	----		06-Oct-2021	28 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_POTW06_WG_2021-07-05_NP	E420	30-Sep-2021	----	----	----		07-Oct-2021	180 days	7 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_POTW17_WG_2021-07-05_NP	E420	30-Sep-2021	----	----	----		07-Oct-2021	180 days	7 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 8 of 15  
Work Order : CG2104553  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	309708	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	312567	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	322853	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	309082	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	309083	1	20	5.0	5.0	✔
Conductivity in Water	E100	312565	0	20	0.0	5.0	✖
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	311592	1	19	5.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	314580	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	311593	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	316464	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	308521	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	309080	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	309084	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	309085	1	20	5.0	5.0	✔
ORP by Electrode	E125	314170	1	20	5.0	5.0	✔
pH by Meter	E108	312566	0	20	0.0	5.0	✖
Sulfate in Water by IC	E235.SO4	309079	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	310907	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	312068	1	2	50.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	309194	1	20	5.0	5.0	✔
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	313190	1	18	5.5	5.0	✔
Total Metals in Water by CRC ICPMS	E420	312069	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	316476	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	310926	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	309346	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	309708	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	312567	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	322853	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	309082	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	309083	1	20	5.0	5.0	✔
Conductivity in Water	E100	312565	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	311592	1	19	5.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	314580	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	311593	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	316464	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	308521	1	20	5.0	5.0	✔





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	309080	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	309084	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	309085	1	20	5.0	5.0	✓
ORP by Electrode	E125	314170	1	20	5.0	5.0	✓
pH by Meter	E108	312566	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	309079	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	310907	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	312068	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	309194	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	313190	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	312069	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	316476	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	310926	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	310902	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	309346	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	309708	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	312567	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	322853	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	309082	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	309083	1	20	5.0	5.0	✓
Conductivity in Water	E100	312565	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	311592	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	314580	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	311593	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	316464	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	308521	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	309080	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	309084	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	309085	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	309079	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	310907	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	312068	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	309194	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	313190	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	312069	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	316476	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	310926	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	310902	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	309346	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	322853	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	309082	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	309083	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	311592	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	314580	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	311593	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	316464	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	308521	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	309080	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	309084	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	309085	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	309079	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	312068	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	309194	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	313190	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	312069	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	316476	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	310926	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

Page : 15 of 15  
Work Order : CG2104553  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			

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## QUALITY CONTROL REPORT

**Work Order** : **CG2104553**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 9/30/2021-WG  
**Sampler** : SS/RG  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 01-Oct-2021 09:00  
**Date Analysis Commenced** : 01-Oct-2021  
**Issue Date** : 28-Oct-2021 12:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dwayne Bennett	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
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Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 309346)</b>											
CG2104548-001	Anonymous	turbidity	----	E121	0.10	NTU	3.15	3.18	0.758%	15%	----
<b>Physical Tests (QC Lot: 309708)</b>											
CG2104524-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<10.0	8.0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 310907)</b>											
CG2104548-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1600	1600	0.188%	20%	----
<b>Physical Tests (QC Lot: 312567)</b>											
CG2104548-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	384	376	2.18%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	384	376	2.18%	20%	----
<b>Physical Tests (QC Lot: 314170)</b>											
CG2104548-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	434	434	0.0692%	15%	----
<b>Anions and Nutrients (QC Lot: 308521)</b>											
CG2104547-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 309079)</b>											
CG2104550-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	55.1	55.9	1.53%	20%	----
<b>Anions and Nutrients (QC Lot: 309080)</b>											
CG2104550-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.077	0.073	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 309082)</b>											
CG2104553-001	GH_POTW17_WG_2021-07-05_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 309083)</b>											
CG2104553-001	GH_POTW17_WG_2021-07-05_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	19.0	19.0	0.182%	20%	----
<b>Anions and Nutrients (QC Lot: 309084)</b>											
CG2104553-001	GH_POTW17_WG_2021-07-05_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.421	0.414	1.60%	20%	----
<b>Anions and Nutrients (QC Lot: 309085)</b>											
CG2104553-001	GH_POTW17_WG_2021-07-05_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 309194)</b>											
CG2104511-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L	1.28	1.31	0.029	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 310926)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 310926) - continued</b>											
CG2104512-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.200	mg/L	6.72	6.44	4.30%	20%	----
<b>Anions and Nutrients (QC Lot: 322853)</b>											
CG2104548-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.130	0.130	0.385%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 316464)</b>											
CG2104548-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.28	1.23	0.04	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 316476)</b>											
CG2104553-001	GH_POTW17_WG_2021-07-05_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.86	4.03	0.17	Diff <2x LOR	----
<b>Total Metals (QC Lot: 312068)</b>											
CG2104553-001	GH_POTW17_WG_2021-07-05_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00013	0.000005	Diff <2x LOR	----
<b>Total Metals (QC Lot: 312069)</b>											
CG2104553-001	GH_POTW17_WG_2021-07-05_NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0069	0.0039	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00069	0.00068	0.000008	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0307	0.0320	4.00%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.021	0.022	0.001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0217 µg/L	0.0000218	0.00000002	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	141	148	4.80%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.11 µg/L	0.00012	0.000007	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00196	0.00194	0.00002	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.873	0.931	6.38%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000159	0.000162	0.000003	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0157	0.0160	2.12%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	63.4	62.0	2.28%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0749	0.0758	1.14%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00179	0.00190	6.30%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00877	0.00896	2.18%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.69	1.69	0.118%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	10.5 µg/L	0.0102	2.65%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.27	4.43	3.80%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	9.06	8.93	1.52%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.373	0.372	0.220%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 312069) - continued</b>											
CG2104553-001	GH_POTW17_WG_2021-07-05_NP	sulfur, total	7704-34-9	E420	0.50	mg/L	121	125	3.31%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00198	0.00202	1.66%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0049	0.0049	0.000009	Diff <2x LOR	----
<b>Total Metals (QC Lot: 313190)</b>											
CG2104553-001	GH_POTW17_WG_2021-07-05_NP	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 311592)</b>											
CG2104505-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 311593)</b>											
CG2104505-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0024	<0.0020	0.0004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00230	0.00238	3.03%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	0.00022	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0385	0.0385	0.0972%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.024	0.024	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.0434 µg/L	0.0000435	0.0000001	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	326	330	1.23%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	0.95 µg/L	0.00099	0.00004	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.213	0.216	1.38%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	230	233	1.38%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.00401	0.00389	3.00%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.0110	0.0115	4.33%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.125	0.126	0.669%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	6.84	6.77	0.930%	20%	----
	selenium, dissolved	7782-49-2	E421	0.100	mg/L	241 µg/L	0.244	1.04%	20%	----	
	silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.99	3.03	1.29%	20%	----	
	silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----	



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 311593) - continued</b>											
CG2104505-001	Anonymous	sodium, dissolved	17341-25-2	E421	0.100	mg/L	28.0	28.6	2.23%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.889	0.900	1.25%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	494	491	0.484%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000021	<0.000020	0.0000009	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0194	0.0194	0.114%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0044	0.0046	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 314580)</b>											
CG2104553-001	GH_POTW17_WG_2021-07-05_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 309346)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 309708)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 310902)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 310907)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 312565)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 312567)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 308521)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 309079)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 309080)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 309082)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 309083)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 309084)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 309085)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 309194)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 310926)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 322853)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 322853) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 316464)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 316476)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 312068)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 312069)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 312069) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 313190)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	---
<b>Dissolved Metals (QCLot: 311592)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 311593)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---

Page : 10 of 18  
Work Order : CG2104553  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 311593) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 314580)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 309346)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.8	85.0	115	---
<b>Physical Tests (QCLot: 309708)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 310902)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.9	85.0	115	---
<b>Physical Tests (QCLot: 310907)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	97.8	85.0	115	---
<b>Physical Tests (QCLot: 312565)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.8	90.0	110	---
<b>Physical Tests (QCLot: 312566)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 312567)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	99.6	85.0	115	---
<b>Physical Tests (QCLot: 314170)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 308521)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	105	80.0	120	---
<b>Anions and Nutrients (QCLot: 309079)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 309080)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 309082)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.3	85.0	115	---
<b>Anions and Nutrients (QCLot: 309083)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 309084)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 309085)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 309194)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	93.7	75.0	125	---
<b>Anions and Nutrients (QCLot: 310926)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 310926) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 322853)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 316464)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	116	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 316476)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	111	80.0	120	----
<b>Total Metals (QCLot: 312068)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Total Metals (QCLot: 312069)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	97.7	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	88.1	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.3	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.8	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.3	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.3	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.2	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.9	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.3	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	99.2	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	99.4	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	91.3	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 312069) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.8	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	96.1	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.5	80.0	120	----
<b>Total Metals (QCLot: 313190)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	90.6	80.0	120	----
<b>Dissolved Metals (QCLot: 311592)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 311593)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.2	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.0	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.7	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.7	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.3	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	93.3	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 311593) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.5	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.3	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.2	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 308521)</b>										
CG2104547-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0549 mg/L	0.05 mg/L	110	70.0	130	----
<b>Anions and Nutrients (QCLot: 309079)</b>										
CG2104550-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 309080)</b>										
CG2104550-002	Anonymous	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 309082)</b>										
CG2104553-002	GH_POTW06_WG_2021-07-05_NP	bromide	24959-67-9	E235.Br-L	0.528 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 309083)</b>										
CG2104553-002	GH_POTW06_WG_2021-07-05_NP	chloride	16887-00-6	E235.Cl-L	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 309084)</b>										
CG2104553-002	GH_POTW06_WG_2021-07-05_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.55 mg/L	2.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 309085)</b>										
CG2104553-002	GH_POTW06_WG_2021-07-05_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.492 mg/L	0.5 mg/L	98.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 309194)</b>										
CG2104511-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	3.17 mg/L	2.5 mg/L	127	70.0	130	----
<b>Anions and Nutrients (QCLot: 310926)</b>										
CG2104512-002	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 322853)</b>										
CG2104561-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 316464)</b>										
CG2104548-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	30.0 mg/L	23.9 mg/L	126	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 316476)</b>										
CG2104553-001	GH_POTW17_WG_2021-07-05_NP	carbon, total organic [TOC]	----	E355-L	30.9 mg/L	23.9 mg/L	129	70.0	130	----
<b>Total Metals (QCLot: 312068)</b>										
CG2104553-002	GH_POTW06_WG_2021-07-05_NP	chromium, total	7440-47-3	E420.Cr-L	0.0421 mg/L	0.04 mg/L	105	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 312069)</b>										
CG2104553-002	GH_POTW06_WG_2021-07-05_NP	aluminum, total	7429-90-5	E420	0.204 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, total	7440-36-0	E420	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00921 mg/L	0.01 mg/L	92.1	70.0	130	----
		boron, total	7440-42-8	E420	0.097 mg/L	0.1 mg/L	96.8	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00396 mg/L	0.004 mg/L	99.0	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	1.93 mg/L	2 mg/L	96.5	70.0	130	----
		lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		lithium, total	7439-93-2	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		nickel, total	7440-02-0	E420	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		potassium, total	7440-09-7	E420	4.25 mg/L	4 mg/L	106	70.0	130	----
		selenium, total	7782-49-2	E420	0.0425 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, total	7440-21-3	E420	9.05 mg/L	10 mg/L	90.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00400 mg/L	0.004 mg/L	99.9	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00382 mg/L	0.004 mg/L	95.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		titanium, total	7440-32-6	E420	0.0428 mg/L	0.04 mg/L	107	70.0	130	----
		uranium, total	7440-61-1	E420	0.00382 mg/L	0.004 mg/L	95.5	70.0	130	----
		vanadium, total	7440-62-2	E420	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		zinc, total	7440-66-6	E420	0.370 mg/L	0.4 mg/L	92.4	70.0	130	----
<b>Total Metals (QCLot: 313190)</b>										
CG2104553-002	GH_POTW06_WG_2021-07-05_NP	mercury, total	7439-97-6	E508-L	4.36 ng/L	5 ng/L	87.2	70.0	130	----
<b>Dissolved Metals (QCLot: 311592)</b>										
CG2104505-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0432 mg/L	0.04 mg/L	108	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 311593)</b>										
CG2104505-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.209 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00952 mg/L	0.01 mg/L	95.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.095 mg/L	0.1 mg/L	95.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00431 mg/L	0.004 mg/L	108	70.0	130	----
		calcium, dissolved	7440-70-2	E421	4.03 mg/L	4 mg/L	101	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0215 mg/L	0.02 mg/L	108	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.03 mg/L	2 mg/L	101	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0999 mg/L	0.1 mg/L	99.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	0.996 mg/L	1 mg/L	99.6	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.23 mg/L	4 mg/L	106	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.20 mg/L	10 mg/L	92.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00394 mg/L	0.004 mg/L	98.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	2.16 mg/L	2 mg/L	108	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.6 mg/L	20 mg/L	97.8	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.439 mg/L	0.4 mg/L	110	70.0	130	----
<b>Dissolved Metals (QCLot: 314580)</b>										
CG2104553-002	GH_POTW06_WG_2021-07-05_NP	mercury, dissolved	7439-97-6	E509	0.0000983 mg/L	0.0001 mg/L	98.3	70.0	130	----



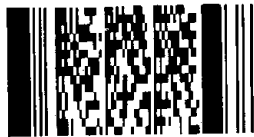
COC ID: 9/30/2021-WG

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Burma-a			Email 1:	DL-Fouis-GHO-Field@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 6:				
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 7:				
				Phone Number	403 407 1794			Email 8:				
								Email 9:				
								PO number	739453			

Environmental Division  
Calgary

Work Order Reference  
**CG2104553**



Telephone: +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED											
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	Preserv	N	N	N	N	N	N	N	N	N	N	n	Y
						ALS_Package-DOC													
						HG-D-CVAF-VA													
						HG-T-U-CVAF-VA				NONE									
						TECKCOAL-MET-D-VA													
						TECKCOAL-MET-T-VA				HNO3									
						TECKCOAL-ROUTINE-VA				NONE									
						ALS_Package-TKN/TOC				H2SO4									
						EPH													
						ROD/COLOUR													
						TSS/TURBIDITY													
						SULPHIDE													
						SULPHATE													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	10/01 9:00

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	SS/RG	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS			
	Sampler's Signature	Date/Time	September 30, 2021

70





SNC-Lavalin  
ATTN: Kim Harber  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 17-AUG-21  
Report Date: 06-DEC-21 12:48 (MT)  
Version: FINAL REV. 2

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2627698  
Project P.O. #: 683032  
Job Reference: 683032  
C of C Numbers: 17-834239  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2627698-1	WATER	16-AUG-21	13:00	GH_MW_PC4A_W G_2021_08_16_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		619			
	Hardness (as CaCO3) (mg/L)		362			
	pH (pH)		7.80			
	ORP (mV)		388			
	Total Suspended Solids (mg/L)		22.2			
	Total Dissolved Solids (mg/L)		414			
	Turbidity (NTU)		42.1			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		4.3			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		222			
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)		222			
	Ammonia as N (mg/L)		0.0275			
	Bicarbonate (HCO3) (mg/L)		271			
	Bromide (Br) (mg/L)		<0.050			
	Carbonate (CO3) (mg/L)		<5.0			
	Chloride (Cl) (mg/L)		0.63			
	Fluoride (F) (mg/L)		0.217			
	Hydroxide (OH) (mg/L)		<5.0			
	Ion Balance (%)		95.1			
	Nitrate and Nitrite (as N) (mg/L)		0.0085			
	Nitrate (as N) (mg/L)		0.0085			
	Nitrite (as N) (mg/L)		<0.0010			
	Total Kjeldahl Nitrogen (mg/L)		<0.20			
	Total Nitrogen (mg/L)		<0.20			
	Orthophosphate-Dissolved (as P) (mg/L)		0.0037			
	Phosphorus (P)-Total (mg/L)		0.0577			
	Sulfate (SO4) (mg/L)		158			
	Anion Sum (meq/L)		7.74			
	Cation Sum (meq/L)		7.36			
	Cation - Anion Balance (%)		-2.5			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		1.60			
	Total Organic Carbon (mg/L)		1.67			
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location		FIELD			
	Aluminum (Al)-Dissolved (mg/L)		0.0040			
	Antimony (Sb)-Dissolved (mg/L)		0.00055			

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2627698-1 WATER 16-AUG-21 13:00 GH_MW_PC4A_W G_2021_08_16_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Arsenic (As)-Dissolved (mg/L)	0.00040			
	Barium (Ba)-Dissolved (mg/L)	0.0296			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.010			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000187			
	Calcium (Ca)-Dissolved (mg/L)	98.1			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	0.00071			
	Copper (Cu)-Dissolved (mg/L)	0.00092			
	Iron (Fe)-Dissolved (mg/L)	0.014			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0037			
	Magnesium (Mg)-Dissolved (mg/L)	28.5			
	Manganese (Mn)-Dissolved (mg/L)	0.147			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00236			
	Nickel (Ni)-Dissolved (mg/L)	0.00301			
	Phosphorus (P)-Dissolved (mg/L)	<0.050			
	Potassium (K)-Dissolved (mg/L)	1.46			
	Selenium (Se)-Dissolved (mg/L)	0.00441			
	Silicon (Si)-Dissolved (mg/L)	4.27			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	1.65			
	Strontium (Sr)-Dissolved (mg/L)	0.150			
	Sulfur (S)-Dissolved (mg/L)	51.8			
	Thallium (Tl)-Dissolved (mg/L)	0.000018			
	Tin (Sn)-Dissolved (mg/L)	0.00015			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.00197			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0102			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030			

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
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### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.</p>			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
<p>Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.</p>			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)  
 Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated  
 Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**TKN-F-ED** Water TKN (as N) by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric





## Quality Control Report

Workorder: L2627698

Report Date: 06-DEC-21

Page 1 of 9

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Kim Harber

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5561798</b>							
<b>WG3601378-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			109.0		%		85-115	19-AUG-21
<b>WG3601378-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	19-AUG-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5567336</b>							
<b>WG3603534-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			107.8		%		85-115	21-AUG-21
<b>WG3603534-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-AUG-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5565536</b>							
<b>WG3603235-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			94.2		%		80-120	23-AUG-21
<b>WG3603235-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-AUG-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5567336</b>							
<b>WG3603534-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-AUG-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5556289</b>							
<b>WG3599451-2</b>	<b>LCS</b>							
Bromide (Br)			98.4		%		85-115	17-AUG-21
<b>WG3599451-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	17-AUG-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5563247</b>							
<b>WG3601872-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.4		%		80-120	20-AUG-21
<b>WG3601872-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-AUG-21
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2627698

Report Date: 06-DEC-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5563247							
<b>WG3601872-2</b>	<b>LCS</b>							
Total Organic Carbon			102.1		%		80-120	20-AUG-21
<b>WG3601872-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	20-AUG-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5556289							
<b>WG3599451-2</b>	<b>LCS</b>							
Chloride (Cl)			100.7		%		85-115	17-AUG-21
<b>WG3599451-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	17-AUG-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5567336							
<b>WG3603534-1</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	21-AUG-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5567336							
<b>WG3603534-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.4		%		90-110	21-AUG-21
<b>WG3603534-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-AUG-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5556289							
<b>WG3599451-2</b>	<b>LCS</b>							
Fluoride (F)			99.5		%		90-110	17-AUG-21
<b>WG3599451-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	17-AUG-21
<b>HG-D-CVAA-CL</b>	<b>Water</b>							
Batch	R5563744							
<b>WG3602055-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			118.0		%		80-120	21-AUG-21
<b>WG3602055-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	21-AUG-21
<b>MET-D-CCMS-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2627698

Report Date: 06-DEC-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5565536</b>							
<b>WG3603235-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			102.1		%		80-120	23-AUG-21
Antimony (Sb)-Dissolved			98.2		%		80-120	23-AUG-21
Arsenic (As)-Dissolved			99.8		%		80-120	23-AUG-21
Barium (Ba)-Dissolved			100.2		%		80-120	23-AUG-21
Bismuth (Bi)-Dissolved			97.8		%		80-120	23-AUG-21
Boron (B)-Dissolved			99.4		%		80-120	23-AUG-21
Cadmium (Cd)-Dissolved			104.0		%		80-120	23-AUG-21
Calcium (Ca)-Dissolved			98.4		%		80-120	23-AUG-21
Chromium (Cr)-Dissolved			98.7		%		80-120	23-AUG-21
Cobalt (Co)-Dissolved			97.8		%		80-120	23-AUG-21
Copper (Cu)-Dissolved			95.2		%		80-120	23-AUG-21
Iron (Fe)-Dissolved			100.7		%		80-120	23-AUG-21
Lead (Pb)-Dissolved			99.8		%		80-120	23-AUG-21
Lithium (Li)-Dissolved			100.9		%		80-120	23-AUG-21
Magnesium (Mg)-Dissolved			102.6		%		80-120	23-AUG-21
Manganese (Mn)-Dissolved			100.7		%		80-120	23-AUG-21
Molybdenum (Mo)-Dissolved			96.2		%		80-120	23-AUG-21
Nickel (Ni)-Dissolved			96.2		%		80-120	23-AUG-21
Phosphorus (P)-Dissolved			108.5		%		70-130	23-AUG-21
Potassium (K)-Dissolved			102.5		%		80-120	23-AUG-21
Selenium (Se)-Dissolved			95.2		%		80-120	23-AUG-21
Silicon (Si)-Dissolved			105.6		%		60-140	23-AUG-21
Silver (Ag)-Dissolved			95.2		%		80-120	23-AUG-21
Sodium (Na)-Dissolved			98.7		%		80-120	23-AUG-21
Strontium (Sr)-Dissolved			106.8		%		80-120	23-AUG-21
Sulfur (S)-Dissolved			97.7		%		80-120	23-AUG-21
Thallium (Tl)-Dissolved			101.4		%		80-120	23-AUG-21
Tin (Sn)-Dissolved			103.2		%		80-120	23-AUG-21
Titanium (Ti)-Dissolved			103.8		%		80-120	23-AUG-21
Uranium (U)-Dissolved			96.5		%		80-120	23-AUG-21
Vanadium (V)-Dissolved			101.5		%		80-120	23-AUG-21
Zinc (Zn)-Dissolved			95.4		%		80-120	23-AUG-21
Zirconium (Zr)-Dissolved			98.4		%		80-120	23-AUG-21
<b>WG3603235-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2627698

Report Date: 06-DEC-21

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5565536</b>							
<b>WG3603235-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-AUG-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-AUG-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-AUG-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-AUG-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-AUG-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-AUG-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-AUG-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	23-AUG-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-AUG-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-AUG-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-AUG-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	23-AUG-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-AUG-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-AUG-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-21

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2627698

Report Date: 06-DEC-21

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>	<b>Water</b>							
Batch	R5565407							
<b>WG3601922-2</b>	<b>LCS</b>							
Ammonia as N			112.2		%		85-115	21-AUG-21
<b>WG3601922-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	21-AUG-21
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5556289							
<b>WG3599451-2</b>	<b>LCS</b>							
Nitrite (as N)			100.3		%		90-110	17-AUG-21
<b>WG3599451-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	17-AUG-21
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5556289							
<b>WG3599451-2</b>	<b>LCS</b>							
Nitrate (as N)			102.2		%		90-110	17-AUG-21
<b>WG3599451-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	17-AUG-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5567336							
<b>WG3603534-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	21-AUG-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5563363							
<b>WG3601913-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	21-AUG-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5563552							
<b>WG3602040-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			111.4		%		80-120	21-AUG-21
<b>WG3602040-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-AUG-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5567336							
<b>WG3603534-2</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	21-AUG-21



## Quality Control Report

Workorder: L2627698

Report Date: 06-DEC-21

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5555156</b>							
<b>WG3596991-3</b>	<b>DUP</b>	<b>L2627698-1</b>						
Orthophosphate-Dissolved (as P)		0.0037	0.0037		mg/L	0.3	20	17-AUG-21
<b>WG3596991-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			103.0		%		80-120	17-AUG-21
<b>WG3596991-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	17-AUG-21
<b>WG3596991-4</b>	<b>MS</b>	<b>L2627698-1</b>						
Orthophosphate-Dissolved (as P)			110.2		%		70-130	17-AUG-21
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5556289</b>							
<b>WG3599451-2</b>	<b>LCS</b>							
Sulfate (SO4)			102.5		%		90-110	17-AUG-21
<b>WG3599451-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	17-AUG-21
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5561264</b>							
<b>WG3600169-2</b>	<b>LCS</b>							
Total Dissolved Solids			98.8		%		85-115	19-AUG-21
<b>WG3600169-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	19-AUG-21
<b>TKN-F-ED</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571554</b>							
<b>WG3605997-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101		%		75-125	27-AUG-21
<b>WG3605997-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	27-AUG-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5561356</b>							
<b>WG3600170-2</b>	<b>LCS</b>							
Total Suspended Solids			106.0		%		85-115	19-AUG-21
<b>WG3600170-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	19-AUG-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5555356</b>							
<b>WG3599095-3</b>	<b>DUP</b>	<b>L2627698-1</b>						
Turbidity		42.1	43.2		NTU	2.5	15	17-AUG-21
<b>WG3599095-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2627698

Report Date: 06-DEC-21

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5555356</b>							
<b>WG3599095-2</b>	<b>LCS</b>							
Turbidity			98.1		%		85-115	17-AUG-21
<b>WG3599095-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	17-AUG-21

# Quality Control Report

Workorder: L2627698

Report Date: 06-DEC-21

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2627698

Report Date: 06-DEC-21

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	16-AUG-21 13:00	21-AUG-21 10:34	0.25	118	hours	EHTR-FM
pH	1	16-AUG-21 13:00	21-AUG-21 18:00	0.25	125	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2627698 were received on 17-AUG-21 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.







SNC-Lavalin  
ATTN: Leslie Harker  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 17-AUG-21  
Report Date: 01-SEP-21 13:39 (MT)  
Version: FINAL

Client Phone: 250-505-6493

## Certificate of Analysis

Lab Work Order #: L2627942  
Project P.O. #: 680806  
Job Reference: 666653  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2627942-1	L2627942-2	L2627942-3	L2627942-4	L2627942-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	16-AUG-21	16-AUG-21	16-AUG-21	16-AUG-21	16-AUG-21
		Sampled Time	10:00	11:00	12:00	15:23	15:10
		Client ID	RG_MW_LC3A_W G_2021_08_16_NP	RG_MW_LC3B_W G_2021_08_16_NP	RG_MW_LCWC1_ WG_2021_08_16_ NP	RG_MW_WC2A_ WG_2021_08_16_ NP	RG_MW_WC2B_ WG_2021_08_16_ NP
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		983	1510	1160	702	596
	Hardness (as CaCO3) (mg/L)		549	864	677	417	329
	pH (pH)		8.36	8.31	8.06	8.05	8.39
	ORP (mV)		417	422	421	414	431
	Total Suspended Solids (mg/L)		3.7	1.0	2.1	201	5.2
	Total Dissolved Solids (mg/L)		731	1250	914	471	405
	Turbidity (NTU)		3.79	1.13	3.75	27.2	0.27
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		3.7	4.9	6.0	3.0	2.8
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		189	198	234	190	174
	Alkalinity, Carbonate (as CaCO3) (mg/L)		13.8	8.8	<1.0	<1.0	12.8
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		203	207	234	190	187
	Ammonia as N (mg/L)		<0.0050	<0.0050	<0.0050	0.0247	<0.0050
	Bicarbonate (HCO3) (mg/L)		231	242	286	232	212
	Bromide (Br) (mg/L)		<0.25 <sup>DLDS</sup>	<0.25 <sup>DLDS</sup>	<0.25 <sup>DLDS</sup>	<0.050	<0.050
	Carbonate (CO3) (mg/L)		8.3	5.3	<5.0	<5.0	7.7
	Chloride (Cl) (mg/L)		2.69	3.19	6.19	1.81	0.92
	Fluoride (F) (mg/L)		0.15	0.11	<0.10 <sup>DLDS</sup>	0.131	0.187
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)		95.8	97.2	98.2	108	98.8
	Nitrate and Nitrite (as N) (mg/L)		20.3	35.7	22.6	7.25	6.59
	Nitrate (as N) (mg/L)		20.3	35.7	22.6	7.25	6.59
	Nitrite (as N) (mg/L)		0.0053 <sup>TKNI</sup>	<0.0050 <sup>TKNI</sup>	0.0085 <sup>TKNI</sup>	<0.0010 <sup>TKNI</sup>	<0.0010 <sup>TKNI</sup>
	Total Kjeldahl Nitrogen (mg/L)		<0.15 <sup>TKNI</sup>	<0.15 <sup>TKNI</sup>	<0.15 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>
	Total Nitrogen (mg/L)		20.3	35.7	22.6	7.25	6.59
	Orthophosphate-Dissolved (as P) (mg/L)		0.0014	<0.0010	0.0024	0.0016	<0.0010
	Phosphorus (P)-Total (mg/L)		0.0087	<0.0020	0.0053	0.316 <sup>DLHC</sup>	<0.0020
	Sulfate (SO4) (mg/L)		313	574	382	179	130
	Anion Sum (meq/L)		12.1	18.7	14.4	8.11	6.94
	Cation Sum (meq/L)		11.6	18.2	14.2	8.76	6.85
Cation - Anion Balance (%)		-2.1	-1.4	-0.9	3.9	-0.6	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		1.91	1.48	1.99	1.84	1.17
	Total Organic Carbon (mg/L)		1.86	2.05	1.92	1.67	1.12
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD				
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0046	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0010	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2627942-6	L2627942-7	L2627942-8
		Description	WG	WG	WG
		Sampled Date	16-AUG-21	16-AUG-21	16-AUG-21
		Sampled Time	13:30	13:45	13:30
		Client ID	RG_MW_ER9A_W G_2021_08_16_NP	RG_MW_ER9B_W G_2021_08_16_NP	RG_MW_MC10A_ WG_2021_08_16_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	429	1010	425	
	Hardness (as CaCO3) (mg/L)	215	588	215	
	pH (pH)	8.35	8.34	8.39	
	ORP (mV)	429	426	405	
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	
	Total Dissolved Solids (mg/L)	279	818	289	
	Turbidity (NTU)	6.35	0.17	6.45	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.3	7.9	1.3	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	228	231	225	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	10.6	13.0	12.6	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	239	244	237	
	Ammonia as N (mg/L)	0.0805	0.0050	0.116	
	Bicarbonate (HCO3) (mg/L)	278	281	274	
	Bromide (Br) (mg/L)	<0.050	<0.25 <sup>DLDS</sup>	<0.050	
	Carbonate (CO3) (mg/L)	6.4	7.8	7.6	
	Chloride (Cl) (mg/L)	7.63	2.86	7.54	
	Fluoride (F) (mg/L)	0.297	<0.10 <sup>DLDS</sup>	0.276	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	99.6	98.3	100	
	Nitrate and Nitrite (as N) (mg/L)	0.0074	16.3	<0.0051	
	Nitrate (as N) (mg/L)	0.0060	16.2	<0.0050	
	Nitrite (as N) (mg/L)	0.0014	0.0109	0.0030	
	Total Kjeldahl Nitrogen (mg/L)	0.055	<0.050 <sup>TKNI</sup>	0.114	
	Total Nitrogen (mg/L)	0.063	16.3	0.117	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	
	Sulfate (SO4) (mg/L)	11.6	309	11.1	
	Anion Sum (meq/L)	5.24	12.5	5.20	
	Cation Sum (meq/L)	5.22	12.3	5.23	
Cation - Anion Balance (%)	-0.2	-0.9	0.2		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.20	1.58	0.88	
	Total Organic Carbon (mg/L)	1.11	1.57	0.86	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location				
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0011	<0.0010	<0.0010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2627942-1 WG 16-AUG-21 10:00 RG_MW_LC3A_W G_2021_08_16_NP	L2627942-2 WG 16-AUG-21 11:00 RG_MW_LC3B_W G_2021_08_16_NP	L2627942-3 WG 16-AUG-21 12:00 RG_MW_LCWC1_ WG_2021_08_16_ NP	L2627942-4 WG 16-AUG-21 15:23 RG_MW_WC2A_ WG_2021_08_16_ NP	L2627942-5 WG 16-AUG-21 15:10 RG_MW_WC2B_ WG_2021_08_16_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>					
Antimony (Sb)-Dissolved (mg/L)	0.00079	0.00160 <sup>DLDS</sup>	0.00012	0.00014	0.00058
Arsenic (As)-Dissolved (mg/L)	0.00011	<0.00050 <sup>DLDS</sup>	0.00011	0.00012	0.00011
Barium (Ba)-Dissolved (mg/L)	0.115	0.108 <sup>DLDS</sup>	0.191	0.0462	0.0575
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.00010 <sup>DLDS</sup>	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.00025 <sup>DLDS</sup>	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	0.018	<0.050 <sup>DLDS</sup>	0.017	0.012	0.013
Cadmium (Cd)-Dissolved (mg/L)	0.0000286	0.000045 <sup>DLDS</sup>	0.0000541	0.0000291	0.0000319
Calcium (Ca)-Dissolved (mg/L)	112	161 <sup>DLDS</sup>	172	102	72.7
Chromium (Cr)-Dissolved (mg/L)	0.00070	<0.00050 <sup>DLDS</sup>	0.00020	0.00019	0.00021
Cobalt (Co)-Dissolved (mg/L)	0.00015	0.00149 <sup>DLDS</sup>	0.00011	<0.00010	<0.00010
Copper (Cu)-Dissolved (mg/L)	0.00085	<0.0010 <sup>DLDS</sup>	0.00045	0.00025	0.00023
Iron (Fe)-Dissolved (mg/L)	0.029	<0.050 <sup>DLDS</sup>	0.013	<0.010	<0.010
Lead (Pb)-Dissolved (mg/L)	0.000065	<0.00025 <sup>DLDS</sup>	0.000064	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	0.0739	0.129 <sup>DLDS</sup>	0.0543	0.0358	0.0343
Magnesium (Mg)-Dissolved (mg/L)	65.1	112 <sup>DLDS</sup>	60.2	39.7	35.8
Manganese (Mn)-Dissolved (mg/L)	0.00211	<0.00050 <sup>DLDS</sup>	0.00073	0.00455	<0.00010
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050 <sup>DLDS</sup>	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.00575	0.00712 <sup>DLDS</sup>	0.00107	0.00110	0.00369
Nickel (Ni)-Dissolved (mg/L)	0.00344	0.0030 <sup>DLDS</sup>	0.00090	0.00061	0.00354
Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.25 <sup>DLDS</sup>	<0.050	<0.050	<0.050
Potassium (K)-Dissolved (mg/L)	3.03	3.74 <sup>DLDS</sup>	1.52	1.23	1.69
Selenium (Se)-Dissolved (mg/L)	0.105	0.176 <sup>DLDS</sup>	0.117	0.0337	0.0360
Silicon (Si)-Dissolved (mg/L)	2.93	2.58 <sup>DLDS</sup>	4.61	2.95	2.67
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000050 <sup>DLDS</sup>	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	12.9	19.4 <sup>DLDS</sup>	13.7	9.05	5.44
Strontium (Sr)-Dissolved (mg/L)	0.399	0.578 <sup>DLDS</sup>	0.519	0.303	0.263
Sulfur (S)-Dissolved (mg/L)	88.2	195 <sup>DLDS</sup>	105	53.3	47.5
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000050 <sup>DLDS</sup>	<0.000010	0.000018	<0.000010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.0015 <sup>DLDS</sup>	<0.00030	<0.00030	<0.00030
Uranium (U)-Dissolved (mg/L)	0.00369	0.00686 <sup>DLDS</sup>	0.00215	0.00175	0.00227
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.0025 <sup>DLDS</sup>	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.0025	<0.0050 <sup>DLDS</sup>	0.0019	0.0012	<0.0010
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.0010 <sup>DLDS</sup>	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2627942-6 WG 16-AUG-21 13:30 RG_MW_ER9A_W G_2021_08_16_NP	L2627942-7 WG 16-AUG-21 13:45 RG_MW_ER9B_W G_2021_08_16_NP	L2627942-8 WG 16-AUG-21 13:30 RG_MW_MC10A_ WG_2021_08_16_ NP	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00017	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00036	0.00011	0.00034	
	Barium (Ba)-Dissolved (mg/L)	0.869	0.0799	0.878	
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.052	0.018	0.052	
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000526	<0.0000050	
	Calcium (Ca)-Dissolved (mg/L)	50.6	137	51.1	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00023	<0.00010	
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00022	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	0.628	<0.010	0.624	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0292	0.0643	0.0291	
	Magnesium (Mg)-Dissolved (mg/L)	21.5	59.4	21.2	
	Manganese (Mn)-Dissolved (mg/L)	0.0756	0.00028	0.0755	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00594	0.00136	0.00593	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	
	Potassium (K)-Dissolved (mg/L)	1.03	1.83	1.04	
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.0810	0.000069	
	Silicon (Si)-Dissolved (mg/L)	4.91	3.74	4.94	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	19.9	12.5	19.8	
	Strontium (Sr)-Dissolved (mg/L)	0.411	0.374	0.404	
	Sulfur (S)-Dissolved (mg/L)	4.32	86.3	4.33	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	
	Uranium (U)-Dissolved (mg/L)	0.000205	0.00276	0.000200	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

## Reference Information

<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			

## Reference Information

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

<b>TKN-L-F-ED</b>	Water	TKN (as N) by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2627942

Report Date: 01-SEP-21

Page 1 of 12

Client: SNC-Lavalin  
 # 3 - 520 Lake Street  
 Nelson BC V1L 4C6  
 Contact: Leslie Harker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5561798</b>							
<b>WG3601378-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			109.0		%		85-115	19-AUG-21
<b>WG3601378-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.7		%		85-115	19-AUG-21
<b>WG3601378-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	19-AUG-21
<b>WG3601378-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	19-AUG-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5567279</b>							
<b>WG3603527-6</b>	<b>DUP</b>	<b>L2627942-2</b>						
Alkalinity, Total (as CaCO3)		207	216		mg/L	4.1	20	21-AUG-21
<b>WG3603527-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.0		%		85-115	21-AUG-21
<b>WG3603527-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.7		%		85-115	21-AUG-21
<b>WG3603527-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-AUG-21
<b>WG3603527-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-AUG-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5565536</b>							
<b>WG3603235-3</b>	<b>DUP</b>	<b>L2627942-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	23-AUG-21
<b>WG3603235-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			94.2		%		80-120	23-AUG-21
<b>WG3603235-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-AUG-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5567279</b>							
<b>WG3603527-6</b>	<b>DUP</b>	<b>L2627942-2</b>						
Bicarbonate (HCO3)		242	250		mg/L	3.1	20	21-AUG-21
<b>WG3603527-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-AUG-21
<b>WG3603527-4</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-AUG-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2627942

Report Date: 01-SEP-21

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
Batch R5566516								
<b>WG3603259-3</b>	<b>DUP</b>	<b>L2627942-8</b>						
Bromide (Br)		<0.050	0.067	RPD-NA	mg/L	N/A	20	17-AUG-21
<b>WG3603259-2</b>	<b>LCS</b>							
Bromide (Br)			100.1		%		85-115	17-AUG-21
<b>WG3603259-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	17-AUG-21
<b>C-DIS-ORG-LOW-CL</b>								
Batch R5563237								
<b>WG3601849-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			93.9		%		80-120	20-AUG-21
<b>WG3601849-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-AUG-21
<b>C-TOT-ORG-LOW-CL</b>								
Batch R5563237								
<b>WG3601849-2</b>	<b>LCS</b>							
Total Organic Carbon			95.0		%		80-120	20-AUG-21
<b>WG3601849-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	20-AUG-21
<b>CL-L-IC-N-CL</b>								
Batch R5566516								
<b>WG3603259-3</b>	<b>DUP</b>	<b>L2627942-8</b>						
Chloride (Cl)		7.54	7.65		mg/L	1.4	20	17-AUG-21
<b>WG3603259-2</b>	<b>LCS</b>							
Chloride (Cl)			104.4		%		85-115	17-AUG-21
<b>WG3603259-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	17-AUG-21
<b>CO3-CL</b>								
Batch R5567279								
<b>WG3603527-6</b>	<b>DUP</b>	<b>L2627942-2</b>						
Carbonate (CO3)		5.3	6.7	J	mg/L	1.4	10	21-AUG-21
<b>WG3603527-1</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	21-AUG-21
<b>WG3603527-4</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	21-AUG-21
<b>EC-L-PCT-CL</b>								
Batch R5567279								



## Quality Control Report

Workorder: L2627942

Report Date: 01-SEP-21

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5567279</b>							
<b>WG3603527-6</b>	<b>DUP</b>	<b>L2627942-2</b>						
Conductivity (@ 25C)		1510	1490		uS/cm	1.2	10	21-AUG-21
<b>WG3603527-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.6		%		90-110	21-AUG-21
<b>WG3603527-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			97.2		%		90-110	21-AUG-21
<b>WG3603527-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-AUG-21
<b>WG3603527-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-AUG-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5566516</b>							
<b>WG3603259-3</b>	<b>DUP</b>	<b>L2627942-8</b>						
Fluoride (F)		0.276	0.287		mg/L	3.7	20	17-AUG-21
<b>WG3603259-2</b>	<b>LCS</b>							
Fluoride (F)			102.1		%		90-110	17-AUG-21
<b>WG3603259-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	17-AUG-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5563744</b>							
<b>WG3602055-7</b>	<b>DUP</b>	<b>L2627942-8</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	21-AUG-21
<b>WG3602055-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			118.0		%		80-120	21-AUG-21
<b>WG3602055-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			91.9		%		80-120	21-AUG-21
<b>WG3602055-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	21-AUG-21
<b>WG3602055-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	21-AUG-21
<b>WG3602055-8</b>	<b>MS</b>	<b>L2627942-8</b>						
Mercury (Hg)-Dissolved			92.1		%		70-130	21-AUG-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5565536</b>							
<b>WG3603235-3</b>	<b>DUP</b>	<b>L2627942-1</b>						
Aluminum (Al)-Dissolved		0.0046	0.0033	J	mg/L	0.0013	0.002	23-AUG-21
Antimony (Sb)-Dissolved		0.00079	0.00078		mg/L	0.7	20	23-AUG-21
Arsenic (As)-Dissolved		0.00011	0.00011		mg/L	3.9	20	23-AUG-21



## Quality Control Report

Workorder: L2627942

Report Date: 01-SEP-21

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5565536</b>							
<b>WG3603235-3</b>	<b>DUP</b>	<b>L2627942-1</b>						
Barium (Ba)-Dissolved		0.115	0.114		mg/L	1.5	20	23-AUG-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-AUG-21
Boron (B)-Dissolved		0.018	0.019		mg/L	1.2	20	23-AUG-21
Cadmium (Cd)-Dissolved		0.0000286	0.0000315		mg/L	9.9	20	23-AUG-21
Calcium (Ca)-Dissolved		112	113		mg/L	0.6	20	23-AUG-21
Chromium (Cr)-Dissolved		0.00070	0.00064		mg/L	8.7	20	23-AUG-21
Cobalt (Co)-Dissolved		0.00015	0.00015		mg/L	0.3	20	23-AUG-21
Copper (Cu)-Dissolved		0.00085	0.00087		mg/L	1.7	20	23-AUG-21
Iron (Fe)-Dissolved		0.029	0.029		mg/L	1.3	20	23-AUG-21
Lead (Pb)-Dissolved		0.000065	0.000064		mg/L	1.4	20	23-AUG-21
Lithium (Li)-Dissolved		0.0739	0.0753		mg/L	1.9	20	23-AUG-21
Magnesium (Mg)-Dissolved		65.1	65.3		mg/L	0.3	20	23-AUG-21
Manganese (Mn)-Dissolved		0.00211	0.00213		mg/L	0.8	20	23-AUG-21
Molybdenum (Mo)-Dissolved		0.00575	0.00573		mg/L	0.4	20	23-AUG-21
Nickel (Ni)-Dissolved		0.00344	0.00346		mg/L	0.6	20	23-AUG-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	23-AUG-21
Potassium (K)-Dissolved		3.03	3.00		mg/L	1.2	20	23-AUG-21
Selenium (Se)-Dissolved		0.105	0.105		mg/L	0.0	20	23-AUG-21
Silicon (Si)-Dissolved		2.93	2.87		mg/L	2.1	20	23-AUG-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-AUG-21
Sodium (Na)-Dissolved		12.9	13.0		mg/L	0.8	20	23-AUG-21
Strontium (Sr)-Dissolved		0.399	0.399		mg/L	0.0	20	23-AUG-21
Sulfur (S)-Dissolved		88.2	86.6		mg/L	1.8	20	23-AUG-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-AUG-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-AUG-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	23-AUG-21
Uranium (U)-Dissolved		0.00369	0.00380		mg/L	3.0	20	23-AUG-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-AUG-21
Zinc (Zn)-Dissolved		0.0025	0.0025		mg/L	2.3	20	23-AUG-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	23-AUG-21
<b>WG3603235-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			102.1		%		80-120	23-AUG-21
Antimony (Sb)-Dissolved			98.2		%		80-120	23-AUG-21
Arsenic (As)-Dissolved			99.8		%		80-120	23-AUG-21



## Quality Control Report

Workorder: L2627942

Report Date: 01-SEP-21

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5565536</b>							
<b>WG3603235-2</b>	<b>LCS</b>	<b>TMRM</b>						
Barium (Ba)-Dissolved			100.2		%		80-120	23-AUG-21
Bismuth (Bi)-Dissolved			97.8		%		80-120	23-AUG-21
Boron (B)-Dissolved			99.4		%		80-120	23-AUG-21
Cadmium (Cd)-Dissolved			104.0		%		80-120	23-AUG-21
Calcium (Ca)-Dissolved			98.4		%		80-120	23-AUG-21
Chromium (Cr)-Dissolved			98.7		%		80-120	23-AUG-21
Cobalt (Co)-Dissolved			97.8		%		80-120	23-AUG-21
Copper (Cu)-Dissolved			95.2		%		80-120	23-AUG-21
Iron (Fe)-Dissolved			100.7		%		80-120	23-AUG-21
Lead (Pb)-Dissolved			99.8		%		80-120	23-AUG-21
Lithium (Li)-Dissolved			100.9		%		80-120	23-AUG-21
Magnesium (Mg)-Dissolved			102.6		%		80-120	23-AUG-21
Manganese (Mn)-Dissolved			100.7		%		80-120	23-AUG-21
Molybdenum (Mo)-Dissolved			96.2		%		80-120	23-AUG-21
Nickel (Ni)-Dissolved			96.2		%		80-120	23-AUG-21
Phosphorus (P)-Dissolved			108.5		%		70-130	23-AUG-21
Potassium (K)-Dissolved			102.5		%		80-120	23-AUG-21
Selenium (Se)-Dissolved			95.2		%		80-120	23-AUG-21
Silicon (Si)-Dissolved			105.6		%		60-140	23-AUG-21
Silver (Ag)-Dissolved			95.2		%		80-120	23-AUG-21
Sodium (Na)-Dissolved			98.7		%		80-120	23-AUG-21
Strontium (Sr)-Dissolved			106.8		%		80-120	23-AUG-21
Sulfur (S)-Dissolved			97.7		%		80-120	23-AUG-21
Thallium (Tl)-Dissolved			101.4		%		80-120	23-AUG-21
Tin (Sn)-Dissolved			103.2		%		80-120	23-AUG-21
Titanium (Ti)-Dissolved			103.8		%		80-120	23-AUG-21
Uranium (U)-Dissolved			96.5		%		80-120	23-AUG-21
Vanadium (V)-Dissolved			101.5		%		80-120	23-AUG-21
Zinc (Zn)-Dissolved			95.4		%		80-120	23-AUG-21
Zirconium (Zr)-Dissolved			98.4		%		80-120	23-AUG-21
<b>WG3603235-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-AUG-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-21



## Quality Control Report

Workorder: L2627942

Report Date: 01-SEP-21

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5565536</b>							
<b>WG3603235-1</b>	<b>MB</b>							
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-AUG-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-AUG-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-AUG-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-AUG-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-AUG-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-AUG-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	23-AUG-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-AUG-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-AUG-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-AUG-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	23-AUG-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-AUG-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-AUG-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-21

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2627942

Report Date: 01-SEP-21

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5565407</b>							
<b>WG3601922-7</b>	<b>DUP</b>	<b>L2627942-6</b>						
Ammonia as N		0.0805	0.0765		mg/L	5.1	20	21-AUG-21
<b>WG3601922-2</b>	<b>LCS</b>							
Ammonia as N			112.2		%		85-115	21-AUG-21
<b>WG3601922-6</b>	<b>LCS</b>							
Ammonia as N			106.4		%		85-115	21-AUG-21
<b>WG3601922-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	21-AUG-21
<b>WG3601922-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	21-AUG-21
<b>WG3601922-8</b>	<b>MS</b>	<b>L2627942-6</b>						
Ammonia as N			119.4		%		75-125	21-AUG-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5566516</b>							
<b>WG3603259-3</b>	<b>DUP</b>	<b>L2627942-8</b>						
Nitrite (as N)		0.0030	0.0030		mg/L	0.0	20	17-AUG-21
<b>WG3603259-2</b>	<b>LCS</b>							
Nitrite (as N)			101.6		%		90-110	17-AUG-21
<b>WG3603259-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	17-AUG-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5566516</b>							
<b>WG3603259-3</b>	<b>DUP</b>	<b>L2627942-8</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	17-AUG-21
<b>WG3603259-2</b>	<b>LCS</b>							
Nitrate (as N)			104.0		%		90-110	17-AUG-21
<b>WG3603259-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	17-AUG-21
<b>OH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5567279</b>							
<b>WG3603527-6</b>	<b>DUP</b>	<b>L2627942-2</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	21-AUG-21
<b>WG3603527-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	21-AUG-21
<b>WG3603527-4</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	21-AUG-21
<b>ORP-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2627942

Report Date: 01-SEP-21

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>								
Batch R5563363								
WG3601913-1	CRM	CL-ORP						
ORP			227		mV		210-230	21-AUG-21
WG3601913-3	CRM	CL-ORP						
ORP			224		mV		210-230	21-AUG-21
WG3601913-4	DUP	L2627942-8						
ORP		405	408	J	mV	2.1	15	21-AUG-21
<b>P-T-L-COL-CL</b>								
Batch R5563552								
WG3602040-2	LCS							
Phosphorus (P)-Total			111.4		%		80-120	21-AUG-21
WG3602040-6	LCS							
Phosphorus (P)-Total			109.3		%		80-120	21-AUG-21
WG3602040-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-AUG-21
WG3602040-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-AUG-21
<b>PH-CL</b>								
Batch R5567279								
WG3603527-6	DUP	L2627942-2						
pH		8.31	8.33	J	pH	0.02	0.2	21-AUG-21
WG3603527-2	LCS							
pH			7.06		pH		6.9-7.1	21-AUG-21
WG3603527-5	LCS							
pH			7.05		pH		6.9-7.1	21-AUG-21
<b>PO4-DO-L-COL-CL</b>								
Batch R5559297								
WG3599933-3	LCS							
Orthophosphate-Dissolved (as P)			100.5		%		80-120	18-AUG-21
WG3599933-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	18-AUG-21
WG3599933-5	MS	L2627942-1						
Orthophosphate-Dissolved (as P)			107.3		%		70-130	18-AUG-21
<b>SO4-IC-N-CL</b>								
Batch R5566516								
WG3603259-3	DUP	L2627942-8						
Sulfate (SO4)		11.1	11.5		mg/L	3.4	20	17-AUG-21
WG3603259-2	LCS							







## Quality Control Report

Workorder: L2627942

Report Date: 01-SEP-21

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5555356</b>							
<b>WG3599095-5</b>	<b>LCS</b>							
Turbidity			97.8		%		85-115	17-AUG-21
<b>WG3599095-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	17-AUG-21
<b>WG3599095-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	17-AUG-21

# Quality Control Report

Workorder: L2627942

Report Date: 01-SEP-21

Page 11 of 12

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2627942

Report Date: 01-SEP-21

Page 12 of 12

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	16-AUG-21 10:00	21-AUG-21 10:34	0.25	120	hours	EHTR-FM
	2	16-AUG-21 11:00	21-AUG-21 10:34	0.25	120	hours	EHTR-FM
	3	16-AUG-21 12:00	21-AUG-21 10:34	0.25	119	hours	EHTR-FM
	4	16-AUG-21 15:23	21-AUG-21 10:34	0.25	115	hours	EHTR-FM
	5	16-AUG-21 15:10	21-AUG-21 10:34	0.25	115	hours	EHTR-FM
	6	16-AUG-21 13:30	21-AUG-21 10:34	0.25	117	hours	EHTR-FM
	7	16-AUG-21 13:45	21-AUG-21 10:34	0.25	117	hours	EHTR-FM
	8	16-AUG-21 13:30	21-AUG-21 10:34	0.25	117	hours	EHTR-FM
pH							
	1	16-AUG-21 10:00	21-AUG-21 14:00	0.25	124	hours	EHTR-FM
	2	16-AUG-21 11:00	21-AUG-21 14:00	0.25	123	hours	EHTR-FM
	3	16-AUG-21 12:00	21-AUG-21 14:00	0.25	122	hours	EHTR-FM
	4	16-AUG-21 15:23	21-AUG-21 14:00	0.25	119	hours	EHTR-FM
	5	16-AUG-21 15:10	21-AUG-21 14:00	0.25	119	hours	EHTR-FM
	6	16-AUG-21 13:30	21-AUG-21 14:00	0.25	120	hours	EHTR-FM
	7	16-AUG-21 13:45	21-AUG-21 14:00	0.25	120	hours	EHTR-FM
	8	16-AUG-21 13:30	21-AUG-21 14:00	0.25	120	hours	EHTR-FM

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2627942 were received on 17-AUG-21 09:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2627942-COFC

COC Number: 21 -

Page 1 of 3

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<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																				
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																				
Contact: Leslie Harker		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		PRIORITY (Business Days)		EMERGENCY																		
Phone: 250-505-6493		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>																		
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>																		
Street: 520 Lake Street		Emails: SNC - 'Leslie.Harker' 'Melissa.MacDonald'		2 day [P2-50%] <input type="checkbox"/>		Date and Time Required for all E&P TATs:																		
City/Province: Nelson, BC		'Vicky.Lipinski@snc.lavalin.com'		For tests that can not be performed according to the service level selected, you will be contacted.																				
Postal Code: V1L 4C6		Teck - Thais.Lamana@teck.com, Jessica.Mackie@teck.com		<b>Analysis Request</b>																				
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																				
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input checked="" type="checkbox"/> FAX		F/P	P	F/P																		
Company:		Emails: Leslie.Harker@snc.lavalin.com		DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)											
Contact:		payables@snc.lavalin.com																						
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																						
ALS Account # / Quote #:		AFE/Cost Center:		PO#																				
Job #:		Major/Minor Code:		Routing Code:																				
PO / AFE:		Requisitioner:		Location:																				
LSD:		ALS Contact: Opeyemi Adetola 403-407-1792		Sampler:																				
ALS Lab Work Order # (lab use only):																								
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)						SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS	
	<del>RG_MW_ER1A_WG_2021_NP</del>	<del>RG_MW_ER1A</del>			WG	R	R	R	R	R	R	R	R	R	R									5
	<del>RG_MW_ER1B_WG_2021_NP</del>	<del>RG_MW_ER1B</del>			WG	R	R	R	R	R	R	R	R	R	R									5
	<del>RG_MW_ER2A_WG_2021_NP</del>	<del>RG_MW_ER2A</del>			WG	R	R	R	R	R	R	R	R	R	R									5
	<del>RG_MW_ER2B_WG_2021_NP</del>	<del>RG_MW_ER2B</del>			WG	R	R	R	R	R	R	R	R	R	R									5
	RG_MW_LC3A_WG_2021 08.16 NP	RG_MW_LC3A	16-Aug-21	10:00	WG	R	R	R	R	R	R	R	R	R	R									5
	RG_MW_LC3B_WG_2021 08.16 NP	RG_MW_LC3B	16-Aug-21	11:00	WG	R	R	R	R	R	R	R	R	R	R									5
	<del>RG_MW_LC3C_WG_2021_NP</del>	<del>RG_MW_LC3C</del>			WG	R	R	R	R	R	R	R	R	R	R									5
	RG_MW_LCWC1_WG_2021 08.16 NP	RG_MW_LCWC1	16-Aug-21	12:00	WG	R	R	R	R	R	R	R	R	R	R									5
	RG_MW_WC2A_WG_2021 08.16 NP	RG_MW_WC2A	16-Aug-21	15:23	WG	R	R	R	R	R	R	R	R	R	R									5
	RG_MW_WC2B_WG_2021 08.16 NP	RG_MW_WC2B	16-Aug-21	15:10	WG	R	R	R	R	R	R	R	R	R	R									5
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																				
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																				
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																				
		REP. Regional Effects Program FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input checked="" type="checkbox"/>																				
				INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C															
				4																				
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>		<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																				
Released by: Melissa		Received by: [Signature]		Date: Aug 16 17:00					Date: 8/17 9:00															





Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2627942-COFC

C Number: 21 -

Page 3 of 3

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<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																	
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																	
Contact: Leslie Harker		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		4 day [P4-20%] <input type="checkbox"/>		3 day [P3-25%] <input type="checkbox"/>		2 day [P2-50%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>				Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>							
Phone: 250-505-6493		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		Priority (Business Days)		Emergency		Date and Time Required for all E&P TATs:													
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		For tests that can not be performed according to the service level selected, you will be contacted.																	
Street: 520 Lake Street		Emails: SNC - 'Leslie.Harker' 'Melissa.MacDonald'		<b>Analysis Request</b>																	
City/Province: Nelson, BC		'Vicky.Lipinski@snc-lavalin.com'		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																	
Postal Code: V1L 4C6		Teck - Thais.Lamana@teck.com, Jessica.Mackie@teck.com		F/P P F/P P																	
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		DOC (C-DIS-ORG-LOW-CL)																	
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input checked="" type="checkbox"/> FAX		TOC (C-TOT-ORG-LOW-CL)																	
Company:		Emails: Leslie.Harker@snc-lavalin.com		BCMDG D-Met.+Hg (MET-D-BCMDG-CL)																	
Contact:		payables@snc-lavalin.com		Total N Calc. (N-T-CALC-CL)																	
Project Information		Oil and Gas Required Fields (client use)		Nitrate + Nitrite Calc. (N2N3-CALC-CL)																	
ALS Account # / Quote #:		AFE/Cost Center:		PO#		Teck Routine (TECKCOAL-ROUTINE-CL)															
Job #:		Major/Minor Code:		Routing Code:		TKN (TKN-L-F-CL)															
PO / AFE:		Requisitioner:		Location:		Bicarbonate (BIC-CL)															
LSD:		ALS Contact: Opeyemi Adetola 403-407-1792		Sampler:		Carbonate (CO3-CL)															
ALS Lab Work Order # (lab use only):		ALS Contact: Opeyemi Adetola 403-407-1792		Sampler:		Hydroxide (OH-CL)															
ALS Sample # (lab use only)		Sample Identification &/or Coordinates		Teck Sample Location (sys_loc_code)		Date		Time		Sample Type		SAMPLES ON HOLD									
		(This description will appear on the report)		(For Teck data upload to EQUIS database)		(dd-mmm-yy)		(hh:mm)				Sample is hazardous (please provide further detail)									
		RG_MW_MC10A_WG_2021_0816 NP		RG_MW_MC10A		16-Aug-21		13:30		WG		NUMBER OF CONTAINERS									
		RG_MW_MC10B_WG_2021 NP		RG_MW_MC10B						WG		5									
		RG_MW_MC10C_WG_2021 NP		RG_MW_MC10C						WG		5									
		RG_MW_MC11A_WG_2021 NP		RG_MW_MC11A						WG		5									
Drinking Water (DW) Samples <sup>1</sup> (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)																	
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																	
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																	
		REP-Regional Effects Program FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input type="checkbox"/>																	
				INITIAL COOLER TEMPERATURES °C																	
				FINAL COOLER TEMPERATURES °C																	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)																	
Released by:		Date:		Time:		Received by:		Date:		Time:		Received by:		Date:		Time:					



SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 15-SEP-21  
Report Date: 05-OCT-21 13:52 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2639693  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2639693-1	L2639693-2	L2639693-3	L2639693-4
		Description	WATER	WATER	WATER	WATER
		Sampled Date	14-SEP-21	14-SEP-21	14-SEP-21	14-SEP-21
		Sampled Time	15:10	15:00	10:45	12:00
		Client ID	GH_MW-MC-1S_WG_2021_09_14_NP	GH_MW-MC-1D_WG_2021_09_14_NP	GH_MW-WOLF-1D_WG_2021_09_14_NP	GH_MW_MC10-A_WG_2021_09_14_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	294	406	409	414	
	Hardness (as CaCO3) (mg/L)	140	114	184	186	
	pH (pH)	8.34	8.47	8.38	8.38	
	ORP (mV)	468	390	383	395	
	Total Suspended Solids (mg/L)	<1.0	<1.0	4.9	5.7	
	Total Dissolved Solids (mg/L)	172	224	232	233	
	Turbidity (NTU)	0.15	1.11	10.6	11.1	
	<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5.1	3.6	9.6	9.0
Alkalinity, Bicarbonate (as CaCO3) (mg/L)		139	183	215	218	
Alkalinity, Carbonate (as CaCO3) (mg/L)		7.4	14.2	12.8	12.4	
Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	
Alkalinity, Total (as CaCO3) (mg/L)		147	197	228	230	
Ammonia as N (mg/L)		<0.0050	0.0307	0.0896	0.0835	
Bicarbonate (HCO3) (mg/L)		170	223	263	266	
Bromide (Br) (mg/L)		<0.050	0.103	<0.050	<0.050	
Carbonate (CO3) (mg/L)		<5.0	8.5	7.7	7.4	
Chloride (Cl) (mg/L)		0.25	20.2	0.75	0.74	
Fluoride (F) (mg/L)		0.142	0.727	0.233	0.240	
Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0	<5.0	
Ion Balance (%)		85.9	89.9	86.6	87.1	
Nitrate and Nitrite (as N) (mg/L)		0.0804	<0.0051	<0.0051	<0.0051	
Nitrate (as N) (mg/L)		0.0804	<0.0050	<0.0050	<0.0050	
Nitrite (as N) (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	
Total Kjeldahl Nitrogen (mg/L)		0.075	0.065	0.151	0.152	
Total Nitrogen (mg/L)		0.155	0.065	0.151	0.152	
Orthophosphate-Dissolved (as P) (mg/L)		0.0010	<0.0010	<0.0010	<0.0010	
Phosphorus (P)-Total (mg/L)		<0.0020	<0.0020	0.0176	0.0094	
Sulfate (SO4) (mg/L)		16.7	0.50	10.2	10.1	
Anion Sum (meq/L)		3.30	4.56	4.80	4.85	
Cation Sum (meq/L)		2.83	4.10	4.16	4.22	
Cation - Anion Balance (%)	-7.6	-5.3	-7.2	-6.9		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.99	1.05 <sup>DTC</sup>	1.45	1.30	
	Total Organic Carbon (mg/L)	0.86	<0.50 <sup>DTC</sup>	1.20	1.23	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0017	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2639693-1	L2639693-2	L2639693-3	L2639693-4
					L2639693-1 WATER 14-SEP-21 15:10 GH_MW-MC- 1S_WG_2021_09_ 14_NP	L2639693-2 WATER 14-SEP-21 15:00 GH_MW-MC- 1D_WG_2021_09_ 14_NP	L2639693-3 WATER 14-SEP-21 10:45 GH_MW-WOLF- 1D_WG_2021_09_ 14_NP	L2639693-4 WATER 14-SEP-21 12:00 GH_MW_MC10- A_WG_2021_09_1 4_NP
Grouping	Analyte							
<b>WATER</b>								
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00099	0.00093	0.00093			
	Barium (Ba)-Dissolved (mg/L)	0.0559	0.848	0.191	0.192			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010	0.074	0.078	0.081			
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Calcium (Ca)-Dissolved (mg/L)	39.7	24.0	41.4	41.9			
	Chromium (Cr)-Dissolved (mg/L)	0.00018	<0.00010	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	0.00011	0.00012			
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.179	0.670	0.705			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0019	0.0814	0.0295	0.0300			
	Magnesium (Mg)-Dissolved (mg/L)	9.90	13.2	19.6	19.9			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.125	0.196	0.200			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00118	0.00672	0.00285	0.00281			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050			
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050			
	Potassium (K)-Dissolved (mg/L)	0.39	1.25	1.10	1.12			
	Selenium (Se)-Dissolved (mg/L)	0.000749	<0.000050	<0.000050	<0.000050			
	Silicon (Si)-Dissolved (mg/L)	1.99	3.12	4.77	4.80			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	0.688	40.6	9.46	9.73			
	Strontium (Sr)-Dissolved (mg/L)	0.202	0.394	0.876	0.881			
	Sulfur (S)-Dissolved (mg/L)	6.10	<0.50	3.61	3.51			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000036	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.000646	0.000070	0.000257	0.000260			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.0011	0.0012			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

## Reference Information

with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

## Reference Information

<b>TKN-F-VA</b>	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 1 of 10

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5586982</b>							
<b>WG3620465-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.6		%		85-115	18-SEP-21
<b>WG3620465-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	18-SEP-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5586928</b>							
<b>WG3620423-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.9		%		85-115	18-SEP-21
<b>WG3620423-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-SEP-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5591376</b>							
<b>WG3621955-7</b>	<b>DUP</b>	<b>L2639693-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	21-SEP-21
<b>WG3621955-6</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			92.4		%		80-120	21-SEP-21
<b>WG3621955-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	21-SEP-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5586928</b>							
<b>WG3620423-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	18-SEP-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5589397</b>							
<b>WG3621448-3</b>	<b>DUP</b>	<b>L2639693-1</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-SEP-21
<b>WG3621448-2</b>	<b>LCS</b>							
Bromide (Br)			104.2		%		85-115	16-SEP-21
<b>WG3621448-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	16-SEP-21
<b>WG3621448-4</b>	<b>MS</b>	<b>L2639693-2</b>						
Bromide (Br)			108.7		%		75-125	16-SEP-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5603359							
<b>WG3626685-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			88.6		%		80-120	27-SEP-21
<b>WG3626685-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-SEP-21
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5603359							
<b>WG3626685-6</b>	<b>LCS</b>							
Total Organic Carbon			91.1		%		80-120	27-SEP-21
<b>WG3626685-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	27-SEP-21
<b>CL-L-IC-N-CL</b> <b>Water</b>								
Batch	R5589397							
<b>WG3621448-3</b>	<b>DUP</b>	<b>L2639693-1</b>						
Chloride (Cl)			0.25	0.24	mg/L	3.2	20	16-SEP-21
<b>WG3621448-2</b>	<b>LCS</b>							
Chloride (Cl)			104.4		%		85-115	16-SEP-21
<b>WG3621448-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	16-SEP-21
<b>WG3621448-4</b>	<b>MS</b>	<b>L2639693-2</b>						
Chloride (Cl)			107.5		%		75-125	16-SEP-21
<b>CO3-CL</b> <b>Water</b>								
Batch	R5586928							
<b>WG3620423-1</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	18-SEP-21
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R5586928							
<b>WG3620423-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			97.3		%		90-110	18-SEP-21
<b>WG3620423-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	18-SEP-21
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R5589397							
<b>WG3621448-3</b>	<b>DUP</b>	<b>L2639693-1</b>						
Fluoride (F)			0.142	0.141	mg/L	0.9	20	16-SEP-21
<b>WG3621448-2</b>	<b>LCS</b>							
Fluoride (F)			101.6		%		90-110	16-SEP-21



## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5589397</b>							
<b>WG3621448-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	16-SEP-21
<b>WG3621448-4</b>	<b>MS</b>	<b>L2639693-2</b>						
Fluoride (F)			106.5		%		75-125	16-SEP-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5586840</b>							
<b>WG3620318-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			108.0		%		80-120	18-SEP-21
<b>WG3620318-14</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			104.0		%		80-120	18-SEP-21
<b>WG3620318-13</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-SEP-21
<b>WG3620318-9</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-SEP-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5591376</b>							
<b>WG3621955-7</b>	<b>DUP</b>	<b>L2639693-1</b>						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-SEP-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-SEP-21
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-SEP-21
Barium (Ba)-Dissolved		0.0559	0.0538		mg/L	3.9	20	21-SEP-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	21-SEP-21
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	21-SEP-21
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	21-SEP-21
Calcium (Ca)-Dissolved		39.7	40.5		mg/L	2.0	20	21-SEP-21
Chromium (Cr)-Dissolved		0.00018	0.00016		mg/L	16	20	21-SEP-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-SEP-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	21-SEP-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	21-SEP-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	21-SEP-21
Lithium (Li)-Dissolved		0.0019	0.0022		mg/L	14	20	21-SEP-21
Magnesium (Mg)-Dissolved		9.90	9.65		mg/L	2.6	20	21-SEP-21
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-SEP-21
Molybdenum (Mo)-Dissolved		0.00118	0.00117		mg/L	0.5	20	21-SEP-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	21-SEP-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	21-SEP-21





## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5591376</b>							
<b>WG3621955-7</b>	<b>DUP</b>	<b>L2639693-1</b>						
Potassium (K)-Dissolved		0.39	0.39		mg/L	0.6	20	21-SEP-21
Selenium (Se)-Dissolved		0.000749	0.000668		mg/L	11	20	21-SEP-21
Silicon (Si)-Dissolved		1.99	2.01		mg/L	0.7	20	21-SEP-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	21-SEP-21
Sodium (Na)-Dissolved		0.688	0.686		mg/L	0.3	20	21-SEP-21
Strontium (Sr)-Dissolved		0.202	0.202		mg/L	0.1	20	21-SEP-21
Sulfur (S)-Dissolved		6.10	6.18		mg/L	1.2	20	21-SEP-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	21-SEP-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-SEP-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	21-SEP-21
Uranium (U)-Dissolved		0.000646	0.000639		mg/L	1.1	20	21-SEP-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	21-SEP-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-SEP-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	21-SEP-21
<b>WG3621955-6</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.8		%		80-120	21-SEP-21
Antimony (Sb)-Dissolved			101.0		%		80-120	21-SEP-21
Arsenic (As)-Dissolved			96.9		%		80-120	21-SEP-21
Barium (Ba)-Dissolved			98.7		%		80-120	21-SEP-21
Bismuth (Bi)-Dissolved			98.4		%		80-120	21-SEP-21
Boron (B)-Dissolved			86.3		%		80-120	21-SEP-21
Cadmium (Cd)-Dissolved			95.5		%		80-120	21-SEP-21
Calcium (Ca)-Dissolved			92.4		%		80-120	21-SEP-21
Chromium (Cr)-Dissolved			97.5		%		80-120	21-SEP-21
Cobalt (Co)-Dissolved			100.9		%		80-120	21-SEP-21
Copper (Cu)-Dissolved			95.3		%		80-120	21-SEP-21
Iron (Fe)-Dissolved			96.7		%		80-120	21-SEP-21
Lead (Pb)-Dissolved			98.1		%		80-120	21-SEP-21
Lithium (Li)-Dissolved			100.1		%		80-120	21-SEP-21
Magnesium (Mg)-Dissolved			94.4		%		80-120	21-SEP-21
Manganese (Mn)-Dissolved			101.0		%		80-120	21-SEP-21
Molybdenum (Mo)-Dissolved			99.0		%		80-120	21-SEP-21
Nickel (Ni)-Dissolved			98.1		%		80-120	21-SEP-21
Phosphorus (P)-Dissolved			108.3		%		70-130	21-SEP-21



## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5591376</b>							
<b>WG3621955-6</b>	<b>LCS</b>							
Potassium (K)-Dissolved			96.4		%		80-120	21-SEP-21
Selenium (Se)-Dissolved			94.8		%		80-120	21-SEP-21
Silicon (Si)-Dissolved			93.8		%		60-140	21-SEP-21
Silver (Ag)-Dissolved			102.9		%		80-120	21-SEP-21
Sodium (Na)-Dissolved			97.2		%		80-120	21-SEP-21
Strontium (Sr)-Dissolved			96.4		%		80-120	21-SEP-21
Sulfur (S)-Dissolved			102.2		%		80-120	21-SEP-21
Thallium (Tl)-Dissolved			97.7		%		80-120	21-SEP-21
Tin (Sn)-Dissolved			97.7		%		80-120	21-SEP-21
Titanium (Ti)-Dissolved			91.4		%		80-120	21-SEP-21
Uranium (U)-Dissolved			98.4		%		80-120	21-SEP-21
Vanadium (V)-Dissolved			99.8		%		80-120	21-SEP-21
Zinc (Zn)-Dissolved			97.6		%		80-120	21-SEP-21
Zirconium (Zr)-Dissolved			100.3		%		80-120	21-SEP-21
<b>WG3621955-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	21-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	21-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	21-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	21-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	21-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	21-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	21-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	21-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	21-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	21-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	21-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	21-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	21-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	21-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	21-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	21-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	21-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	21-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	21-SEP-21



## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5591376</b>							
<b>WG3621955-5</b>	<b>MB</b>							
Potassium (K)-Dissolved			<0.050		mg/L		0.05	21-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	21-SEP-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	21-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	21-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	21-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	21-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	21-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	21-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	21-SEP-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	21-SEP-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	21-SEP-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	21-SEP-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	21-SEP-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	21-SEP-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5606938</b>							
<b>WG3630212-6</b>	<b>LCS</b>							
Ammonia as N			97.8		%		85-115	02-OCT-21
<b>WG3630212-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	02-OCT-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5589397</b>							
<b>WG3621448-3</b>	<b>DUP</b>	<b>L2639693-1</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	16-SEP-21
<b>WG3621448-2</b>	<b>LCS</b>							
Nitrite (as N)			103.3		%		90-110	16-SEP-21
<b>WG3621448-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	16-SEP-21
<b>WG3621448-4</b>	<b>MS</b>	<b>L2639693-2</b>						
Nitrite (as N)			109.0		%		75-125	16-SEP-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5589397</b>							
<b>WG3621448-3</b>	<b>DUP</b>	<b>L2639693-1</b>						
Nitrate (as N)		0.0804	0.0787		mg/L	2.1	20	16-SEP-21
<b>WG3621448-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5589397							
<b>WG3621448-2</b>	<b>LCS</b>							
Nitrate (as N)			105.1		%		90-110	16-SEP-21
<b>WG3621448-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	16-SEP-21
<b>WG3621448-4</b>	<b>MS</b>	<b>L2639693-2</b>						
Nitrate (as N)			106.4		%		75-125	16-SEP-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5586928							
<b>WG3620423-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	18-SEP-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5590324							
<b>WG3621796-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			218		mV		210-230	21-SEP-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5586824							
<b>WG3620302-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			95.4		%		80-120	18-SEP-21
<b>WG3620302-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	18-SEP-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5586928							
<b>WG3620423-2</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	18-SEP-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5584929							
<b>WG3617765-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			97.5		%		80-120	15-SEP-21
<b>WG3617765-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	15-SEP-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5589397</b>							
<b>WG3621448-3</b>	<b>DUP</b>	<b>L2639693-1</b>						
Sulfate (SO4)		16.7	16.7		mg/L	0.1	20	16-SEP-21
<b>WG3621448-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.2		%		90-110	16-SEP-21
<b>WG3621448-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	16-SEP-21
<b>WG3621448-4</b>	<b>MS</b>	<b>L2639693-2</b>						
Sulfate (SO4)			119.2		%		75-125	16-SEP-21
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5590496</b>							
<b>WG3620607-3</b>	<b>DUP</b>	<b>L2639693-1</b>						
Total Dissolved Solids		172	171		mg/L	0.6	20	20-SEP-21
<b>WG3620607-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.6		%		85-115	20-SEP-21
<b>WG3620607-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	20-SEP-21
<b>TKN-F-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5605322</b>							
<b>WG3621774-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			102.9		%		75-125	29-SEP-21
<b>WG3621774-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-SEP-21
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5590176</b>							
<b>WG3620611-2</b>	<b>LCS</b>							
Total Suspended Solids			99.8		%		85-115	20-SEP-21
<b>WG3620611-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	20-SEP-21
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5586193</b>							
<b>WG3619567-2</b>	<b>LCS</b>							
Turbidity			98.2		%		85-115	17-SEP-21
<b>WG3619567-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	17-SEP-21

# Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 9 of 10

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	14-SEP-21 15:10	21-SEP-21 12:20	0.25	165	hours	EHTR-FM
	2	14-SEP-21 15:00	21-SEP-21 12:20	0.25	165	hours	EHTR-FM
	3	14-SEP-21 10:45	21-SEP-21 12:20	0.25	170	hours	EHTR-FM
	4	14-SEP-21 12:00	21-SEP-21 12:20	0.25	168	hours	EHTR-FM
pH							
	1	14-SEP-21 15:10	18-SEP-21 09:00	0.25	90	hours	EHTR-FM
	2	14-SEP-21 15:00	18-SEP-21 09:00	0.25	90	hours	EHTR-FM
	3	14-SEP-21 10:45	18-SEP-21 09:00	0.25	94	hours	EHTR-FM
	4	14-SEP-21 12:00	18-SEP-21 09:00	0.25	93	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2639693 were received on 15-SEP-21 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.









SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 17-SEP-21  
Report Date: 05-OCT-21 13:53 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2641139  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2641139-1	L2641139-2	L2641139-3		
					L2641139-1 WG 15-SEP-21 10:30 GH_MW-MC- 2S_WG_2021_09_ 15_NP	L2641139-2 WG 15-SEP-21 11:00 GH_MW-MC- 2D_WG_2021_09_ 15_NP	L2641139-3 WG 15-SEP-21 08:15 GH_MW-WOLF- 2D_WG_2021_09_ 15_NP		
Grouping	Analyte								
<b>WATER</b>									
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	585	1960	505					
	Hardness (as CaCO3) (mg/L)	278	20.8	250					
	pH (pH)	8.01	8.98	8.08					
	ORP (mV)	470	385	420					
	Total Suspended Solids (mg/L)	<1.0	4.5	132					
	Total Dissolved Solids (mg/L)	373	1200	353					
	Turbidity (NTU)	0.57	28.5	119					
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5.2	<1.0	4.5					
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	267	471	282					
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	85.6	<1.0					
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0					
	Alkalinity, Total (as CaCO3) (mg/L)	267	557	282					
	Ammonia as N (mg/L)	0.0055	0.56	0.0151					
	Bicarbonate (HCO3) (mg/L)	326	575	344					
	Bromide (Br) (mg/L)	<0.050	0.88	<0.050					
	Carbonate (CO3) (mg/L)	<5.0	51.4	<5.0					
	Chloride (Cl) (mg/L)	2.04	270	0.40					
	Fluoride (F) (mg/L)	0.121	2.76	0.214					
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0					
	Ion Balance (%)	90.9	89.1	88.4					
	Nitrate and Nitrite (as N) (mg/L)	0.176	<0.025	0.0074					
	Nitrate (as N) (mg/L)	0.176	<0.025 <sup>DLDS</sup>	0.0074					
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0010					
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.578	<0.050					
	Total Nitrogen (mg/L)	0.176	0.578	<0.050					
	Orthophosphate-Dissolved (as P) (mg/L)	0.0045	0.0964	0.0047					
	Phosphorus (P)-Total (mg/L)	0.0044	0.325 <sup>DLHC</sup>	0.0116					
	Sulfate (SO4) (mg/L)	73.1	3.8	24.8					
	Anion Sum (meq/L)	6.94	19.0	6.18					
	Cation Sum (meq/L)	6.30	16.9	5.47					
	Cation - Anion Balance (%)	-4.8	-5.8	-6.1					
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.09	2.44	1.28					
	Total Organic Carbon (mg/L)	2.16	3.13	1.22					
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD					
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD					
	Aluminum (Al)-Dissolved (mg/L)	0.0040	0.0190	0.0027					

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2641139-1	L2641139-2	L2641139-3
		Description	WG	WG	WG
		Sampled Date	15-SEP-21	15-SEP-21	15-SEP-21
		Sampled Time	10:30	11:00	08:15
		Client ID	GH_MW-MC- 2S_WG_2021_09_ 15_NP	GH_MW-MC- 2D_WG_2021_09_ 15_NP	GH_MW-WOLF- 2D_WG_2021_09_ 15_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)		<0.00010	0.00015	0.00011
	Arsenic (As)-Dissolved (mg/L)		0.00016	0.00199	0.00078
	Barium (Ba)-Dissolved (mg/L)		0.107	0.131	0.0664
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.025	0.539	0.047
	Cadmium (Cd)-Dissolved (mg/L)		0.0000379	<0.0000050	0.0000175
	Calcium (Ca)-Dissolved (mg/L)		70.9	3.65	63.9
	Chromium (Cr)-Dissolved (mg/L)		0.00013	0.00014	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		<0.00010	<0.00010	0.00021
	Copper (Cu)-Dissolved (mg/L)		0.00049	<0.00020	0.00033
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0231	1.18	0.0161
	Magnesium (Mg)-Dissolved (mg/L)		24.4	2.83	21.9
	Manganese (Mn)-Dissolved (mg/L)		0.00965	0.0455	0.0677
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00136	0.000734	0.00307
	Nickel (Ni)-Dissolved (mg/L)		0.00063	<0.00050	0.00090
	Phosphorus (P)-Dissolved (mg/L)		<0.050	0.298	<0.050
	Potassium (K)-Dissolved (mg/L)		1.17	1.77	1.74
	Selenium (Se)-Dissolved (mg/L)		0.00196	0.00428	0.000162
	Silicon (Si)-Dissolved (mg/L)		3.84	3.26	4.76
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		16.8	378	9.90
	Strontium (Sr)-Dissolved (mg/L)		0.240	0.219	0.407
	Sulfur (S)-Dissolved (mg/L)		22.8	304	8.76
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	0.000022
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.00104	0.000768	0.00196
	Vanadium (V)-Dissolved (mg/L)		<0.00050	0.00069	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	<0.0010	0.0023
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	0.00052	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2641139-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2641139-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2641139-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

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### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 1 of 13

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5597544</b>							
<b>WG3624463-4</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.1		%		85-115	22-SEP-21
<b>WG3624463-2</b>	<b>MB</b>							
Acidity (as CaCO3)			1.0		mg/L		2	22-SEP-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5597616</b>							
<b>WG3624493-4</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.8		%		85-115	22-SEP-21
<b>WG3624493-2</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-SEP-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-11</b>	<b>DUP</b>	<b>L2641139-3</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	28-SEP-21
<b>WG3626412-10</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.1		%		80-120	28-SEP-21
<b>WG3626412-6</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.2		%		80-120	28-SEP-21
<b>WG3626412-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-SEP-21
<b>WG3626412-9</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-SEP-21
<b>WG3626412-12</b>	<b>MS</b>	<b>L2641139-3</b>						
Beryllium (Be)-Dissolved			80.7		%		70-130	28-SEP-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5597616</b>							
<b>WG3624493-2</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	22-SEP-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5590836</b>							
<b>WG3621773-10</b>	<b>LCS</b>							
Bromide (Br)			102.2		%		85-115	17-SEP-21
<b>WG3621773-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	17-SEP-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5609019							
<b>WG3631672-2 LCS</b>								
Dissolved Organic Carbon			97.4		%		80-120	04-OCT-21
<b>WG3631672-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-OCT-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5609019							
<b>WG3631672-2 LCS</b>								
Total Organic Carbon			101.0		%		80-120	04-OCT-21
<b>WG3631672-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	04-OCT-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5590836							
<b>WG3621773-10 LCS</b>								
Chloride (Cl)			105.6		%		85-115	17-SEP-21
<b>WG3621773-9 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	17-SEP-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5597616							
<b>WG3624493-2 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	22-SEP-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5597616							
<b>WG3624493-4 LCS</b>								
Conductivity (@ 25C)			98.2		%		90-110	22-SEP-21
<b>WG3624493-2 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	22-SEP-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5590836							
<b>WG3621773-10 LCS</b>								
Fluoride (F)			98.2		%		90-110	17-SEP-21
<b>WG3621773-9 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	17-SEP-21
<b>HG-D-CVAA-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5591157</b>							
<b>WG3621936-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			82.8		%		80-120	22-SEP-21
<b>WG3621936-9</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000050		mg/L		0.000005	22-SEP-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-11</b>	<b>DUP</b>	<b>L2641139-3</b>						
Aluminum (Al)-Dissolved		0.0027	0.0032		mg/L	14	20	28-SEP-21
Antimony (Sb)-Dissolved		0.00011	0.00011		mg/L	7.7	20	28-SEP-21
Arsenic (As)-Dissolved		0.00078	0.00074		mg/L	5.4	20	28-SEP-21
Barium (Ba)-Dissolved		0.0664	0.0648		mg/L	2.4	20	28-SEP-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-SEP-21
Boron (B)-Dissolved		0.047	0.043		mg/L	8.8	20	28-SEP-21
Cadmium (Cd)-Dissolved		0.0000175	0.0000152		mg/L	14	20	28-SEP-21
Calcium (Ca)-Dissolved		63.9	64.8		mg/L	1.5	20	28-SEP-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-SEP-21
Cobalt (Co)-Dissolved		0.00021	0.00022		mg/L	6.1	20	28-SEP-21
Copper (Cu)-Dissolved		0.00033	0.00031		mg/L	7.3	20	28-SEP-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	28-SEP-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-SEP-21
Lithium (Li)-Dissolved		0.0161	0.0164		mg/L	2.0	20	28-SEP-21
Magnesium (Mg)-Dissolved		21.9	22.1		mg/L	0.8	20	28-SEP-21
Manganese (Mn)-Dissolved		0.0677	0.0669		mg/L	1.2	20	28-SEP-21
Molybdenum (Mo)-Dissolved		0.00307	0.00311		mg/L	1.6	20	28-SEP-21
Nickel (Ni)-Dissolved		0.00090	0.00086		mg/L	5.0	20	28-SEP-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	28-SEP-21
Potassium (K)-Dissolved		1.74	1.73		mg/L	0.7	20	28-SEP-21
Selenium (Se)-Dissolved		0.000162	0.000157		mg/L	3.0	20	28-SEP-21
Silicon (Si)-Dissolved		4.76	4.77		mg/L	0.3	20	28-SEP-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	28-SEP-21
Sodium (Na)-Dissolved		9.90	10.2		mg/L	2.8	20	28-SEP-21
Strontium (Sr)-Dissolved		0.407	0.406		mg/L	0.3	20	28-SEP-21
Sulfur (S)-Dissolved		8.76	7.78		mg/L	12	20	28-SEP-21
Thallium (Tl)-Dissolved		0.000022	0.000026		mg/L	16	20	28-SEP-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-SEP-21



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-11</b>	<b>DUP</b>	<b>L2641139-3</b>						
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	28-SEP-21
Uranium (U)-Dissolved		0.00196	0.00204		mg/L	3.8	20	28-SEP-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	28-SEP-21
Zinc (Zn)-Dissolved		0.0023	0.0024		mg/L	3.8	20	28-SEP-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	28-SEP-21
<b>WG3626412-10</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.0		%		80-120	28-SEP-21
Antimony (Sb)-Dissolved			104.3		%		80-120	28-SEP-21
Arsenic (As)-Dissolved			98.9		%		80-120	28-SEP-21
Barium (Ba)-Dissolved			98.0		%		80-120	28-SEP-21
Bismuth (Bi)-Dissolved			101.3		%		80-120	28-SEP-21
Boron (B)-Dissolved			90.6		%		80-120	28-SEP-21
Cadmium (Cd)-Dissolved			101.5		%		80-120	28-SEP-21
Calcium (Ca)-Dissolved			94.9		%		80-120	28-SEP-21
Chromium (Cr)-Dissolved			99.8		%		80-120	28-SEP-21
Cobalt (Co)-Dissolved			98.5		%		80-120	28-SEP-21
Copper (Cu)-Dissolved			94.9		%		80-120	28-SEP-21
Iron (Fe)-Dissolved			101.0		%		80-120	28-SEP-21
Lead (Pb)-Dissolved			101.7		%		80-120	28-SEP-21
Lithium (Li)-Dissolved			102.1		%		80-120	28-SEP-21
Magnesium (Mg)-Dissolved			98.1		%		80-120	28-SEP-21
Manganese (Mn)-Dissolved			98.6		%		80-120	28-SEP-21
Molybdenum (Mo)-Dissolved			103.6		%		80-120	28-SEP-21
Nickel (Ni)-Dissolved			96.9		%		80-120	28-SEP-21
Phosphorus (P)-Dissolved			93.8		%		70-130	28-SEP-21
Potassium (K)-Dissolved			98.7		%		80-120	28-SEP-21
Selenium (Se)-Dissolved			96.5		%		80-120	28-SEP-21
Silicon (Si)-Dissolved			98.0		%		60-140	28-SEP-21
Silver (Ag)-Dissolved			105.7		%		80-120	28-SEP-21
Sodium (Na)-Dissolved			98.0		%		80-120	28-SEP-21
Strontium (Sr)-Dissolved			99.0		%		80-120	28-SEP-21
Sulfur (S)-Dissolved			99.5		%		80-120	28-SEP-21
Thallium (Tl)-Dissolved			103.2		%		80-120	28-SEP-21
Tin (Sn)-Dissolved			95.3		%		80-120	28-SEP-21



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-10 LCS</b>								
Titanium (Ti)-Dissolved			94.6		%		80-120	28-SEP-21
Uranium (U)-Dissolved			102.7		%		80-120	28-SEP-21
Vanadium (V)-Dissolved			100.8		%		80-120	28-SEP-21
Zinc (Zn)-Dissolved			90.7		%		80-120	28-SEP-21
Zirconium (Zr)-Dissolved			103.0		%		80-120	28-SEP-21
<b>WG3626412-6 LCS</b>								
Aluminum (Al)-Dissolved			96.6		%		80-120	28-SEP-21
Antimony (Sb)-Dissolved			97.4		%		80-120	28-SEP-21
Arsenic (As)-Dissolved			94.7		%		80-120	28-SEP-21
Barium (Ba)-Dissolved			95.6		%		80-120	28-SEP-21
Bismuth (Bi)-Dissolved			95.3		%		80-120	28-SEP-21
Boron (B)-Dissolved			96.0		%		80-120	28-SEP-21
Cadmium (Cd)-Dissolved			96.9		%		80-120	28-SEP-21
Calcium (Ca)-Dissolved			99.9		%		80-120	28-SEP-21
Chromium (Cr)-Dissolved			94.4		%		80-120	28-SEP-21
Cobalt (Co)-Dissolved			95.8		%		80-120	28-SEP-21
Copper (Cu)-Dissolved			94.0		%		80-120	28-SEP-21
Iron (Fe)-Dissolved			93.1		%		80-120	28-SEP-21
Lead (Pb)-Dissolved			100.6		%		80-120	28-SEP-21
Lithium (Li)-Dissolved			100.6		%		80-120	28-SEP-21
Magnesium (Mg)-Dissolved			98.1		%		80-120	28-SEP-21
Manganese (Mn)-Dissolved			94.5		%		80-120	28-SEP-21
Molybdenum (Mo)-Dissolved			97.6		%		80-120	28-SEP-21
Nickel (Ni)-Dissolved			93.3		%		80-120	28-SEP-21
Phosphorus (P)-Dissolved			97.6		%		70-130	28-SEP-21
Potassium (K)-Dissolved			97.1		%		80-120	28-SEP-21
Selenium (Se)-Dissolved			91.0		%		80-120	28-SEP-21
Silicon (Si)-Dissolved			95.4		%		60-140	28-SEP-21
Silver (Ag)-Dissolved			98.2		%		80-120	28-SEP-21
Sodium (Na)-Dissolved			95.9		%		80-120	28-SEP-21
Strontium (Sr)-Dissolved			98.1		%		80-120	28-SEP-21
Sulfur (S)-Dissolved			93.1		%		80-120	28-SEP-21
Thallium (Tl)-Dissolved			95.0		%		80-120	28-SEP-21
Tin (Sn)-Dissolved			96.9		%		80-120	28-SEP-21



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-6</b>	<b>LCS</b>							
Titanium (Ti)-Dissolved			92.2		%		80-120	28-SEP-21
Uranium (U)-Dissolved			101.6		%		80-120	28-SEP-21
Vanadium (V)-Dissolved			95.9		%		80-120	28-SEP-21
Zinc (Zn)-Dissolved			91.4		%		80-120	28-SEP-21
Zirconium (Zr)-Dissolved			101.9		%		80-120	28-SEP-21
<b>WG3626412-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	28-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-5 MB</b>								
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-SEP-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-SEP-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
<b>WG3626412-9 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	28-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-9 MB</b>								
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-SEP-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-SEP-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
<b>WG3626412-12 MS</b>		<b>L2641139-3</b>						
Aluminum (Al)-Dissolved			85.2		%		70-130	28-SEP-21
Antimony (Sb)-Dissolved			87.7		%		70-130	28-SEP-21
Arsenic (As)-Dissolved			85.8		%		70-130	28-SEP-21
Barium (Ba)-Dissolved			79.4		%		70-130	28-SEP-21
Bismuth (Bi)-Dissolved			85.6		%		70-130	28-SEP-21
Boron (B)-Dissolved			77.4		%		70-130	28-SEP-21
Cadmium (Cd)-Dissolved			84.7		%		70-130	28-SEP-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	28-SEP-21
Chromium (Cr)-Dissolved			85.0		%		70-130	28-SEP-21
Cobalt (Co)-Dissolved			84.9		%		70-130	28-SEP-21
Copper (Cu)-Dissolved			85.2		%		70-130	28-SEP-21
Iron (Fe)-Dissolved			84.2		%		70-130	28-SEP-21
Lead (Pb)-Dissolved			86.8		%		70-130	28-SEP-21
Lithium (Li)-Dissolved			83.0		%		70-130	28-SEP-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	28-SEP-21
Manganese (Mn)-Dissolved			83.0		%		70-130	28-SEP-21
Molybdenum (Mo)-Dissolved			87.5		%		70-130	28-SEP-21
Nickel (Ni)-Dissolved			84.4		%		70-130	28-SEP-21
Phosphorus (P)-Dissolved			81.6		%		70-130	28-SEP-21
Potassium (K)-Dissolved			87.0		%		70-130	28-SEP-21
Selenium (Se)-Dissolved			85.6		%		70-130	28-SEP-21
Silicon (Si)-Dissolved			80.9		%		70-130	28-SEP-21
Silver (Ag)-Dissolved			89.7		%		70-130	28-SEP-21
Sodium (Na)-Dissolved			79.3		%		70-130	28-SEP-21
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	28-SEP-21
Thallium (Tl)-Dissolved			87.9		%		70-130	28-SEP-21
Tin (Sn)-Dissolved			84.0		%		70-130	28-SEP-21
Titanium (Ti)-Dissolved			82.1		%		70-130	28-SEP-21



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b> <b>Water</b>								
Batch	R5604083							
<b>WG3626412-12</b>	<b>MS</b>	<b>L2641139-3</b>						
Uranium (U)-Dissolved			84.8		%		70-130	28-SEP-21
Vanadium (V)-Dissolved			86.5		%		70-130	28-SEP-21
Zinc (Zn)-Dissolved			81.9		%		70-130	28-SEP-21
Zirconium (Zr)-Dissolved			86.9		%		70-130	28-SEP-21
<b>NH3-L-F-CL</b> <b>Water</b>								
Batch	R5607381							
<b>WG3630300-15</b>	<b>DUP</b>	<b>L2641139-3</b>						
Ammonia as N		0.0151	0.0179		mg/L	17	20	04-OCT-21
<b>WG3630300-14</b>	<b>LCS</b>							
Ammonia as N			101.1		%		85-115	04-OCT-21
<b>WG3630300-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	04-OCT-21
<b>WG3630300-16</b>	<b>MS</b>	<b>L2641139-3</b>						
Ammonia as N			113.9		%		75-125	04-OCT-21
<b>NO2-L-IC-N-CL</b> <b>Water</b>								
Batch	R5590836							
<b>WG3621773-10</b>	<b>LCS</b>							
Nitrite (as N)			105.8		%		90-110	17-SEP-21
<b>WG3621773-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	17-SEP-21
<b>NO3-L-IC-N-CL</b> <b>Water</b>								
Batch	R5590836							
<b>WG3621773-10</b>	<b>LCS</b>							
Nitrate (as N)			107.0		%		90-110	17-SEP-21
<b>WG3621773-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	17-SEP-21
<b>OH-CL</b> <b>Water</b>								
Batch	R5597616							
<b>WG3624493-2</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	22-SEP-21
<b>ORP-CL</b> <b>Water</b>								
Batch	R5593821							
<b>WG3623082-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	22-SEP-21
<b>WG3623082-4</b>	<b>DUP</b>	<b>L2641139-1</b>						





## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5593821							
WG3623082-4	DUP	L2641139-1						
ORP		470	475	J	mV	4.7	15	22-SEP-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5595612							
WG3623716-14	LCS							
Phosphorus (P)-Total			96.1		%		80-120	23-SEP-21
WG3623716-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-SEP-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5597616							
WG3624493-4	LCS							
pH			7.02		pH		6.9-7.1	22-SEP-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5587924							
WG3620920-6	LCS							
Orthophosphate-Dissolved (as P)			103.7		%		80-120	18-SEP-21
WG3620920-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	18-SEP-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5590836							
WG3621773-10	LCS							
Sulfate (SO4)			107.2		%		90-110	17-SEP-21
WG3621773-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	17-SEP-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5593676							
WG3621633-2	LCS							
Total Dissolved Solids			100.9		%		85-115	21-SEP-21
WG3621633-1	MB							
Total Dissolved Solids			<10		mg/L		10	21-SEP-21
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5602660							
WG3624475-5	LCS							
Total Kjeldahl Nitrogen			99.3		%		75-125	24-SEP-21
WG3624475-6	LCS							



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5602660</b>							
<b>WG3624475-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			85.4		%		75-125	24-SEP-21
<b>WG3624475-7</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			87.4		%		75-125	24-SEP-21
<b>WG3624475-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.1		%		75-125	24-SEP-21
<b>WG3624475-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-SEP-21
<b>WG3624475-2</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-SEP-21
<b>WG3624475-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-SEP-21
<b>WG3624475-4</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-SEP-21
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5590176</b>							
<b>WG3620611-2</b>	<b>LCS</b>							
Total Suspended Solids			99.8		%		85-115	20-SEP-21
<b>WG3620611-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	20-SEP-21
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5586922</b>							
<b>WG3620403-2</b>	<b>LCS</b>							
Turbidity			97.5		%		85-115	19-SEP-21
<b>WG3620403-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	19-SEP-21

# Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 12 of 13

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 13 of 13

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	15-SEP-21 10:30	22-SEP-21 17:26	0.25	175	hours	EHTR-FM
	2	15-SEP-21 11:00	22-SEP-21 17:26	0.25	174	hours	EHTR-FM
	3	15-SEP-21 08:15	22-SEP-21 17:26	0.25	177	hours	EHTR-FM
Turbidity	1	15-SEP-21 10:30	19-SEP-21 12:00	3	4	days	EHT
	2	15-SEP-21 11:00	19-SEP-21 12:00	3	4	days	EHT
	3	15-SEP-21 08:15	19-SEP-21 12:00	3	4	days	EHTL
pH	1	15-SEP-21 10:30	22-SEP-21 00:00	0.25	157	hours	EHTR-FM
	2	15-SEP-21 11:00	22-SEP-21 00:00	0.25	157	hours	EHTR-FM
	3	15-SEP-21 08:15	22-SEP-21 00:00	0.25	160	hours	EHTR-FM

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2641139 were received on 17-SEP-21 10:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2641139-COFC

COC Number:

Page 1 of 2

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<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																								
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																								
Contact: Genevieve Pomerleau		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			PRIORITY (Business Days)		EMERGENCY																						
Phone: Tel.:250-354-1664 ext. 53216 Cell.: 250-505-2847		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			4 day [P4-20%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>																						
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>																						
Street: 520 Lake Street		Emails: SNC - genevieve.pomerleau' and vicky.lipinski@snc.lavalin.com			Date and Time Required for all E&P TATs:																								
City/Province: Nelson, BC		Teck - 'crystal.sabel' and sarah.therrian@teck.com			For tests that can not be performed according to the service level selected, you will be contacted.																								
Postal Code: V1L 4C6		<b>Invoice Distribution</b>			<b>Analysis Request</b>																								
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																								
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: <del>lyngale@snc.lavalin.com</del> payables@snc.lavalin.com			F/P	P	F/P																						
Company:		Project Information			DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Mer +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKGOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS												
Contact:		Oil and Gas Required Fields (client use)																											
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#																											
Job #: Greenhills Operations		Major/Minor Code: Routing Code:																											
PO / AFE: 658004		Requisitioner: Location:																											
LSD:		ALS Lab Work Order # (lab use only): L2641139			ALS Contact: Jnavat Dhaliwal 403-907-4784			Sampler: JNE,CS																					
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type																								
	<del>GH_MW-MC-1S_WG_2021_09_15_NP</del>	<del>GH_MW-MC-1S</del>	<del>15-Sep-21</del>		<del>WG</del>																								
	<del>GH_MW-MC-1B_WG_2021_09_15_NP</del>	<del>GH_MW-MC-1B</del>	<del>15-Sep-21</del>		<del>WG</del>																								
	GH_MW-MC-2S_WG_2021_09_15_NP	GH_MW-MC-2S	15-Sep-21	10:30	WG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	5									
	GH_MW-MC-2D_WG_2021_09_15_NP	GH_MW-MC-2D	15-Sep-21	11:00	WG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	5									
	<del>GH_MW-Willow-1S_WG_2021_09_15_NP</del>	<del>GH_MW-Willow-1S</del>	<del>15-Sep-21</del>		<del>WG</del>																								
	<del>GH_MW-Willow-1D_WG_2021_09_15_NP</del>	<del>GH_MW-Willow-1D</del>	<del>15-Sep-21</del>		<del>WG</del>																								
	<del>GH_MW-Willow-2S_WG_2021_09_15_NP</del>	<del>GH_MW-Willow-2S</del>	<del>15-Sep-21</del>		<del>WG</del>																								
	<del>GH_MW-Willow-2D_WG_2021_09_15_NP</del>	<del>GH_MW-Willow-2D</del>	<del>15-Sep-21</del>		<del>WG</del>																								
	<del>GH_MW-Willow-3S_WG_2021_09_15_NP</del>	<del>GH_MW-Willow-3S</del>	<del>15-Sep-21</del>		<del>WG</del>																								
	<del>GH_MW-Willow-3D_WG_2021_09_15_NP</del>	<del>GH_MW-Willow-3D</del>	<del>15-Sep-21</del>		<del>WG</del>																								
	<del>GH_MW-Wolf-1S_WG_2021_09_15_NP</del>	<del>GH_MW-Wolf-1S</del>	<del>15-Sep-21</del>		<del>WG</del>																								
	<del>GH_MW-Wolf-1D_WG_2021_09_15_NP</del>	<del>GH_MW-Wolf-1D</del>	<del>15-Sep-21</del>		<del>WG</del>																								
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																								
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																								
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)			Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																								
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Cooling Initiated <input type="checkbox"/>																								
					INITIAL COOLER TEMPERATURES °C																								
					FINAL COOLER TEMPERATURES °C																								
					7																								
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																								
Released by: <i>Sambhavad</i>	Date: <i>2/20/15</i>	Time: <i>1700</i>	Received by: <i>[Signature]</i>	Date: <i>9/17</i>	Time: <i>[Signature]</i>	Received by:	Date:	Time:	Received by:	Date:	Time:																		





SNC-Lavalin  
ATTN: Kim Harrier  
4500 Mennie Road  
Cranbrook BC V1C 4J6

Date Received: 18-SEP-21  
Report Date: 01-DEC-21 11:16 (MT)  
Version: FINAL REV. 2

Client Phone: 250-505-6493

## Certificate of Analysis

Lab Work Order #: L2641148  
Project P.O. #: 683032  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Comments: coc

Opeyemi Adetola  
Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2641148-1 WG 17-SEP-21 09:15 GH_MW_EF1A_W G_2021-09-17_NP	L2641148-2 WG 17-SEP-21 09:40 GH_MW_EF1B_W G_2021-09-17_NP	L2641148-3 WG 17-SEP-21 12:00 GH_MW_MC10- A_WG_2021-09- 17_NP	L2641148-4 WG 17-SEP-21 12:00 GH_MW_MC10- B_WG_2021-09- 17_NP	
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	305	305	306	<2.0
	Hardness (as CaCO3) (mg/L)	159	155	154	<0.50
	pH (pH)	8.13	8.12	8.21	4.85
	ORP (mV)	462	462	442	517
	Total Suspended Solids (mg/L)	277	27.8	<1.0	<1.0
	Total Dissolved Solids (mg/L)	195	180	190	<10
	Turbidity (NTU)	0.35	<0.10	<0.10	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.3	3.6	2.3	1.7
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	151	157	146	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	151	157	146	<1.0
	Ammonia as N (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	184	192	179	<5.0
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	0.69	0.62	0.68	<0.10
	Fluoride (F) (mg/L)	0.153	0.161	0.156	<0.020
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	90.8	85.7	90.3	0.0
	Nitrate and Nitrite (as N) (mg/L)	0.265	0.231	0.264	<0.0051
	Nitrate (as N) (mg/L)	0.265	0.231	0.264	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050	<0.050
	Total Nitrogen (mg/L)	0.265	0.231	0.264	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	24.1	23.3	24.0	<0.30
	Anion Sum (meq/L)	3.57	3.67	3.47	<0.10
	Cation Sum (meq/L)	3.24	3.14	3.14	<0.10
	Cation - Anion Balance (%)	-4.8	-7.7	-5.1	0.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0011	<0.0010	0.0014	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2641148-1 WG 17-SEP-21 09:15 GH_MW_EF1A_W G_2021-09-17_NP	L2641148-2 WG 17-SEP-21 09:40 GH_MW_EF1B_W G_2021-09-17_NP	L2641148-3 WG 17-SEP-21 12:00 GH_MW_MC10- A_WG_2021-09- 17_NP	L2641148-4 WG 17-SEP-21 12:00 GH_MW_MC10- B_WG_2021-09- 17_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0559	0.0561	0.0546	<0.00010
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000083	0.0000057	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	44.3	43.4	42.6	<0.050
	Chromium (Cr)-Dissolved (mg/L)	0.00023	0.00019	0.00019	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0031	0.0028	0.0030	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	11.7	11.3	11.6	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00102	0.000983	0.000976	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.37	0.43	0.37	<0.10
	Selenium (Se)-Dissolved (mg/L)	0.00186	0.00165	0.00181	<0.000050
	Silicon (Si)-Dissolved (mg/L)	1.96	2.07	1.95	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.20	0.897	1.16	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.189	0.193	0.184	<0.00020
	Sulfur (S)-Dissolved (mg/L)	8.37	8.00	8.44	<0.50
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000689	0.000623	0.000670	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2641148-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2641148-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2641148-1, -2, -3, -4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2641148

Report Date: 01-DEC-21

Page 1 of 9

Client: SNC-Lavalin  
 4500 Mennie Road  
 Cranbrook BC V1C 4J6

Contact: Kim Harrier

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
Batch	R5604770							
<b>WG3627913-4</b>	<b>LCS</b>							
Acidity (as CaCO3)			108.9		%		85-115	28-SEP-21
<b>WG3627913-1</b>	<b>MB</b>							
Acidity (as CaCO3)			2.0		mg/L		2	28-SEP-21
<b>ALK-MAN-CL</b>		<b>Water</b>						
Batch	R5606590							
<b>WG3629973-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.3		%		85-115	01-OCT-21
<b>WG3629973-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-OCT-21
<b>BE-D-L-CCMS-CL</b>		<b>Water</b>						
Batch	R5604083							
<b>WG3626412-10</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.1		%		80-120	28-SEP-21
<b>WG3626412-9</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-SEP-21
<b>BIC-CL</b>		<b>Water</b>						
Batch	R5606590							
<b>WG3629973-4</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	01-OCT-21
<b>BR-L-IC-N-CL</b>		<b>Water</b>						
Batch	R5588736							
<b>WG3621155-2</b>	<b>LCS</b>							
Bromide (Br)			102.8		%		85-115	19-SEP-21
<b>WG3621155-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	19-SEP-21
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						
Batch	R5609276							
<b>WG3631730-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			108.3		%		80-120	04-OCT-21
<b>WG3631730-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-OCT-21
<b>C-TOT-ORG-LOW-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2641148

Report Date: 01-DEC-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5609276							
<b>WG3631730-2</b>	<b>LCS</b>							
Total Organic Carbon			111.1		%		80-120	04-OCT-21
<b>WG3631730-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	04-OCT-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5588736							
<b>WG3621155-2</b>	<b>LCS</b>							
Chloride (Cl)			102.0		%		85-115	19-SEP-21
<b>WG3621155-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	19-SEP-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5606590							
<b>WG3629973-4</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	01-OCT-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5606590							
<b>WG3629973-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			97.7		%		90-110	01-OCT-21
<b>WG3629973-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	01-OCT-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5588736							
<b>WG3621155-2</b>	<b>LCS</b>							
Fluoride (F)			105.8		%		90-110	19-SEP-21
<b>WG3621155-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	19-SEP-21
<b>HG-D-CVAA-CL</b>	<b>Water</b>							
Batch	R5598480							
<b>WG3624562-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.1		%		80-120	24-SEP-21
<b>WG3624562-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-SEP-21
<b>MET-D-CCMS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2641148

Report Date: 01-DEC-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-10 LCS</b>								
Aluminum (Al)-Dissolved			99.0		%		80-120	28-SEP-21
Antimony (Sb)-Dissolved			104.3		%		80-120	28-SEP-21
Arsenic (As)-Dissolved			98.9		%		80-120	28-SEP-21
Barium (Ba)-Dissolved			98.0		%		80-120	28-SEP-21
Bismuth (Bi)-Dissolved			101.3		%		80-120	28-SEP-21
Boron (B)-Dissolved			90.6		%		80-120	28-SEP-21
Cadmium (Cd)-Dissolved			101.5		%		80-120	28-SEP-21
Calcium (Ca)-Dissolved			94.9		%		80-120	28-SEP-21
Chromium (Cr)-Dissolved			99.8		%		80-120	28-SEP-21
Cobalt (Co)-Dissolved			98.5		%		80-120	28-SEP-21
Copper (Cu)-Dissolved			94.9		%		80-120	28-SEP-21
Iron (Fe)-Dissolved			101.0		%		80-120	28-SEP-21
Lead (Pb)-Dissolved			101.7		%		80-120	28-SEP-21
Lithium (Li)-Dissolved			102.1		%		80-120	28-SEP-21
Magnesium (Mg)-Dissolved			98.1		%		80-120	28-SEP-21
Manganese (Mn)-Dissolved			98.6		%		80-120	28-SEP-21
Molybdenum (Mo)-Dissolved			103.6		%		80-120	28-SEP-21
Nickel (Ni)-Dissolved			96.9		%		80-120	28-SEP-21
Phosphorus (P)-Dissolved			93.8		%		70-130	28-SEP-21
Potassium (K)-Dissolved			98.7		%		80-120	28-SEP-21
Selenium (Se)-Dissolved			96.5		%		80-120	28-SEP-21
Silicon (Si)-Dissolved			98.0		%		60-140	28-SEP-21
Silver (Ag)-Dissolved			105.7		%		80-120	28-SEP-21
Sodium (Na)-Dissolved			98.0		%		80-120	28-SEP-21
Strontium (Sr)-Dissolved			99.0		%		80-120	28-SEP-21
Sulfur (S)-Dissolved			99.5		%		80-120	28-SEP-21
Thallium (Tl)-Dissolved			103.2		%		80-120	28-SEP-21
Tin (Sn)-Dissolved			95.3		%		80-120	28-SEP-21
Titanium (Ti)-Dissolved			94.6		%		80-120	28-SEP-21
Uranium (U)-Dissolved			102.7		%		80-120	28-SEP-21
Vanadium (V)-Dissolved			100.8		%		80-120	28-SEP-21
Zinc (Zn)-Dissolved			90.7		%		80-120	28-SEP-21
Zirconium (Zr)-Dissolved			103.0		%		80-120	28-SEP-21
<b>WG3626412-9 MB</b>								



## Quality Control Report

Workorder: L2641148

Report Date: 01-DEC-21

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-9</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	28-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-SEP-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-SEP-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21

**NH3-L-F-CL**

**Water**





## Quality Control Report

Workorder: L2641148

Report Date: 01-DEC-21

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Batch R5609402</b>								
<b>WG3630864-15</b>	<b>DUP</b>	<b>L2641148-1</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	04-OCT-21
<b>WG3630864-14</b>	<b>LCS</b>							
Ammonia as N			100.2		%		85-115	04-OCT-21
<b>WG3630864-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	04-OCT-21
<b>WG3630864-16</b>	<b>MS</b>	<b>L2641148-1</b>						
Ammonia as N			98.8		%		75-125	04-OCT-21
<b>NO2-L-IC-N-CL</b>								
<b>Batch R5588736</b>								
<b>WG3621155-2</b>	<b>LCS</b>							
Nitrite (as N)			104.1		%		90-110	19-SEP-21
<b>WG3621155-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	19-SEP-21
<b>NO3-L-IC-N-CL</b>								
<b>Batch R5588736</b>								
<b>WG3621155-2</b>	<b>LCS</b>							
Nitrate (as N)			102.2		%		90-110	19-SEP-21
<b>WG3621155-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	19-SEP-21
<b>OH-CL</b>								
<b>Batch R5606590</b>								
<b>WG3629973-4</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	01-OCT-21
<b>ORP-CL</b>								
<b>Batch R5593840</b>								
<b>WG3623096-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			222		mV		210-230	22-SEP-21
<b>P-T-L-COL-CL</b>								
<b>Batch R5599717</b>								
<b>WG3625157-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			90.2		%		80-120	25-SEP-21
<b>WG3625157-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-SEP-21
<b>PH-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2641148

Report Date: 01-DEC-21

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL Water</b>								
Batch	R5606590							
WG3629973-5	LCS							
pH			7.04		pH		6.9-7.1	01-OCT-21
<b>PO4-DO-L-COL-CL Water</b>								
Batch	R5588858							
WG3620941-3	DUP	L2641148-4						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-SEP-21
WG3620941-2	LCS							
Orthophosphate-Dissolved (as P)			100.7		%		80-120	20-SEP-21
WG3620941-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-SEP-21
WG3620941-4	MS	L2641148-4						
Orthophosphate-Dissolved (as P)			97.0		%		70-130	20-SEP-21
<b>SO4-IC-N-CL Water</b>								
Batch	R5588736							
WG3621155-2	LCS							
Sulfate (SO4)			103.2		%		90-110	19-SEP-21
WG3621155-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	19-SEP-21
<b>SOLIDS-TDS-CL Water</b>								
Batch	R5599036							
WG3623395-2	LCS							
Total Dissolved Solids			100.1		%		85-115	23-SEP-21
WG3623395-1	MB							
Total Dissolved Solids			<10		mg/L		10	23-SEP-21
Batch	R5599986							
WG3624488-2	LCS							
Total Dissolved Solids			98.8		%		85-115	24-SEP-21
WG3624488-1	MB							
Total Dissolved Solids			<10		mg/L		10	24-SEP-21
<b>TKN-L-F-CL Water</b>								
Batch	R5605657							
WG3628905-13	LCS							
Total Kjeldahl Nitrogen			87.7		%		75-125	28-SEP-21
WG3628905-14	LCS							
Total Kjeldahl Nitrogen			88.0		%		75-125	28-SEP-21
WG3628905-15	LCS							



## Quality Control Report

Workorder: L2641148

Report Date: 01-DEC-21

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5605657</b>							
<b>WG3628905-15</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			86.0		%		75-125	28-SEP-21
<b>WG3628905-16</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.0		%		75-125	28-SEP-21
<b>WG3628905-10</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-SEP-21
<b>WG3628905-11</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-SEP-21
<b>WG3628905-12</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-SEP-21
<b>WG3628905-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-SEP-21
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5596526</b>							
<b>WG3621631-4</b>	<b>LCS</b>							
Total Suspended Solids			97.0		%		85-115	22-SEP-21
<b>WG3621631-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	22-SEP-21
<b>Batch</b>	<b>R5598917</b>							
<b>WG3623396-2</b>	<b>LCS</b>							
Total Suspended Solids			95.8		%		85-115	23-SEP-21
<b>WG3623396-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	23-SEP-21
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5587316</b>							
<b>WG3620679-2</b>	<b>LCS</b>							
Turbidity			98.1		%		85-115	20-SEP-21
<b>WG3620679-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	20-SEP-21

# Quality Control Report

Workorder: L2641148

Report Date: 01-DEC-21

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2641148

Report Date: 01-DEC-21

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	17-SEP-21 09:15	22-SEP-21 17:39	0.25	128	hours	EHTR-FM
	2	17-SEP-21 09:40	22-SEP-21 17:39	0.25	128	hours	EHTR-FM
	3	17-SEP-21 12:00	22-SEP-21 17:39	0.25	126	hours	EHTR-FM
	4	17-SEP-21 12:00	22-SEP-21 17:39	0.25	126	hours	EHTR-FM
pH	1	17-SEP-21 09:15	01-OCT-21 09:00	0.25	336	hours	EHTR-FM
	2	17-SEP-21 09:40	01-OCT-21 09:00	0.25	335	hours	EHTR-FM
	3	17-SEP-21 12:00	01-OCT-21 09:00	0.25	333	hours	EHTR-FM
	4	17-SEP-21 12:00	01-OCT-21 09:00	0.25	333	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2641148 were received on 18-SEP-21 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>												
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply												
Contact: Genevieve Pomerleau <b>Kim Harter</b>		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			PRIORITY (Business days)		EMERGENCY										
Phone: Tel: 250-354-1664 ext 53246 Cell: 250-605-2847		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			4 day [P4-20%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>										
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>										
Street: 620 Lake Street <b>901 Industrial Rd 2.</b>		Emails: SNC - genevieve.pomerleau and <b>Kim.Harter</b>			Date and Time Required for all E&P TATs:												
City/Province: Nelson, BC <b>Cranbrook, BC</b>		wicky.ilpinski@snc-lavalin.com <b>@snc-lavalin</b>			For tests that can not be performed according to the service level selected, you will be contacted.												
Postal Code: V1L 4G6 <b>VIC 4C9</b>		Teck - "sarah.therrien", "crystal.sebol"@teck.com			<b>Analysis Request</b>												
<b>Invoice To</b>		<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P P F/P P												
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: tyler.gale@snc-lavalin.com			DOC (C-DIS-ORG-LOW-CL) <input checked="" type="checkbox"/>												
Company:		payables@snc-lavalin.com			TOC (C-TOT-ORG-LOW-CL) <input checked="" type="checkbox"/>												
Contact:					BCMDG D-Met: +Hg (MET-D-BCMDG-CL) <input checked="" type="checkbox"/>												
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>			Total N Calc. (N-T-CALC-CL) <input checked="" type="checkbox"/>												
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#			Nitrate + Nitrite Calc. (N2N3-CALC-CL) <input checked="" type="checkbox"/>												
Job #: Greenhills Operations		Major/Minor Code: Routing Code:			Teck Routine (TECKCOAL-ROUTINE-CL) <input checked="" type="checkbox"/>												
PO / AFE: <del>958004</del> <b>683032</b>		Requisitioner:			TKN (TKN-L-F-CL) <input checked="" type="checkbox"/>												
LSD:		Location:			Bicarbonate (BIC-CL) <input checked="" type="checkbox"/>												
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784			Carbonate (CO3-CL) <input checked="" type="checkbox"/>												
		Sampler: <b>JVG CS</b>			Hydroxide (OH-CL) <input checked="" type="checkbox"/>												
ALS Sample # (lab use only)		Sample Identification &/or Coordinates (This description will appear on the report)		Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type		SAMPLES ON HOLD		Sample is hazardous (please provide further detail)		NUMBER OF CONTAINERS	
		GH_MW_MC10A_WG_2021_09_NP		GH_MW_MC10-A						WG							
		GH_MW_MC11-A_WG_2021_09_NP		GH_MW_MC11-A						WG							
		GH_MW_MC10-B_WG_2021_09_NP		GH_MW_MC10-B						WG							
		GH_MW_MC10-C_WG_2021_09_NP		GH_MW_MC10-C						WG							
		<b>GH_MW_EF1A-WG-2021-09-13-NP</b>		<b>GH_MW_EF1A</b>		<b>17 Sept 21</b>		<b>9:15</b>		<b>WG</b>		<b>X X X X X X X X X</b>				<b>5</b>	
		<b>GH_MW_EF1B-WG-2021-09-13-NP</b>		<b>GH_MW_EF1B</b>		<b>17 Sept 21</b>		<b>9:40</b>		<b>WG</b>		<b>X X X X X X X X X</b>				<b>5</b>	
		<b>GH_MW_MC10A-WG-2021-09-13-NP</b>		<b>GH_MW_MC10-A</b>		<b>17 Sept 21</b>		<b>12:00</b>		<b>WG</b>		<b>X X X X X X X X X</b>				<b>5</b>	
		<b>GH_MW_MC10B-WG-2021-09-13-NP</b>		<b>GH_MW_MC10-B</b>		<b>17 Sept 21</b>		<b>12:00</b>		<b>WG</b>		<b>X X X X X X X X X</b>				<b>5</b>	
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>												
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>												
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)			Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>												
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Cooling Initiated <input type="checkbox"/>												
					INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C												
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>												
Released by: <b>Jen Vongrad</b> Date: <b>21/09/17</b> Time: <b>7:00</b>		Received by: <b>[Signature]</b> Date: <b>9/18</b> Time: <b>[Signature]</b>			Received by: _____ Date: _____ Time: _____												



SNC-Lavalin  
ATTN: Tyler Gale  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 22-SEP-21  
Report Date: 07-OCT-21 16:15 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2642551  
Project P.O. #: 674842/ 681309  
Job Reference: 674842  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2642551-1 WG 21-SEP-21 09:50 GH_MW_GHC_2A _WG_2021_09_21 _NP	L2642551-2 WG 21-SEP-21 10:00 GH_MW_GHC_2B _WG_2021_09_21 _NP	L2642551-3 WG 21-SEP-21 13:30 GH_MW_GHC_3B _WG_2021_09_21 _NP	L2642551-4 WG 21-SEP-21 08:30 GH_MW_GHC_4B _WG_2021_09_21 _NP	L2642551-5 WG 21-SEP-21 12:00 GH_MW_GAC_1_ WG_2021_09_21 _NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1110	698 <sup>HTD</sup>	649 <sup>HTD</sup>	1300	1730
	Hardness (as CaCO3) (mg/L)	672	408	396	840	1080
	pH (pH)	7.82	7.91	8.01	8.18	8.25
	ORP (mV)	447	479	474	476	442
	Total Suspended Solids (mg/L)	59.2	11.9	<1.0	1.1	8.7
	Total Dissolved Solids (mg/L)	959	520	408	1050	1500
	Turbidity (NTU)	33.3	58.2	0.28	1.36	26.3
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	15.7	7.6	6.4	8.5	6.5
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	242	320	347	240	155
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	242	320 <sup>HTD</sup>	347 <sup>HTD</sup>	240	155
	Ammonia as N (mg/L)	0.220	0.0094 <sup>HTD</sup>	0.0346 <sup>HTD</sup>	0.0067	0.0514
	Bicarbonate (HCO3) (mg/L)	296 <sup>DLDS</sup>	390 <sup>HTD</sup>	423 <sup>HTD</sup>	293 <sup>DLDS</sup>	189 <sup>DLDS</sup>
	Bromide (Br) (mg/L)	<0.25 <sup>DLDS</sup>	<0.050 <sup>HTD</sup>	<0.050 <sup>HTD</sup>	<0.25 <sup>DLDS</sup>	<0.25 <sup>DLDS</sup>
	Carbonate (CO3) (mg/L)	<5.0	<5.0 <sup>HTD</sup>	<5.0 <sup>HTD</sup>	<5.0	<5.0
	Chloride (Cl) (mg/L)	1.10	1.71	0.96	5.40 <sup>DLDS</sup>	3.26 <sup>DLDS</sup>
	Fluoride (F) (mg/L)	0.12	0.137 <sup>HTD</sup>	0.231 <sup>HTD</sup>	<0.10 <sup>DLDS</sup>	<0.10 <sup>DLDS</sup>
	Hydroxide (OH) (mg/L)	<5.0	<5.0 <sup>HTD</sup>	<5.0 <sup>HTD</sup>	<5.0	<5.0
	Ion Balance (%)	113	100	102	104	96.3
	Nitrate and Nitrite (as N) (mg/L)	0.316	0.0363	0.467	2.47	0.041
	Nitrate (as N) (mg/L)	0.310	0.0363	0.456	2.47 <sup>DLDS</sup>	0.041 <sup>DLDS</sup>
	Nitrite (as N) (mg/L)	0.0060	<0.0010	0.0110	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>
	Total Kjeldahl Nitrogen (mg/L)	0.272	0.069	0.129	0.419	0.105
	Total Nitrogen (mg/L)	0.588	0.106	0.596	2.89	0.146
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010 <sup>DLHC</sup>	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.110 <sup>DLHC</sup>	0.0559	<0.0020	0.0079	0.0055
	Sulfate (SO4) (mg/L)	423	105	49.1	543	944
	Anion Sum (meq/L)	13.7	8.63	8.02	16.4	22.8
	Cation Sum (meq/L)	15.4	8.63	8.15	17.1	22.0
Cation - Anion Balance (%)	5.9	0.0	0.8	1.9	-1.9	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.22	1.73	2.10	2.27	3.33
	Total Organic Carbon (mg/L)	1.61	2.58	1.74	1.98	2.81
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050 <sup>DLDS</sup>

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2642551-6	L2642551-7	L2642551-8	L2642551-9
		Description	WG	WG	WG	WG
		Sampled Date	21-SEP-21	21-SEP-21	21-SEP-21	21-SEP-21
		Sampled Time	15:00	12:00	12:00	12:00
		Client ID	GH_MW_E1_1A_WG_2021_09_21_NP	GH_MW_MC10-A_WG_2021_09_21_NP	GH_MW_MC10-B_WG_2021_09_21_NP	GH_MW_MC10-C_WG_2021_09_21_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	931	563	<2.0	<2.0	
	Hardness (as CaCO3) (mg/L)	601	394	<0.50	<0.50	
	pH (pH)	8.01	8.14	5.22	5.18	
	ORP (mV)	469	456	518	530	
	Total Suspended Solids (mg/L)	52.7	<1.0	<1.0	<1.0	
	Total Dissolved Solids (mg/L)	693	405	<10	<10	
	Turbidity (NTU)	25.4	0.25	<0.10	<0.10	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	12.3	4.1	2.1	1.9	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	306	273	<1.0	<1.0	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	306	273	<1.0	<1.0	
	Ammonia as N (mg/L)	0.166	0.0438	0.0083	0.0072	
	Bicarbonate (HCO3) (mg/L)	373	333	<5.0	<5.0	
	Bromide (Br) (mg/L)	<0.25 <sup>DLDS</sup>	<0.050	<0.050	<0.050	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	0.80	0.94	<0.10	<0.10	
	Fluoride (F) (mg/L)	<0.10 <sup>DLDS</sup>	0.244	<0.020	<0.020	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	
	Ion Balance (%)	106	118	0.0	0.0	
	Nitrate and Nitrite (as N) (mg/L)	<0.025	0.473	<0.0051	<0.0051	
	Nitrate (as N) (mg/L)	<0.025 <sup>DLDS</sup>	0.458	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLDS</sup>	0.0143	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.187	0.112	<0.050	<0.050	
	Total Nitrogen (mg/L)	0.187	0.584	<0.050	<0.050	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0734	<0.0020	<0.0020	<0.0020	
	Sulfate (SO4) (mg/L)	280	63.7	<0.30	<0.30	
	Anion Sum (meq/L)	12.0	6.85	<0.10	<0.10	
	Cation Sum (meq/L)	12.7	8.11	<0.10	<0.10	
Cation - Anion Balance (%)	3.0	8.4	0.0	0.0		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.46	2.05	0.54	<0.50	
	Total Organic Carbon (mg/L)	1.63	1.80	<0.50	<0.50	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2642551-1	L2642551-2	L2642551-3	L2642551-4	L2642551-5
					WG	WG	WG	WG	WG
		21-SEP-21	09:50		21-SEP-21	21-SEP-21	21-SEP-21	21-SEP-21	21-SEP-21
					10:00	10:00	13:30	08:30	12:00
					GH_MW_GHC_2A	GH_MW_GHC_2B	GH_MW_GHC_3B	GH_MW_GHC_4B	GH_MW_GAC_1
					_WG_2021_09_21	_WG_2021_09_21	_WG_2021_09_21	_WG_2021_09_21	WG_2021_09_21
					_NP	_NP	_NP	_NP	_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050
	Arsenic (As)-Dissolved (mg/L)	0.00022	0.00011	0.00013	<0.00010	0.00183			DLDS
	Barium (Ba)-Dissolved (mg/L)	0.00793	0.0621	0.0444	0.0772	0.0213			DLDS
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.00010			DLDS
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.00025			DLDS
	Boron (B)-Dissolved (mg/L)	0.208	0.061	0.025	0.018	<0.050			DLDS
	Cadmium (Cd)-Dissolved (mg/L)	0.0000119	0.0000087	0.0000076	0.0000478	<0.000025			DLDS
	Calcium (Ca)-Dissolved (mg/L)	202	117	98.9	193	297			DLDS
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00012	<0.00010	0.00012	<0.00050			DLDS
	Cobalt (Co)-Dissolved (mg/L)	0.00024	<0.00010	<0.00010	<0.00010	<0.00050			DLDS
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00026	<0.00020	0.00029	<0.0010			DLDS
	Iron (Fe)-Dissolved (mg/L)	0.019	<0.010	<0.010	<0.010	2.12			DLDS
	Lead (Pb)-Dissolved (mg/L)	0.000416	<0.000050	<0.000050	<0.000050	<0.00025			DLDS
	Lithium (Li)-Dissolved (mg/L)	0.0526	0.0213	0.0274	0.0104	0.0116			DLDS
	Magnesium (Mg)-Dissolved (mg/L)	41.1	28.2	36.3	87.2	82.8			DLDS
	Manganese (Mn)-Dissolved (mg/L)	1.37	0.00065	0.0146	<0.00010	0.664			DLDS
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			DLDS
	Molybdenum (Mo)-Dissolved (mg/L)	0.000318	0.000484	0.00138	0.000454	0.00149			DLDS
	Nickel (Ni)-Dissolved (mg/L)	0.00110	<0.00050	<0.00050	<0.00050	<0.0025			DLDS
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.25			DLDS
	Potassium (K)-Dissolved (mg/L)	3.56	1.58	1.55	1.91	1.46			DLDS
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000337	0.000742	0.0803	<0.00025			DLDS
	Silicon (Si)-Dissolved (mg/L)	6.89	5.59	5.12	5.32	5.10			DLDS
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050			DLDS
	Sodium (Na)-Dissolved (mg/L)	42.7	10.1	4.53	5.64	4.64			DLDS
	Strontium (Sr)-Dissolved (mg/L)	0.775	0.301	0.526	0.396	0.593			DLDS
	Sulfur (S)-Dissolved (mg/L)	151	38.6	17.8	212	328			DLDS
	Thallium (Tl)-Dissolved (mg/L)	0.000012	<0.000010	<0.000010	<0.000010	<0.000050			DLDS
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050			DLDS
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.0015			DLDS
	Uranium (U)-Dissolved (mg/L)	0.000283	0.000619	0.00195	0.00179	0.000406			DLDS
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.0025			DLDS
	Zinc (Zn)-Dissolved (mg/L)	0.0017	0.0013	<0.0010	<0.0010	<0.0050			DLDS
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.0010			DLDS

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2642551-6	L2642551-7	L2642551-8	L2642551-9
		Description	WG	WG	WG	WG
		Sampled Date	21-SEP-21	21-SEP-21	21-SEP-21	21-SEP-21
		Sampled Time	15:00	12:00	12:00	12:00
		Client ID	GH_MW_E1_1A_WG_2021_09_21_NP	GH_MW_MC10-A_WG_2021_09_21_NP	GH_MW_MC10-B_WG_2021_09_21_NP	GH_MW_MC10-C_WG_2021_09_21_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)		0.00013	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00238	0.00012	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0119	0.0445	<0.00010	<0.00010
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.048	0.025	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		<0.0000050	0.0000094	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)		119	98.8	<0.050	<0.050
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)		<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)		0.097	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0378	0.0273	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)		73.9	35.9	<0.0050	<0.0050
	Manganese (Mn)-Dissolved (mg/L)		0.0612	0.0142	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000638	0.00139	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)		0.00084	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		1.99	1.53	<0.10	<0.10
	Selenium (Se)-Dissolved (mg/L)		0.000074	0.000694	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)		8.77	5.10	<0.050	<0.050
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		14.5	4.39	<0.050	<0.050
	Strontium (Sr)-Dissolved (mg/L)		0.546	0.528	<0.00020	<0.00020
	Sulfur (S)-Dissolved (mg/L)		87.8	18.0	<0.50	<0.50
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.000331	0.00191	<0.000010	<0.000010
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0015	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		0.00104	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2642551-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2642551-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2642551-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2642551-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2642551-1, -2, -3, -4, -5, -6, -7, -8, -9

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**P04-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**S04-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-F-VA**      Water      TKN in Water by Fluorescence      APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**      Water      Total Suspended Solids      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2642551

Report Date: 07-OCT-21

Page 1 of 12

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Tyler Gale

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604770</b>							
<b>WG3627913-8</b>	<b>DUP</b>	<b>L2642551-1</b>						
Acidity (as CaCO3)		15.7	16.6		mg/L	5.7	20	28-SEP-21
<b>WG3627913-4</b>	<b>LCS</b>							
Acidity (as CaCO3)			108.9		%		85-115	28-SEP-21
<b>WG3627913-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			109.0		%		85-115	28-SEP-21
<b>WG3627913-1</b>	<b>MB</b>							
Acidity (as CaCO3)			2.0		mg/L		2	28-SEP-21
<b>WG3627913-2</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	28-SEP-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5607452</b>							
<b>WG3630961-4</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	03-OCT-21
<b>WG3630961-2</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-OCT-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5606483</b>							
<b>WG3629150-3</b>	<b>DUP</b>	<b>L2642551-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	30-SEP-21
<b>WG3629150-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			105.7		%		80-120	30-SEP-21
<b>WG3629150-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-SEP-21
<b>WG3629150-4</b>	<b>MS</b>	<b>L2642551-1</b>						
Beryllium (Be)-Dissolved			95.5		%		70-130	30-SEP-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5607452</b>							
<b>WG3630961-2</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	03-OCT-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5597957</b>							
<b>WG3624592-10</b>	<b>LCS</b>							
Bromide (Br)			92.6		%		85-115	23-SEP-21
<b>WG3624592-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	23-SEP-21
	<b>Water</b>							



## Quality Control Report

Workorder: L2642551

Report Date: 07-OCT-21

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5611358</b>							
<b>WG3631984-3</b>	<b>DUP</b>	<b>L2642551-9</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	05-OCT-21
<b>WG3631984-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			88.6		%		80-120	05-OCT-21
<b>WG3631984-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-OCT-21
<b>WG3631984-4</b>	<b>MS</b>	<b>L2642551-9</b>						
Dissolved Organic Carbon			102.1		%		70-130	05-OCT-21
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5611358</b>							
<b>WG3631984-3</b>	<b>DUP</b>	<b>L2642551-9</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	05-OCT-21
<b>WG3631984-2</b>	<b>LCS</b>							
Total Organic Carbon			94.2		%		80-120	05-OCT-21
<b>WG3631984-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	05-OCT-21
<b>WG3631984-4</b>	<b>MS</b>	<b>L2642551-9</b>						
Total Organic Carbon			106.5		%		70-130	05-OCT-21
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5597957</b>							
<b>WG3624592-10</b>	<b>LCS</b>							
Chloride (Cl)			100.9		%		85-115	23-SEP-21
<b>WG3624592-9</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	23-SEP-21
<b>CO3-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5607452</b>							
<b>WG3630961-2</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	03-OCT-21
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5607452</b>							
<b>WG3630961-4</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.4		%		90-110	03-OCT-21
<b>WG3630961-2</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-OCT-21
<b>F-IC-N-CL</b>								
<b>Water</b>								





## Quality Control Report

Workorder: L2642551

Report Date: 07-OCT-21

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5597957</b>							
<b>WG3624592-10</b>	<b>LCS</b>							
Fluoride (F)			101.1		%		90-110	23-SEP-21
<b>WG3624592-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	23-SEP-21
<b>HG-D-CVAA-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5598480</b>							
<b>WG3624562-18</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.1		%		80-120	24-SEP-21
<b>WG3624562-17</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-SEP-21
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5606483</b>							
<b>WG3629150-3</b>	<b>DUP</b>	<b>L2642551-1</b>						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-SEP-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-SEP-21
Arsenic (As)-Dissolved		0.00022	0.00019		mg/L	11	20	30-SEP-21
Barium (Ba)-Dissolved		0.00793	0.00806		mg/L	1.6	20	30-SEP-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-SEP-21
Boron (B)-Dissolved		0.208	0.204		mg/L	1.7	20	30-SEP-21
Cadmium (Cd)-Dissolved		0.0000119	0.0000127		mg/L	6.6	20	30-SEP-21
Calcium (Ca)-Dissolved		202	200		mg/L	0.6	20	30-SEP-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-SEP-21
Cobalt (Co)-Dissolved		0.00024	0.00024		mg/L	0.5	20	30-SEP-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	30-SEP-21
Iron (Fe)-Dissolved		0.019	0.020		mg/L	2.0	20	30-SEP-21
Lead (Pb)-Dissolved		0.000416	0.000411		mg/L	1.4	20	30-SEP-21
Lithium (Li)-Dissolved		0.0526	0.0516		mg/L	1.9	20	30-SEP-21
Magnesium (Mg)-Dissolved		41.1	41.1		mg/L	0.0	20	30-SEP-21
Manganese (Mn)-Dissolved		1.37	1.37		mg/L	0.3	20	30-SEP-21
Molybdenum (Mo)-Dissolved		0.000318	0.000299		mg/L	6.2	20	30-SEP-21
Nickel (Ni)-Dissolved		0.00110	0.00103		mg/L	7.1	20	30-SEP-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-SEP-21
Potassium (K)-Dissolved		3.56	3.55		mg/L	0.1	20	30-SEP-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-SEP-21
Silicon (Si)-Dissolved		6.89	6.97		mg/L	1.1	20	30-SEP-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-SEP-21



## Quality Control Report

Workorder: L2642551

Report Date: 07-OCT-21

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5606483</b>							
<b>WG3629150-3</b>	<b>DUP</b>	<b>L2642551-1</b>						
Sodium (Na)-Dissolved		42.7	42.3		mg/L	1.0	20	30-SEP-21
Strontium (Sr)-Dissolved		0.775	0.767		mg/L	1.0	20	30-SEP-21
Sulfur (S)-Dissolved		151	153		mg/L	1.3	20	30-SEP-21
Thallium (Tl)-Dissolved		0.000012	0.000011		mg/L	2.5	20	30-SEP-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-SEP-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	30-SEP-21
Uranium (U)-Dissolved		0.000283	0.000280		mg/L	1.2	20	30-SEP-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	30-SEP-21
Zinc (Zn)-Dissolved		0.0017	0.0017		mg/L	0.2	20	30-SEP-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	30-SEP-21
<b>WG3629150-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			109.8		%		80-120	30-SEP-21
Antimony (Sb)-Dissolved			104.8		%		80-120	30-SEP-21
Arsenic (As)-Dissolved			104.3		%		80-120	30-SEP-21
Barium (Ba)-Dissolved			105.2		%		80-120	30-SEP-21
Bismuth (Bi)-Dissolved			105.1		%		80-120	30-SEP-21
Boron (B)-Dissolved			102.4		%		80-120	30-SEP-21
Cadmium (Cd)-Dissolved			103.6		%		80-120	30-SEP-21
Calcium (Ca)-Dissolved			101.3		%		80-120	30-SEP-21
Chromium (Cr)-Dissolved			106.4		%		80-120	30-SEP-21
Cobalt (Co)-Dissolved			107.4		%		80-120	30-SEP-21
Copper (Cu)-Dissolved			105.2		%		80-120	30-SEP-21
Iron (Fe)-Dissolved			105.2		%		80-120	30-SEP-21
Lead (Pb)-Dissolved			102.0		%		80-120	30-SEP-21
Lithium (Li)-Dissolved			103.6		%		80-120	30-SEP-21
Magnesium (Mg)-Dissolved			119.3		%		80-120	30-SEP-21
Manganese (Mn)-Dissolved			108.1		%		80-120	30-SEP-21
Molybdenum (Mo)-Dissolved			107.7		%		80-120	30-SEP-21
Nickel (Ni)-Dissolved			103.7		%		80-120	30-SEP-21
Phosphorus (P)-Dissolved			107.1		%		70-130	30-SEP-21
Potassium (K)-Dissolved			112.3		%		80-120	30-SEP-21
Selenium (Se)-Dissolved			98.4		%		80-120	30-SEP-21
Silicon (Si)-Dissolved			107.5		%		60-140	30-SEP-21
Silver (Ag)-Dissolved			100.7		%		80-120	30-SEP-21



## Quality Control Report

Workorder: L2642551

Report Date: 07-OCT-21

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5606483</b>							
<b>WG3629150-2</b>	<b>LCS</b>							
Sodium (Na)-Dissolved			112.2		%		80-120	30-SEP-21
Strontium (Sr)-Dissolved			109.4		%		80-120	30-SEP-21
Sulfur (S)-Dissolved			114.3		%		80-120	30-SEP-21
Thallium (Tl)-Dissolved			100.4		%		80-120	30-SEP-21
Tin (Sn)-Dissolved			104.3		%		80-120	30-SEP-21
Titanium (Ti)-Dissolved			107.3		%		80-120	30-SEP-21
Uranium (U)-Dissolved			106.6		%		80-120	30-SEP-21
Vanadium (V)-Dissolved			109.0		%		80-120	30-SEP-21
Zinc (Zn)-Dissolved			101.6		%		80-120	30-SEP-21
Zirconium (Zr)-Dissolved			104.2		%		80-120	30-SEP-21
<b>WG3629150-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	30-SEP-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-SEP-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-SEP-21



## Quality Control Report

Workorder: L2642551

Report Date: 07-OCT-21

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5606483</b>							
<b>WG3629150-1</b>	<b>MB</b>							
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	30-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-SEP-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-SEP-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-SEP-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-SEP-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-SEP-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	30-SEP-21
<b>WG3629150-4</b>	<b>MS</b>	<b>L2642551-1</b>						
Aluminum (Al)-Dissolved			96.5		%		70-130	30-SEP-21
Antimony (Sb)-Dissolved			95.0		%		70-130	30-SEP-21
Arsenic (As)-Dissolved			95.1		%		70-130	30-SEP-21
Barium (Ba)-Dissolved			94.1		%		70-130	30-SEP-21
Bismuth (Bi)-Dissolved			97.1		%		70-130	30-SEP-21
Boron (B)-Dissolved			98.7		%		70-130	30-SEP-21
Cadmium (Cd)-Dissolved			96.7		%		70-130	30-SEP-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	30-SEP-21
Chromium (Cr)-Dissolved			95.2		%		70-130	30-SEP-21
Cobalt (Co)-Dissolved			95.8		%		70-130	30-SEP-21
Copper (Cu)-Dissolved			96.5		%		70-130	30-SEP-21
Iron (Fe)-Dissolved			93.4		%		70-130	30-SEP-21
Lead (Pb)-Dissolved			95.1		%		70-130	30-SEP-21
Lithium (Li)-Dissolved			97.7		%		70-130	30-SEP-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	30-SEP-21
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	30-SEP-21
Molybdenum (Mo)-Dissolved			98.6		%		70-130	30-SEP-21
Nickel (Ni)-Dissolved			94.1		%		70-130	30-SEP-21
Phosphorus (P)-Dissolved			97.8		%		70-130	30-SEP-21
Potassium (K)-Dissolved			91.8		%		70-130	30-SEP-21
Selenium (Se)-Dissolved			92.0		%		70-130	30-SEP-21
Silicon (Si)-Dissolved			89.2		%		70-130	30-SEP-21
Silver (Ag)-Dissolved			95.9		%		70-130	30-SEP-21



## Quality Control Report

Workorder: L2642551

Report Date: 07-OCT-21

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5606483</b>							
<b>WG3629150-4</b>	<b>MS</b>	<b>L2642551-1</b>						
Sodium (Na)-Dissolved			N/A	MS-B	%		-	30-SEP-21
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	30-SEP-21
Thallium (Tl)-Dissolved			89.3		%		70-130	30-SEP-21
Tin (Sn)-Dissolved			91.4		%		70-130	30-SEP-21
Titanium (Ti)-Dissolved			95.7		%		70-130	30-SEP-21
Uranium (U)-Dissolved			99.1		%		70-130	30-SEP-21
Vanadium (V)-Dissolved			97.4		%		70-130	30-SEP-21
Zinc (Zn)-Dissolved			90.2		%		70-130	30-SEP-21
Zirconium (Zr)-Dissolved			101.1		%		70-130	30-SEP-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5613955</b>							
<b>WG3632754-10</b>	<b>LCS</b>							
Ammonia as N			113.0		%		85-115	06-OCT-21
<b>WG3632754-14</b>	<b>LCS</b>							
Ammonia as N			111.4		%		85-115	06-OCT-21
<b>WG3632754-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	06-OCT-21
<b>WG3632754-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	06-OCT-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5597957</b>							
<b>WG3624592-10</b>	<b>LCS</b>							
Nitrite (as N)			99.8		%		90-110	23-SEP-21
<b>WG3624592-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	23-SEP-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5597957</b>							
<b>WG3624592-10</b>	<b>LCS</b>							
Nitrate (as N)			101.6		%		90-110	23-SEP-21
<b>WG3624592-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	23-SEP-21
<b>OH-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5607452</b>							
<b>WG3630961-2</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	03-OCT-21



## Quality Control Report

Workorder: L2642551

Report Date: 07-OCT-21

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5606975							
WG3630371-1	CRM	CL-ORP						
ORP			220		mV		210-230	02-OCT-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5603619							
WG3626786-2	LCS							
Phosphorus (P)-Total			96.0		%		80-120	28-SEP-21
WG3626786-4	LCS							
Phosphorus (P)-Total			98.2		%		80-120	28-SEP-21
WG3626786-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-SEP-21
WG3626786-3	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-SEP-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5607452							
WG3630961-4	LCS							
pH			7.04		pH		6.9-7.1	03-OCT-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5593838							
WG3622689-6	LCS							
Orthophosphate-Dissolved (as P)			106.5		%		80-120	22-SEP-21
WG3622689-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-SEP-21
WG3622689-8	MS	L2642551-9						
Orthophosphate-Dissolved (as P)			112.0		%		70-130	22-SEP-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5597957							
WG3624592-10	LCS							
Sulfate (SO4)			100.5		%		90-110	23-SEP-21
WG3624592-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	23-SEP-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5599986							
WG3624488-2	LCS							
Total Dissolved Solids			98.8		%		85-115	24-SEP-21
WG3624488-1	MB							



## Quality Control Report

Workorder: L2642551

Report Date: 07-OCT-21

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5599986</b>							
<b>WG3624488-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	24-SEP-21
<b>Batch</b>	<b>R5604539</b>							
<b>WG3626292-6</b>	<b>LCS</b>							
Total Dissolved Solids			101.5		%		85-115	28-SEP-21
<b>WG3626292-5</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	28-SEP-21
<b>TKN-F-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5605322</b>							
<b>WG3627154-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			107.7		%		75-125	29-SEP-21
<b>WG3627154-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-SEP-21
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5603162</b>							
<b>WG3625436-2</b>	<b>LCS</b>							
Total Suspended Solids			105.4		%		85-115	27-SEP-21
<b>WG3625436-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	27-SEP-21
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5596497</b>							
<b>WG3623944-6</b>	<b>DUP</b>	<b>L2642551-7</b>						
Turbidity		0.25	0.28		NTU	8.9	15	23-SEP-21
<b>WG3623944-2</b>	<b>LCS</b>							
Turbidity			98.9		%		85-115	23-SEP-21
<b>WG3623944-5</b>	<b>LCS</b>							
Turbidity			101.0		%		85-115	23-SEP-21
<b>WG3623944-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	23-SEP-21
<b>WG3623944-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	23-SEP-21

# Quality Control Report

Workorder: L2642551

Report Date: 07-OCT-21

Page 10 of 12

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2642551

Report Date: 07-OCT-21

Page 11 of 12

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	21-SEP-21 09:50	02-OCT-21 12:00	0.25	266	hours	EHTR-FM
	2	21-SEP-21 10:00	02-OCT-21 12:00	0.25	266	hours	EHTR-FM
	3	21-SEP-21 13:30	02-OCT-21 12:00	0.25	263	hours	EHTR-FM
	4	21-SEP-21 08:30	02-OCT-21 12:00	0.25	268	hours	EHTR-FM
	5	21-SEP-21 12:00	02-OCT-21 12:00	0.25	264	hours	EHTR-FM
	6	21-SEP-21 15:00	02-OCT-21 12:00	0.25	261	hours	EHTR-FM
	7	21-SEP-21 12:00	02-OCT-21 12:00	0.25	264	hours	EHTR-FM
	8	21-SEP-21 12:00	02-OCT-21 12:00	0.25	264	hours	EHTR-FM
	9	21-SEP-21 12:00	02-OCT-21 12:00	0.25	264	hours	EHTR-FM
pH							
	1	21-SEP-21 09:50	03-OCT-21 00:00	0.25	278	hours	EHTR-FM
	2	21-SEP-21 10:00	06-OCT-21 10:00	0.25	360	hours	EHTR-FM
	3	21-SEP-21 13:30	06-OCT-21 10:00	0.25	356	hours	EHTR-FM
	4	21-SEP-21 08:30	03-OCT-21 00:00	0.25	280	hours	EHTR-FM
	5	21-SEP-21 12:00	03-OCT-21 00:00	0.25	276	hours	EHTR-FM
	6	21-SEP-21 15:00	03-OCT-21 00:00	0.25	273	hours	EHTR-FM
	7	21-SEP-21 12:00	03-OCT-21 00:00	0.25	276	hours	EHTR-FM
	8	21-SEP-21 12:00	03-OCT-21 00:00	0.25	276	hours	EHTR-FM
	9	21-SEP-21 12:00	03-OCT-21 00:00	0.25	276	hours	EHTR-FM

**Anions and Nutrients**

Alkalinity (Species) by Manual Titration

	2	21-SEP-21 10:00	06-OCT-21 10:00	14	15	days	EHT
	3	21-SEP-21 13:30	06-OCT-21 10:00	14	15	days	EHT

Bicarbonate (HCO3)

	2	21-SEP-21 10:00	06-OCT-21 10:00	14	15	days	EHT
	3	21-SEP-21 13:30	06-OCT-21 10:00	14	15	days	EHT

Carbonate (CO3)

	2	21-SEP-21 10:00	06-OCT-21 10:00	14	15	days	EHT
	3	21-SEP-21 13:30	06-OCT-21 10:00	14	15	days	EHT

Hydroxide in Water

	2	21-SEP-21 10:00	06-OCT-21 10:00	14	15	days	EHT
	3	21-SEP-21 13:30	06-OCT-21 10:00	14	15	days	EHT

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

**Notes\*:**

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2642551 were received on 22-SEP-21 08:35.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

# Quality Control Report

Workorder: L2642551

Report Date: 07-OCT-21

Page 12 of 12

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.







SNC-Lavalin  
ATTN: KIM HARRER  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 30-SEP-21  
Report Date: 18-OCT-21 16:04 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2645881  
Project P.O. #: 683032  
Job Reference: RGMP  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

18-OCT-21 16:04 (MT)

Version: FINAL

Sample ID Description Sampled Date Sampled Time Client ID	L2645881-1 GW 29-SEP-21 12:40 RG_MW_DC1A_W G_2021_09_29_NP	L2645881-2 GW 29-SEP-21 11:30 RG_MW_DC1B_W G_2021_09_29_NP	L2645881-3 GW 29-SEP-21 14:00 RG_MW_FR11A_ WG_2021_09_29_ NP	L2645881-4 GW 29-SEP-21 14:25 RG_MW_FR11B_ WG_2021_09_29_ NP	L2645881-5 GW 29-SEP-21 12:00 RG_MW_MC10A_ WG_2021_09_29_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)				
	Hardness (as CaCO3) (mg/L)				
	pH (pH)				
<b>Anions and Nutrients</b>	Ammonia as N (mg/L)				
	Total Kjeldahl Nitrogen (mg/L)				
	Phosphorus (P)-Total (mg/L)				
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)				
	Total Organic Carbon (mg/L)				
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location				
	Dissolved Metals Filtration Location				
	Aluminum (Al)-Dissolved (mg/L)				
	Antimony (Sb)-Dissolved (mg/L)				
	Arsenic (As)-Dissolved (mg/L)				
	Barium (Ba)-Dissolved (mg/L)				
	Beryllium (Be)-Dissolved (mg/L)				
	Bismuth (Bi)-Dissolved (mg/L)				
	Boron (B)-Dissolved (mg/L)				
	Cadmium (Cd)-Dissolved (mg/L)				
	Calcium (Ca)-Dissolved (mg/L)				
	Chromium (Cr)-Dissolved (mg/L)				
	Cobalt (Co)-Dissolved (mg/L)				
	Copper (Cu)-Dissolved (mg/L)				
	Iron (Fe)-Dissolved (mg/L)				
	Lead (Pb)-Dissolved (mg/L)				
	Lithium (Li)-Dissolved (mg/L)				
	Magnesium (Mg)-Dissolved (mg/L)				
	Manganese (Mn)-Dissolved (mg/L)				
	Mercury (Hg)-Dissolved (mg/L)				
	Molybdenum (Mo)-Dissolved (mg/L)				
	Nickel (Ni)-Dissolved (mg/L)				
	Phosphorus (P)-Dissolved (mg/L)				
Potassium (K)-Dissolved (mg/L)					
Selenium (Se)-Dissolved (mg/L)					
Silicon (Si)-Dissolved (mg/L)					
Silver (Ag)-Dissolved (mg/L)					
Sodium (Na)-Dissolved (mg/L)					

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2645881-1	L2645881-2	L2645881-3	L2645881-4	L2645881-5
		Description	GW	GW	GW	GW	GW
		Sampled Date	29-SEP-21	29-SEP-21	29-SEP-21	29-SEP-21	29-SEP-21
		Sampled Time	12:40	11:30	14:00	14:25	12:00
		Client ID	RG_MW_DC1A_W G_2021_09_29_NP	RG_MW_DC1B_W G_2021_09_29_NP	RG_MW_FR11A_ WG_2021_09_29_ NP	RG_MW_FR11B_ WG_2021_09_29_ NP	RG_MW_MC10A_ WG_2021_09_29_ NP
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Strontium (Sr)-Dissolved (mg/L)		0.153	0.126	0.479	0.363	0.153
	Sulfur (S)-Dissolved (mg/L)		0.67	0.70	11.9	10.5	0.91
	Thallium (Tl)-Dissolved (mg/L)		0.000017	0.000017	0.000021	0.000022	0.000015
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	0.00111	0.00071	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		0.00042	<0.00030	<0.00030	<0.00030	0.00044
	Uranium (U)-Dissolved (mg/L)		0.000226	0.000120	0.00118	0.000864	0.000225
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0027	0.0015	0.0081	0.0119	0.0011
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
NDIS	No Data: Insufficient Sample - Samples -1 to -5 were received with Routine bottles almost empty; Only pH and EC could be run for -3 and -4, rest of codes had to be deleted

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2645881-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2645881-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2645881-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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**BE-D-L-CCMS-CL** Water Diss. Be (low) in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**C-DIS-ORG-LOW-CL** Water Dissolved Organic Carbon APHA 5310 B-Instrumental

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**C-TOT-ORG-LOW-CL** Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS



## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**TKN-F-VA** Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 1 of 8

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: KIM HARRER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BE-D-L-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-7</b>	<b>DUP</b>	<b>L2645881-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	08-OCT-21
<b>WG3635014-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			100.8		%		80-120	08-OCT-21
<b>WG3635014-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-OCT-21
<b>WG3635014-8</b>	<b>MS</b>	<b>L2645881-1</b>						
Beryllium (Be)-Dissolved			103.0		%		70-130	08-OCT-21
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5615044</b>							
<b>WG3635006-3</b>	<b>DUP</b>	<b>L2645881-5</b>						
Dissolved Organic Carbon		1.23	1.08		mg/L	13	20	08-OCT-21
<b>WG3635006-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			94.9		%		80-120	08-OCT-21
<b>WG3635006-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-OCT-21
<b>WG3635006-4</b>	<b>MS</b>	<b>L2645881-5</b>						
Dissolved Organic Carbon			87.2		%		70-130	08-OCT-21
<b>C-TOT-ORG-LOW-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5615044</b>							
<b>WG3635006-3</b>	<b>DUP</b>	<b>L2645881-5</b>						
Total Organic Carbon		1.41	1.47		mg/L	4.6	20	08-OCT-21
<b>WG3635006-2</b>	<b>LCS</b>							
Total Organic Carbon			97.9		%		80-120	08-OCT-21
<b>WG3635006-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	08-OCT-21
<b>WG3635006-4</b>	<b>MS</b>	<b>L2645881-5</b>						
Total Organic Carbon			91.8		%		70-130	08-OCT-21
<b>EC-L-PCT-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5615374</b>							
<b>WG3635299-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.0		%		90-110	11-OCT-21
<b>WG3635299-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-OCT-21
<b>HG-D-CVAA-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5609738</b>							
<b>WG3631495-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.3		%		80-120	05-OCT-21
<b>WG3631495-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000050		mg/L		0.000005	05-OCT-21
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-7</b>	<b>DUP</b>	<b>L2645881-1</b>						
Aluminum (Al)-Dissolved		0.0200	0.0199		mg/L	0.5	20	08-OCT-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-OCT-21
Arsenic (As)-Dissolved		0.00230	0.00227		mg/L	1.3	20	08-OCT-21
Barium (Ba)-Dissolved		0.449	0.437		mg/L	2.7	20	08-OCT-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-OCT-21
Boron (B)-Dissolved		0.022	0.023		mg/L	1.8	20	08-OCT-21
Cadmium (Cd)-Dissolved		0.0000197	0.0000207		mg/L	5.2	20	08-OCT-21
Calcium (Ca)-Dissolved		56.1	55.3		mg/L	1.4	20	08-OCT-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-OCT-21
Cobalt (Co)-Dissolved		0.00091	0.00090		mg/L	1.3	20	08-OCT-21
Copper (Cu)-Dissolved		0.00043	0.00042		mg/L	3.0	20	08-OCT-21
Iron (Fe)-Dissolved		1.38	1.36		mg/L	1.2	20	08-OCT-21
Lead (Pb)-Dissolved		0.000085	0.000085		mg/L	0.6	20	08-OCT-21
Lithium (Li)-Dissolved		0.0116	0.0120		mg/L	3.4	20	08-OCT-21
Magnesium (Mg)-Dissolved		25.8	25.7		mg/L	0.5	20	08-OCT-21
Manganese (Mn)-Dissolved		0.0833	0.0825		mg/L	1.0	20	08-OCT-21
Molybdenum (Mo)-Dissolved		0.00657	0.00652		mg/L	0.9	20	08-OCT-21
Nickel (Ni)-Dissolved		0.00150	0.00147		mg/L	2.5	20	08-OCT-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-OCT-21
Potassium (K)-Dissolved		2.48	2.52		mg/L	1.7	20	08-OCT-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-OCT-21
Silicon (Si)-Dissolved		5.16	5.18		mg/L	0.3	20	08-OCT-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	08-OCT-21
Sodium (Na)-Dissolved		3.62	3.62		mg/L	0.1	20	08-OCT-21
Strontium (Sr)-Dissolved		0.153	0.155		mg/L	1.4	20	08-OCT-21
Sulfur (S)-Dissolved		0.67	0.71		mg/L	5.8	20	08-OCT-21
Thallium (Tl)-Dissolved		0.000017	0.000017		mg/L	1.1	20	08-OCT-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-OCT-21



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-7</b>	<b>DUP</b>	<b>L2645881-1</b>						
Titanium (Ti)-Dissolved		0.00042	<0.00030	RPD-NA	mg/L	N/A	20	08-OCT-21
Uranium (U)-Dissolved		0.000226	0.000235		mg/L	4.0	20	08-OCT-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-OCT-21
Zinc (Zn)-Dissolved		0.0027	0.0027		mg/L	0.9	20	08-OCT-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	08-OCT-21
<b>WG3635014-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			106.7		%		80-120	08-OCT-21
Antimony (Sb)-Dissolved			109.2		%		80-120	08-OCT-21
Arsenic (As)-Dissolved			107.8		%		80-120	08-OCT-21
Barium (Ba)-Dissolved			113.1		%		80-120	08-OCT-21
Bismuth (Bi)-Dissolved			106.3		%		80-120	08-OCT-21
Boron (B)-Dissolved			99.0		%		80-120	08-OCT-21
Cadmium (Cd)-Dissolved			107.8		%		80-120	08-OCT-21
Calcium (Ca)-Dissolved			101.4		%		80-120	08-OCT-21
Chromium (Cr)-Dissolved			110.8		%		80-120	08-OCT-21
Cobalt (Co)-Dissolved			107.2		%		80-120	08-OCT-21
Copper (Cu)-Dissolved			107.9		%		80-120	08-OCT-21
Iron (Fe)-Dissolved			112.0		%		80-120	08-OCT-21
Lead (Pb)-Dissolved			105.8		%		80-120	08-OCT-21
Lithium (Li)-Dissolved			99.7		%		80-120	08-OCT-21
Magnesium (Mg)-Dissolved			116.0		%		80-120	08-OCT-21
Manganese (Mn)-Dissolved			110.2		%		80-120	08-OCT-21
Molybdenum (Mo)-Dissolved			105.1		%		80-120	08-OCT-21
Nickel (Ni)-Dissolved			108.6		%		80-120	08-OCT-21
Phosphorus (P)-Dissolved			114.0		%		70-130	08-OCT-21
Potassium (K)-Dissolved			112.7		%		80-120	08-OCT-21
Selenium (Se)-Dissolved			103.5		%		80-120	08-OCT-21
Silicon (Si)-Dissolved			107.0		%		60-140	08-OCT-21
Silver (Ag)-Dissolved			104.4		%		80-120	08-OCT-21
Sodium (Na)-Dissolved			107.1		%		80-120	08-OCT-21
Strontium (Sr)-Dissolved			108.6		%		80-120	08-OCT-21
Sulfur (S)-Dissolved			106.6		%		80-120	08-OCT-21
Thallium (Tl)-Dissolved			107.1		%		80-120	08-OCT-21
Tin (Sn)-Dissolved			111.2		%		80-120	08-OCT-21



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-6</b>	<b>LCS</b>	<b>TMRM</b>						
Titanium (Ti)-Dissolved			111.4		%		80-120	08-OCT-21
Uranium (U)-Dissolved			99.4		%		80-120	08-OCT-21
Vanadium (V)-Dissolved			109.6		%		80-120	08-OCT-21
Zinc (Zn)-Dissolved			112.2		%		80-120	08-OCT-21
Zirconium (Zr)-Dissolved			107.0		%		80-120	08-OCT-21
<b>WG3635014-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-OCT-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-OCT-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-OCT-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-OCT-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-OCT-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-OCT-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-5</b>	<b>MB</b>							
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-OCT-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-OCT-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-21
<b>WG3635014-8</b>	<b>MS</b>	<b>L2645881-1</b>						
Aluminum (Al)-Dissolved			106.4		%		70-130	08-OCT-21
Antimony (Sb)-Dissolved			108.3		%		70-130	08-OCT-21
Arsenic (As)-Dissolved			106.0		%		70-130	08-OCT-21
Barium (Ba)-Dissolved			N/A	MS-B	%		-	08-OCT-21
Bismuth (Bi)-Dissolved			111.5		%		70-130	08-OCT-21
Boron (B)-Dissolved			102.6		%		70-130	08-OCT-21
Cadmium (Cd)-Dissolved			110.7		%		70-130	08-OCT-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	08-OCT-21
Chromium (Cr)-Dissolved			108.7		%		70-130	08-OCT-21
Cobalt (Co)-Dissolved			106.2		%		70-130	08-OCT-21
Copper (Cu)-Dissolved			109.0		%		70-130	08-OCT-21
Iron (Fe)-Dissolved			109.1		%		70-130	08-OCT-21
Lead (Pb)-Dissolved			105.1		%		70-130	08-OCT-21
Lithium (Li)-Dissolved			101.5		%		70-130	08-OCT-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	08-OCT-21
Manganese (Mn)-Dissolved			108.5		%		70-130	08-OCT-21
Molybdenum (Mo)-Dissolved			96.1		%		70-130	08-OCT-21
Nickel (Ni)-Dissolved			109.0		%		70-130	08-OCT-21
Phosphorus (P)-Dissolved			109.0		%		70-130	08-OCT-21
Potassium (K)-Dissolved			109.8		%		70-130	08-OCT-21
Selenium (Se)-Dissolved			105.1		%		70-130	08-OCT-21
Silicon (Si)-Dissolved			95.1		%		70-130	08-OCT-21
Silver (Ag)-Dissolved			102.7		%		70-130	08-OCT-21
Sodium (Na)-Dissolved			106.8		%		70-130	08-OCT-21
Strontium (Sr)-Dissolved			102.7		%		70-130	08-OCT-21
Thallium (Tl)-Dissolved			101.0		%		70-130	08-OCT-21
Tin (Sn)-Dissolved			98.7		%		70-130	08-OCT-21
Titanium (Ti)-Dissolved			107.7		%		70-130	08-OCT-21



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-8</b>	<b>MS</b>	<b>L2645881-1</b>						
Uranium (U)-Dissolved			98.5		%		70-130	08-OCT-21
Vanadium (V)-Dissolved			107.9		%		70-130	08-OCT-21
Zinc (Zn)-Dissolved			109.0		%		70-130	08-OCT-21
Zirconium (Zr)-Dissolved			103.7		%		70-130	08-OCT-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5620920</b>							
<b>WG3638515-2</b>	<b>LCS</b>							
Ammonia as N			98.6		%		85-115	14-OCT-21
<b>WG3638515-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	14-OCT-21
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5609367</b>							
<b>WG3631783-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			107.9		%		80-120	05-OCT-21
<b>WG3631783-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.7		%		80-120	05-OCT-21
<b>WG3631783-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-OCT-21
<b>WG3631783-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-OCT-21
<b>PH-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5615374</b>							
<b>WG3635299-2</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	11-OCT-21
<b>TKN-F-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5612563</b>							
<b>WG3631537-3</b>	<b>DUP</b>	<b>L2645881-1</b>						
Total Kjeldahl Nitrogen		0.128	0.134		mg/L	4.7	20	06-OCT-21
<b>WG3631537-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.8		%		75-125	06-OCT-21
<b>WG3631537-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-OCT-21
<b>WG3631537-4</b>	<b>MS</b>	<b>L2645881-2</b>						
Total Kjeldahl Nitrogen			104.5		%		70-130	06-OCT-21

# Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 7 of 8

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 8 of 8

## Hold Time Exceedances:

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ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
pH	3	29-SEP-21 14:00	13-OCT-21 00:00	0.25	322	hours	EHTR-FM
	4	29-SEP-21 14:25	13-OCT-21 00:00	0.25	322	hours	EHTR-FM

## Legend & Qualifier Definitions:

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EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2645881 were received on 30-SEP-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

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The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>														
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply						EMERGENCY								
Contact: Kim Harrer		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> <input type="checkbox"/> NO		4 day [P4-20%] <input type="checkbox"/>		3 day [P3-25%] <input type="checkbox"/>		2 day [P2-50%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>								
Phone: Tel.:250-464-9108		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>														
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Date and Time Required for all E&P TATs:														
Street: 520 Lake Street		Emails: SNC - 'Kim.Harrer', 'Alex.Heathcott'		For tests that can not be performed according to the service level selected, you will be contacted.														
City/Province: Nelson, BC		Vicky.Lipinski@sncclavalin.com		<b>Analysis Request</b>														
Postal Code: V1L 4C6		Teck: Cam.Jaeger@teck.com, teck.lab.results@teck.com		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below														
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		SAMPLES ON HOLD														
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Sample is hazardous (please provide further details)														
Company:		Emails: Kim.Harrer@sncclavalin.com		NUMBER OF CONTAINERS														
Contact:		payables@sncclavalin.com																
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																
ALS Account # / Quote #: MOR125 / Q78198		AFE/Cost Center: PO#																
Job #: RGMP		Major/Minor Code: Routing Code:																
PO / AFE: 683032		Requisitioner:																
LSD:		Location:																
ALS Lab Work Order # (lab use only):		ALS Contact:		Sampler: ENDS														
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met. + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	Rb.MW.DC1A.W-2020-09-21-NP	Rb.MW.DC1A	29-Sep-21	12:40	GW	R	R	R	R	R	R	R	R	R	R			5
	Rb.MW.DC1B.W-2020-09-21-NP	Rb.MW.DC1B	↓	1:30	GW	R	R	R	R	R	R	R	R	R	R			5
	Rb.MW.FR1A.W-2020-09-29-NP	Rb.MW.FR1A	↓	14:00	GW	R	R	R	R	R	R	R	R	R	R			5
	Rb.MW.FR1B.W-2020-09-29-NP	Rb.MW.FR1B	↓	14:25	GW	R	R	R	R	R	R	R	R	R	R			5
	Rb.MW.MC1A.W-2020-09-29-NP	Rb.MW.MC1A	↓	12:00	GW	R	R	R	R	R	R	R	R	R	R			5
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>						<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>												
Are samples taken from a Regulated DW System? <input type="checkbox"/> NO						PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com												
Are samples for human consumption/ use? <input type="checkbox"/> NO						Note: No Preservative Used in amber bottles!												
						Teck Facility Name: (please select the applicable Facility)												
						REP-Regional Effects Program FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS												
<b>SHIPMENT RELEASE (client use)</b>						<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>												
Released by: <u>Shawn Endicott</u> Date: <u>29-Sep-2021</u> Time: <u>1600</u>						Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>												
Received by: <u>[Signature]</u> Date: <u>9/30</u> Time: <u>[Signature]</u>						Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>												
						Cooling Initiated <input type="checkbox"/>												
						INITIAL COOLER TEMPERATURES °C												
						FINAL COOLER TEMPERATURES °C												
<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>						<b>FINAL SHIPMENT RECEPTION (lab use only)</b>												
Released by: <u>[Signature]</u> Date: <u>29-Sep-2021</u> Time: <u>1600</u>						Received by: <u>[Signature]</u> Date: <u>9/30</u> Time: <u>[Signature]</u>												



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105960**  
**Client** : **Teck Coal Limited**  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_Elkford\_Muni\_2021\_Q4  
**Sampler** : Evan Warner  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 24-Nov-2021 08:40  
**Date Analysis Commenced** : 24-Nov-2021  
**Issue Date** : 06-Dec-2021 16:54

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					RG_DW-01-01_ WP_2021_11_2 3_NP	RG_DW-01-02_ WP_2021_11_2 3_NP	RG_DW-01-03_ WP_2021_11_2 3_NP	RG_DW-01-04_ WP_2021_11_2 3_NP	----
Client sampling date / time					23-Nov-2021 10:30	23-Nov-2021 09:45	23-Nov-2021 08:45	23-Nov-2021 11:25	----
Analyte	CAS Number	Method	LOR	Unit	CG2105960-001	CG2105960-002	CG2105960-003	CG2105960-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	2.6	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	162	160	159	248	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	197	196	194	302	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	162	160	159	248	----
conductivity	----	E100	2.0	µS/cm	386	418	341	452	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	203	209	180	238	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	466	462	443	465	----
pH	----	E108	0.10	pH units	8.07	8.08	8.17	7.77	----
solids, total dissolved [TDS]	----	E162	10	mg/L	253	260	210	266	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
turbidity	----	E121	0.10	NTU	<0.10	<0.10	<0.10	6.66	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	<0.0050	0.214	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.09	6.04	0.76	4.65	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.227	0.223	0.145	0.221	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.095	<0.050	<0.050 <sup>TKN</sup>	0.279	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.464	0.473	0.609	<0.0050	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0014	0.0015	0.0012	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0023	0.0025	<0.0020	<0.0020	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	57.9	67.8	39.0	17.6	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-01-01_ WP_2021_11_2 3_NP	RG_DW-01-02_ WP_2021_11_2 3_NP	RG_DW-01-03_ WP_2021_11_2 3_NP	RG_DW-01-04_ WP_2021_11_2 3_NP	----
Client sampling date / time					23-Nov-2021 10:30	23-Nov-2021 09:45	23-Nov-2021 08:45	23-Nov-2021 11:25	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105960-001	CG2105960-002	CG2105960-003	CG2105960-004	-----	
					Result	Result	Result	Result	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.60	4.82	4.06	5.46	----	
cation sum	----	EC101	0.10	meq/L	4.24	4.44	3.68	4.98	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.2	92.1	90.6	91.2	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.07	4.10	4.91	4.60	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00014	0.00010	<0.00010	0.00187	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0563	0.0586	0.0715	0.280	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.010	0.013	<0.010	0.011	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	<0.0050	0.0054	<0.0050	----	
calcium, total	7440-70-2	E420	0.050	mg/L	57.7	59.0	52.2	66.2	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00032	0.00023	0.00023	<0.00010	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00125	0.00231	0.00058	<0.00050	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	<0.010	0.526	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000059	0.000110	<0.000050	0.000085	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0064	0.0111	0.0025	0.0051	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	14.6	15.4	13.3	19.3	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.0695	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00122	0.00126	0.000987	0.00554	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	0.00055	----	
potassium, total	7440-09-7	E420	0.050	mg/L	0.518	0.620	0.412	0.754	----	
selenium, total	7782-49-2	E420	0.050	µg/L	2.19	2.41	3.24	<0.050	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.33	2.30	2.10	5.16	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, total	17341-25-2	E420	0.050	mg/L	3.94	5.86	1.34	3.55	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.470	0.478	0.213	0.276	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-01-01_ WP_2021_11_2 3_NP	RG_DW-01-02_ WP_2021_11_2 3_NP	RG_DW-01-03_ WP_2021_11_2 3_NP	RG_DW-01-04_ WP_2021_11_2 3_NP	----
Client sampling date / time					23-Nov-2021 10:30	23-Nov-2021 09:45	23-Nov-2021 08:45	23-Nov-2021 11:25	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105960-001 Result	CG2105960-002 Result	CG2105960-003 Result	CG2105960-004 Result	----- ----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	19.9	23.0	13.5	6.00	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000935	0.000948	0.000810	0.00105	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0029	<0.0010	0.0010	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	<0.00010	<0.00010	0.00184	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0600	0.0595	0.0715	0.286	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.012	<0.010	0.011	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	0.0052	<0.0050	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	56.0	58.0	50.2	63.7	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00041	0.00022	0.00023	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00143	0.00225	0.00058	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	0.494	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000053	0.000102	<0.000050	0.000053	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0059	0.0103	0.0023	0.0048	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	15.4	15.6	13.4	19.3	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.0664	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00120	0.00123	0.000939	0.00540	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.535	0.608	0.413	0.740	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	2.11	2.32	3.44	<0.050	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.24	2.18	2.00	4.99	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-01-01_ WP_2021_11_2 3_NP	RG_DW-01-02_ WP_2021_11_2 3_NP	RG_DW-01-03_ WP_2021_11_2 3_NP	RG_DW-01-04_ WP_2021_11_2 3_NP	----
Client sampling date / time					23-Nov-2021 10:30	23-Nov-2021 09:45	23-Nov-2021 08:45	23-Nov-2021 11:25	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105960-001	CG2105960-002	CG2105960-003	CG2105960-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.91	5.74	1.32	3.56	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.462	0.477	0.207	0.273	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	18.7	21.4	12.5	5.72	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000882	0.000901	0.000781	0.000992	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0019	0.0020	0.0022	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105960</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 24-Nov-2021 08:40
PO	: VPO00762695	Issue Date	: 06-Dec-2021 16:54
C-O-C number	: COC_Elkford_Muni_2021_Q4		
Sampler	: Evan Warner		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-01_WP_2021_11_23_NP	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-02_WP_2021_11_23_NP	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-03_WP_2021_11_23_NP	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-04_WP_2021_11_23_NP	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-01-01_WP_2021_11_23_NP	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-01-02_WP_2021_11_23_NP	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-01-03_WP_2021_11_23_NP	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE RG_DW-01-04_WP_2021_11_23_NP	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE RG_DW-01-01_WP_2021_11_23_NP	E235.Cl-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE RG_DW-01-02_WP_2021_11_23_NP	E235.Cl-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE RG_DW-01-03_WP_2021_11_23_NP	E235.Cl-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE RG_DW-01-04_WP_2021_11_23_NP	E235.Cl-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE RG_DW-01-01_WP_2021_11_23_NP	E378-U	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE RG_DW-01-02_WP_2021_11_23_NP	E378-U	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE RG_DW-01-03_WP_2021_11_23_NP	E378-U	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE RG_DW-01-04_WP_2021_11_23_NP	E378-U	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE RG_DW-01-01_WP_2021_11_23_NP	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE RG_DW-01-02_WP_2021_11_23_NP	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE RG_DW-01-03_WP_2021_11_23_NP	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE RG_DW-01-04_WP_2021_11_23_NP	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_DW-01-01_WP_2021_11_23_NP	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_DW-01-02_WP_2021_11_23_NP	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_DW-01-03_WP_2021_11_23_NP	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_DW-01-04_WP_2021_11_23_NP	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_DW-01-01_WP_2021_11_23_NP	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-01-02_WP_2021_11_23_NP	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-01-03_WP_2021_11_23_NP	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-01-04_WP_2021_11_23_NP	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> RG_DW-01-01_WP_2021_11_23_NP	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> RG_DW-01-02_WP_2021_11_23_NP	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> RG_DW-01-03_WP_2021_11_23_NP	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> RG_DW-01-04_WP_2021_11_23_NP	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-03_WP_2021_11_23_NP	E318	23-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-01_WP_2021_11_23_NP	E318	23-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	28 days	9 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-02_WP_2021_11_23_NP	E318	23-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-04_WP_2021_11_23_NP	E318	23-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-01_WP_2021_11_23_NP	E372-U	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-02_WP_2021_11_23_NP	E372-U	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-03_WP_2021_11_23_NP	E372-U	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-04_WP_2021_11_23_NP	E372-U	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-01-01_WP_2021_11_23_NP	E421.Cr-L	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-01-02_WP_2021_11_23_NP	E421.Cr-L	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-01-03_WP_2021_11_23_NP	E421.Cr-L	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-01-04_WP_2021_11_23_NP	E421.Cr-L	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-01-01_WP_2021_11_23_NP	E421	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-01-02_WP_2021_11_23_NP	E421	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-01-03_WP_2021_11_23_NP	E421	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-01-04_WP_2021_11_23_NP	E421	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-01-01_WP_2021_11_23_NP	E358-L	23-Nov-2021	24-Nov-2021	----	----		27-Nov-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-01-02_WP_2021_11_23_NP	E358-L	23-Nov-2021	24-Nov-2021	----	----		27-Nov-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-01-03_WP_2021_11_23_NP	E358-L	23-Nov-2021	24-Nov-2021	----	----		27-Nov-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-01-04_WP_2021_11_23_NP	E358-L	23-Nov-2021	24-Nov-2021	----	----		27-Nov-2021	28 days	4 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-01_WP_2021_11_23_NP	E355-L	23-Nov-2021	24-Nov-2021	----	----		27-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-02_WP_2021_11_23_NP	E355-L	23-Nov-2021	24-Nov-2021	----	----		27-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-03_WP_2021_11_23_NP	E355-L	23-Nov-2021	24-Nov-2021	----	----		27-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-01-04_WP_2021_11_23_NP	E355-L	23-Nov-2021	24-Nov-2021	----	----		27-Nov-2021	28 days	4 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-01-01_WP_2021_11_23_NP	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-01-02_WP_2021_11_23_NP	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-01-03_WP_2021_11_23_NP	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-01-04_WP_2021_11_23_NP	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> RG_DW-01-01_WP_2021_11_23_NP	E290	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE RG_DW-01-02_WP_2021_11_23_NP	E290	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE RG_DW-01-03_WP_2021_11_23_NP	E290	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE RG_DW-01-04_WP_2021_11_23_NP	E290	23-Nov-2021	----	----	----		26-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_DW-01-01_WP_2021_11_23_NP	E100	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_DW-01-02_WP_2021_11_23_NP	E100	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_DW-01-03_WP_2021_11_23_NP	E100	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_DW-01-04_WP_2021_11_23_NP	E100	23-Nov-2021	----	----	----		26-Nov-2021	28 days	3 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-01-04_WP_2021_11_23_NP	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	168 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-01-01_WP_2021_11_23_NP	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	169 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-01-02_WP_2021_11_23_NP	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	169 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-01-03_WP_2021_11_23_NP	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	170 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-01-01_WP_2021_11_23_NP	E108	23-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	48 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-01-02_WP_2021_11_23_NP	E108	23-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	48 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-01-03_WP_2021_11_23_NP	E108	23-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	49 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-01-04_WP_2021_11_23_NP	E108	23-Nov-2021	----	----	----		26-Nov-2021	0.25 hrs	71 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-01-01_WP_2021_11_23_NP	E162	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-01-02_WP_2021_11_23_NP	E162	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-01-03_WP_2021_11_23_NP	E162	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> RG_DW-01-04_WP_2021_11_23_NP	E162	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> RG_DW-01-01_WP_2021_11_23_NP	E160-L	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> RG_DW-01-02_WP_2021_11_23_NP	E160-L	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> RG_DW-01-03_WP_2021_11_23_NP	E160-L	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> RG_DW-01-04_WP_2021_11_23_NP	E160-L	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> RG_DW-01-01_WP_2021_11_23_NP	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> RG_DW-01-02_WP_2021_11_23_NP	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> RG_DW-01-03_WP_2021_11_23_NP	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> RG_DW-01-04_WP_2021_11_23_NP	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> RG_DW-01-01_WP_2021_11_23_NP	E420.Cr-L	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> RG_DW-01-02_WP_2021_11_23_NP	E420.Cr-L	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> RG_DW-01-03_WP_2021_11_23_NP	E420.Cr-L	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> RG_DW-01-04_WP_2021_11_23_NP	E420.Cr-L	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> RG_DW-01-01_WP_2021_11_23_NP	E420	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> RG_DW-01-02_WP_2021_11_23_NP	E420	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> RG_DW-01-03_WP_2021_11_23_NP	E420	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> RG_DW-01-04_WP_2021_11_23_NP	E420	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	352510	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	352506	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	354675	2	39	5.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352254	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352255	1	20	5.0	5.0	✓
Conductivity in Water	E100	352507	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353196	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353197	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352126	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351968	2	34	5.8	5.0	✓
Fluoride in Water by IC	E235.F	352252	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352256	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352257	1	20	5.0	5.0	✓
ORP by Electrode	E125	355392	1	20	5.0	5.0	✓
pH by Meter	E108	352508	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352253	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352935	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353188	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357409	1	10	10.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353189	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352127	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352041	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	352528	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	352510	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	352506	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	354675	2	39	5.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352254	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352255	1	20	5.0	5.0	✓
Conductivity in Water	E100	352507	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353196	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353197	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352126	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351968	2	34	5.8	5.0	✓
Fluoride in Water by IC	E235.F	352252	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352256	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352257	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	355392	1	20	5.0	5.0	✓
pH by Meter	E108	352508	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352253	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352935	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353188	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357409	1	10	10.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353189	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352127	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352041	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352940	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	352528	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	352510	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	352506	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	354675	2	39	5.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352254	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352255	1	20	5.0	5.0	✓
Conductivity in Water	E100	352507	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353196	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353197	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352126	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351968	2	34	5.8	5.0	✓
Fluoride in Water by IC	E235.F	352252	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352256	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352257	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352253	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352935	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353188	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357409	1	10	10.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353189	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352127	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352041	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352940	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	352528	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	354675	2	39	5.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352254	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352255	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353196	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353197	1	19	5.2	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352126	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351968	2	34	5.8	5.0	✓
Fluoride in Water by IC	E235.F	352252	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352256	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352257	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352253	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353188	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357409	1	10	10.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353189	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352127	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352041	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.  Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2105960**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
           Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_Elkford\_Muni\_2021\_Q4  
**Sampler** : Evan Warner  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
           Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 24-Nov-2021 08:40  
**Date Analysis Commenced** : 24-Nov-2021  
**Issue Date** : 06-Dec-2021 16:54

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2105960  
Client : Teck Coal Limited  
Project : REGIONAL EFFECTS PROGRAM

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 352506)</b>											
CG2105949-006	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352507)</b>											
CG2105949-006	Anonymous	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352508)</b>											
CG2105949-006	Anonymous	pH	----	E108	0.10	pH units	6.53	6.58	0.763%	4%	----
<b>Physical Tests (QC Lot: 352510)</b>											
CG2105949-006	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.2	2.1	0.04	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352528)</b>											
CG2105923-006	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352935)</b>											
CG2105939-004	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1420	1410	0.919%	20%	----
<b>Physical Tests (QC Lot: 353409)</b>											
CG2105960-004	RG_DW-01-04_WP_2021_11_23_NP	conductivity	----	E100	2.0	µS/cm	452	447	1.11%	10%	----
<b>Physical Tests (QC Lot: 353410)</b>											
CG2105960-004	RG_DW-01-04_WP_2021_11_23_NP	pH	----	E108	0.10	pH units	7.77	7.78	0.129%	4%	----
<b>Physical Tests (QC Lot: 353411)</b>											
CG2105960-004	RG_DW-01-04_WP_2021_11_23_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	248	246	0.648%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	248	246	0.648%	20%	----
<b>Physical Tests (QC Lot: 355392)</b>											
CG2105954-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	407	414	1.75%	15%	----
<b>Anions and Nutrients (QC Lot: 351968)</b>											
CG2105945-010	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351969)</b>											
CG2105960-002	RG_DW-01-02_WP_2021_11_23_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0015	0.0014	0.00002	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 352041)</b>											
CG2105949-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0028	0.0029	0.00007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352252)</b>											
CG2105949-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.184	0.177	0.006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352253)</b>											
CG2105949-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	664	659	0.750%	20%	----
<b>Anions and Nutrients (QC Lot: 352254)</b>											
CG2105949-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352255)</b>											
CG2105949-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.78	1.66	0.13	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352256)</b>											
CG2105949-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	84.8	84.2	0.633%	20%	----
<b>Anions and Nutrients (QC Lot: 352257)</b>											
CG2105949-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354675)</b>											
CG2105941-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.0848	0.0927	0.0079	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354676)</b>											
CG2105960-004	RG_DW-01-04_WP_2021_11_23_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.214	0.226	5.49%	20%	----
<b>Anions and Nutrients (QC Lot: 357409)</b>											
CG2105960-001	RG_DW-01-01_WP_2021_11_23_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.095	0.056	0.040	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352126)</b>											
CG2105953-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.52	0.58	0.06	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352127)</b>											
CG2105953-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.51	0.52	0.01	Diff <2x LOR	----
<b>Total Metals (QC Lot: 353188)</b>											
CG2105923-006	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 353189)</b>											
CG2105923-006	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	<0.0050 µg/L	<0.000050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 353189) - continued</b>											
CG2105923-006	Anonymous	calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353196)</b>											
CG2105887-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353197)</b>											
CG2105887-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	<0.0010	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00046	0.00046	0.000006	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00043	0.00048	0.00005	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0493	0.0508	3.08%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.018	0.018	0.00002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0336 µg/L	0.0000374	0.0000038	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	245	252	2.72%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 353197) - continued</b>											
CG2105887-008	Anonymous	cobalt, dissolved	7440-48-4	E421	0.10	mg/L	1.45 µg/L	0.00145	0.0104%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.072	0.072	0.0009	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0471	0.0495	4.98%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	151	152	1.03%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0364	0.0375	2.90%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00282	0.00283	0.185%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0136	0.0137	0.246%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.34	3.46	3.36%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	137 µg/L	0.150	8.70%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.29	3.26	0.943%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.28	4.29	0.302%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.336	0.348	3.41%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	273	266	2.56%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00946	0.00964	1.88%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0034	0.0037	0.0003	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 352506)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 352507)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 352510)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 352528)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 352935)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 352940)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 353409)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 353411)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 351968)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 351969)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 352041)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 352252)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 352253)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 352254)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 352255)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 352256)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 352257)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 354675)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 354676)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 357409)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 352126)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 352127)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 353188)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 353189)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 353189) - continued</b>						
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 353196)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 353197)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 353197) - continued</b>						
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 352506)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	112	85.0	115	----
<b>Physical Tests (QCLot: 352507)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	96.8	90.0	110	----
<b>Physical Tests (QCLot: 352508)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 352510)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	105	85.0	115	----
<b>Physical Tests (QCLot: 352528)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	105	85.0	115	----
<b>Physical Tests (QCLot: 352935)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	91.5	85.0	115	----
<b>Physical Tests (QCLot: 352940)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	93.0	85.0	115	----
<b>Physical Tests (QCLot: 353409)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	97.7	90.0	110	----
<b>Physical Tests (QCLot: 353410)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 353411)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	112	85.0	115	----
<b>Physical Tests (QCLot: 355392)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	103	95.4	104	----
<b>Anions and Nutrients (QCLot: 351968)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	94.3	80.0	120	----
<b>Anions and Nutrients (QCLot: 351969)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	95.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 352041)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	93.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 352252)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 352253)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 352254)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		
						Low	High		
<b>Anions and Nutrients (QCLot: 352254) - continued</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 352255)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 352256)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 352257)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 354675)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Anions and Nutrients (QCLot: 354676)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 357409)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	91.2	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 352126)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	109	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 352127)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	114	80.0	120	----
<b>Total Metals (QCLot: 353188)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
<b>Total Metals (QCLot: 353189)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	99.2	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	93.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	89.0	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.2	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.3	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.1	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.9	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	95.1	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 353189) - continued</b>									
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.9	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	100.0	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.0	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	95.0	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	92.2	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	97.6	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.0	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100.0	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	96.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	95.6	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	92.4	80.0	120	----
<b>Dissolved Metals (QCLot: 353196)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
<b>Dissolved Metals (QCLot: 353197)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.0	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	91.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	88.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.0	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.8	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.7	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.3	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.7	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier	
					Concentration	LCS	Low	High		
<b>Dissolved Metals (QCLot: 353197) - continued</b>										
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.4	80.0	120	----	
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----	
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----	
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	92.6	80.0	120	----	
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	89.9	80.0	120	----	
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----	
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----	
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	85.3	80.0	120	----	
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.1	80.0	120	----	
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.0	80.0	120	----	
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.2	80.0	120	----	
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.2	80.0	120	----	
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.5	80.0	120	----	
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.9	80.0	120	----	





## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 351968)</b>										
CG2105945-011	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0519 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 351969)</b>										
CG2105960-003	RG_DW-01-03_WP_2021_1_23_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0518 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 352041)</b>										
CG2105949-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0522 mg/L	0.0676 mg/L	77.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 352252)</b>										
CG2105965-003	Anonymous	fluoride	16984-48-8	E235.F	1.08 mg/L	1 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 352253)</b>										
CG2105965-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 352254)</b>										
CG2105965-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.484 mg/L	0.5 mg/L	96.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 352255)</b>										
CG2105965-003	Anonymous	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 352256)</b>										
CG2105965-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.69 mg/L	2.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 352257)</b>										
CG2105965-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.531 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 354675)</b>										
CG2105941-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 354676)</b>										
CG2105965-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 357409)</b>										
CG2105960-002	RG_DW-01-02_WP_2021_1_23_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.41 mg/L	2.5 mg/L	96.4	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352126)</b>										
CG2105953-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	28.4 mg/L	23.9 mg/L	119	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352127)</b>										
CG2105953-001	Anonymous	carbon, total organic [TOC]	----	E355-L	30.1 mg/L	23.9 mg/L	126	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 353188)</b>										
CG2105949-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0776 mg/L	0.08 mg/L	97.0	70.0	130	----
<b>Total Metals (QCLot: 353189)</b>										
CG2105949-001	Anonymous	aluminum, total	7429-90-5	E420	0.397 mg/L	0.4 mg/L	99.3	70.0	130	----
		antimony, total	7440-36-0	E420	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0729 mg/L	0.08 mg/L	91.1	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0187 mg/L	0.02 mg/L	93.5	70.0	130	----
		boron, total	7440-42-8	E420	0.183 mg/L	0.2 mg/L	91.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00806 mg/L	0.008 mg/L	101	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0363 mg/L	0.04 mg/L	90.8	70.0	130	----
		copper, total	7440-50-8	E420	0.0364 mg/L	0.04 mg/L	91.0	70.0	130	----
		iron, total	7439-89-6	E420	3.83 mg/L	4 mg/L	95.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0361 mg/L	0.04 mg/L	90.2	70.0	130	----
		lithium, total	7439-93-2	E420	0.176 mg/L	0.2 mg/L	88.0	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		nickel, total	7440-02-0	E420	0.0725 mg/L	0.08 mg/L	90.6	70.0	130	----
		potassium, total	7440-09-7	E420	7.44 mg/L	8 mg/L	93.0	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	18.3 mg/L	20 mg/L	91.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00744 mg/L	0.008 mg/L	93.0	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00705 mg/L	0.008 mg/L	88.2	70.0	130	----
		tin, total	7440-31-5	E420	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
		titanium, total	7440-32-6	E420	0.0784 mg/L	0.08 mg/L	98.0	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.200 mg/L	0.2 mg/L	99.8	70.0	130	----
		zinc, total	7440-66-6	E420	0.704 mg/L	0.8 mg/L	88.1	70.0	130	----
<b>Dissolved Metals (QCLot: 353196)</b>										
CG2105887-009	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
<b>Dissolved Metals (QCLot: 353197)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 353197) - continued</b>										
CG2105887-009	Anonymous	aluminum, dissolved	7429-90-5	E421	0.188 mg/L	0.2 mg/L	94.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0360 mg/L	0.04 mg/L	89.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00836 mg/L	0.01 mg/L	83.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00377 mg/L	0.004 mg/L	94.3	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0177 mg/L	0.02 mg/L	88.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0175 mg/L	0.02 mg/L	87.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0898 mg/L	0.1 mg/L	89.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0435 mg/L	0.04 mg/L	109	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.27 mg/L	10 mg/L	92.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00360 mg/L	0.004 mg/L	90.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00346 mg/L	0.004 mg/L	86.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0987 mg/L	0.1 mg/L	98.7	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.366 mg/L	0.4 mg/L	91.5	70.0	130	----

COC ID: COC\_Elkford\_Muni\_2021\_Q4      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	evan.warner@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teck.lab.results@sharepoint.teck.com	X	X	
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	VPO00762695			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PHI	F	N	F	N	N								
							ANALYSIS	H2SO4	H2SO4	HNO3	HNO3	None								
							ALS_Package-DOC	ALS_Package-TKN/TOC	TECKCOAL-MET-D-VA	TECKCOAL-MET-F-VA	TECKCOAL-ROUTINE-VA									
RG_DW-01-01_WP_2021_11_23_NP	RG_DW-01-01	WP	N	23-Nov-21	1030	G	5	1	1	1	1	1								
RG_DW-01-02_WP_2021_11_23_NP	RG_DW-01-02	WP	N	23-Nov-21	0945	G	5	1	1	1	1	1								
RG_DW-01-03_WP_2021_11_23_NP	RG_DW-01-03	WP	N	23-Nov-21	0845	G	5	1	1	1	1	1								
RG_DW-01-04_WP_2021_11_23_NP	RG_DW-01-04	WP	N	23-Nov-21	1125	G	5	1	1	1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>EW</i>	11/24 890

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Evan Warner <i>[Signature]</i>	250-433-6399
	Sampler's Signature <i>[Signature]</i>	Date/Time November 23, 2021

*6*

*1700*



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2106347**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000**  
**Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-12-03-WG**  
**Sampler** : **RG/RA**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **3**  
**No. of samples analysed** : **3**

**Page** : **1 of 6**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
**Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **04-Dec-2021 08:40**  
**Date Analysis Commenced** : **04-Dec-2021**  
**Issue Date** : **09-Dec-2021 17:43**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Russell Zhang		Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-PC_W G_2021-10-04_ NP	GH_JDW3_WG _2021-10-04_N P	GH_RD12_WG_ 2021-10-04_NP	----	----
Client sampling date / time					03-Dec-2021 11:45	03-Dec-2021 11:45	03-Dec-2021 11:45	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106347-001 Result	CG2106347-002 Result	CG2106347-003 Result	----- ---	----- ---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	9.8	<2.0	2.1 <sup>RRV</sup>	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	215	<1.0	<1.0	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	263	<1.0	<1.0	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	263	<1.0	<1.0	----	----	
conductivity	----	E100	2.0	µS/cm	991	<2.0	<2.0	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	587	<0.50	<0.50	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	496	478	504	----	----	
pH	----	E108	0.10	pH units	7.54	5.55	5.78	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	757	<10	<10	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	113	<1.0	<1.0	----	----	
turbidity	----	E121	0.10	NTU	66.6	<0.10	<0.10	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0115	<0.0050	0.0135 <sup>RRV</sup>	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.86	<0.10	<0.10	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.044	<0.020	<0.020	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.149	<0.050	<0.050	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.46	<0.0050	<0.0050	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0072	<0.0010	<0.0010	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0770	<0.0020	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	345	<0.30	<0.30	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.93	<0.50	<0.50	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.14	<0.50	<0.50	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-PC_W G_2021-10-04_ NP	GH_JDW3_WG _2021-10-04_N P	GH_RD12_WG_ 2021-10-04_NP	----	----
Client sampling date / time					03-Dec-2021 11:45	03-Dec-2021 11:45	03-Dec-2021 11:45	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106347-001	CG2106347-002	CG2106347-003	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	12.6	<0.10	<0.10	----	----	
cation sum	----	EC101	0.10	meq/L	11.8	<0.10	<0.10	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.6	100	100 <sup>RRV</sup>	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.28	<0.010	<0.010	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	1.06	0.0034 <sup>RRV</sup>	<0.0030	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00014	<0.00010	<0.00010	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00097	<0.00010	<0.00010	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.178	<0.00010	<0.00010	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	0.132	<0.020	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	<0.010	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0963	<0.0050	<0.0050	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	114	<0.050	<0.050	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00162	<0.00010	<0.00010	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	1.63	<0.10	<0.10	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.0177	<0.00050	<0.00050	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	1.39	<0.010	<0.010	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.00141	<0.000050	<0.000050	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0086	<0.0010	<0.0010	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	80.2	<0.0050	<0.0050	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0643	<0.00010	<0.00010	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00238	<0.00050	<0.00050	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00210	<0.000050	<0.000050	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00212	<0.00050	<0.00050	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.26	<0.050	<0.050	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	59.4	<0.050	<0.050	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	4.38	<0.10	<0.10	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000024	<0.000010	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	1.14	<0.050	<0.050	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-PC_W G_2021-10-04_ NP	GH_JDW3_WG _2021-10-04_N P	GH_RD12_WG_ 2021-10-04_NP	----	----
Client sampling date / time					03-Dec-2021 11:45	03-Dec-2021 11:45	03-Dec-2021 11:45	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106347-001 Result	CG2106347-002 Result	CG2106347-003 Result	----- ----	----- ----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.146	<0.00020	<0.00020	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	127	<0.50	<0.50	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000032	<0.000010	<0.000010	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00010	<0.00010	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0130	<0.00030	<0.00030	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00459	<0.000010	<0.000010	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00231	<0.00050	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0089	<0.0030	<0.0030	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0028	<0.0010	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00021	<0.00010	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0843	<0.00010	<0.00010	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	<0.010	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0410	<0.0050	<0.0050	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	102	<0.050	<0.050	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00026	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00454	<0.00020	<0.00020	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0068	<0.0010	<0.0010	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	80.6	<0.0050	<0.0050	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00037	<0.00010	<0.00010	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00204	<0.000050	<0.000050	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00064	<0.00050	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.02	<0.050	<0.050	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-PC_W G_2021-10-04_ NP	GH_JDW3_WG _2021-10-04_ P	GH_RD12_WG_ 2021-10-04_NP	----	----
Client sampling date / time					03-Dec-2021 11:45	03-Dec-2021 11:45	03-Dec-2021 11:45	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106347-001 Result	CG2106347-002 Result	CG2106347-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	63.7	<0.050	<0.050	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.62	<0.050	<0.050	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.14	<0.050	<0.050	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.139	<0.00020	<0.00020	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	121	<0.50	<0.50	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00444	<0.000010	<0.000010	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0019	<0.0010	<0.0010	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106347</b>	Page	: 1 of 17
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jeremy Enns	Account Manager	: Justine Buma-a
Address	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 865 3305	Telephone	: +1 403 407 1800
Project	: GREENHILLS OPERATION	Date Samples Received	: 04-Dec-2021 08:40
PO	: VPO00739453	Issue Date	: 09-Dec-2021 17:43
C-O-C number	: 2021-12-03-WG		
Sampler	: RG/RA		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_JDW3_WG_2021-10-04_NP	E298	03-Dec-2021	04-Dec-2021	----	----		04-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-PC_WG_2021-10-04_NP	E298	03-Dec-2021	04-Dec-2021	----	----		04-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_RD12_WG_2021-10-04_NP	E298	03-Dec-2021	04-Dec-2021	----	----		04-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_JDW3_WG_2021-10-04_NP	E235.Br-L	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_MW-PC_WG_2021-10-04_NP	E235.Br-L	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_RD12_WG_2021-10-04_NP	E235.Br-L	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_JDW3_WG_2021-10-04_NP	E235.Cl-L	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE GH_MW-PC_WG_2021-10-04_NP	E235.Cl-L	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE GH_RD12_WG_2021-10-04_NP	E235.Cl-L	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_JDW3_WG_2021-10-04_NP	E378-U	03-Dec-2021	----	----	----		04-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_MW-PC_WG_2021-10-04_NP	E378-U	03-Dec-2021	----	----	----		04-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_RD12_WG_2021-10-04_NP	E378-U	03-Dec-2021	----	----	----		04-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_JDW3_WG_2021-10-04_NP	E235.F	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_MW-PC_WG_2021-10-04_NP	E235.F	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_RD12_WG_2021-10-04_NP	E235.F	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_JDW3_WG_2021-10-04_NP	E235.NO3-L	03-Dec-2021	----	----	----		04-Dec-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_MW-PC_WG_2021-10-04_NP	E235.NO3-L	03-Dec-2021	----	----	----		04-Dec-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_RD12_WG_2021-10-04_NP	E235.NO3-L	03-Dec-2021	----	----	----		04-Dec-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_JDW3_WG_2021-10-04_NP	E235.NO2-L	03-Dec-2021	----	----	----		04-Dec-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_MW-PC_WG_2021-10-04_NP	E235.NO2-L	03-Dec-2021	----	----	----		04-Dec-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_RD12_WG_2021-10-04_NP	E235.NO2-L	03-Dec-2021	----	----	----		04-Dec-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE GH_JDW3_WG_2021-10-04_NP	E235.SO4	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE GH_MW-PC_WG_2021-10-04_NP	E235.SO4	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE GH_RD12_WG_2021-10-04_NP	E235.SO4	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_JDW3_WG_2021-10-04_NP	E318	03-Dec-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	5 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-PC_WG_2021-10-04_NP	E318	03-Dec-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_RD12_WG_2021-10-04_NP	E318	03-Dec-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_JDW3_WG_2021-10-04_NP	E372-U	03-Dec-2021	05-Dec-2021	----	----		05-Dec-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-PC_WG_2021-10-04_NP	E372-U	03-Dec-2021	05-Dec-2021	----	----		05-Dec-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_RD12_WG_2021-10-04_NP	E372-U	03-Dec-2021	05-Dec-2021	----	----		05-Dec-2021	28 days	2 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_JDW3_WG_2021-10-04_NP	E421.Cr-L	03-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-PC_WG_2021-10-04_NP	E421.Cr-L	03-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_RD12_WG_2021-10-04_NP	E421.Cr-L	03-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_JDW3_WG_2021-10-04_NP	E509	03-Dec-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	5 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_MW-PC_WG_2021-10-04_NP	E509	03-Dec-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_RD12_WG_2021-10-04_NP	E509	03-Dec-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_JDW3_WG_2021-10-04_NP	E421	03-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-PC_WG_2021-10-04_NP	E421	03-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_RD12_WG_2021-10-04_NP	E421	03-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_JDW3_WG_2021-10-04_NP	E358-L	03-Dec-2021	04-Dec-2021	----	----		04-Dec-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_MW-PC_WG_2021-10-04_NP	E358-L	03-Dec-2021	04-Dec-2021	----	----		04-Dec-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_RD12_WG_2021-10-04_NP	E358-L	03-Dec-2021	04-Dec-2021	----	----		04-Dec-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_JDW3_WG_2021-10-04_NP	E355-L	03-Dec-2021	06-Dec-2021	----	----		06-Dec-2021	28 days	3 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-PC_WG_2021-10-04_NP	E355-L	03-Dec-2021	06-Dec-2021	----	----		06-Dec-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_RD12_WG_2021-10-04_NP	E355-L	03-Dec-2021	06-Dec-2021	----	----		06-Dec-2021	28 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_JDW3_WG_2021-10-04_NP	E283	03-Dec-2021	----	----	----		04-Dec-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_MW-PC_WG_2021-10-04_NP	E283	03-Dec-2021	----	----	----		04-Dec-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_RD12_WG_2021-10-04_NP	E283	03-Dec-2021	----	----	----		04-Dec-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_JDW3_WG_2021-10-04_NP	E290	03-Dec-2021	----	----	----		04-Dec-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_MW-PC_WG_2021-10-04_NP	E290	03-Dec-2021	----	----	----		04-Dec-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_RD12_WG_2021-10-04_NP	E290	03-Dec-2021	----	----	----		04-Dec-2021	14 days	1 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> GH_JDW3_WG_2021-10-04_NP	E100	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_MW-PC_WG_2021-10-04_NP	E100	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_RD12_WG_2021-10-04_NP	E100	03-Dec-2021	----	----	----		04-Dec-2021	28 days	1 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_JDW3_WG_2021-10-04_NP	E125	03-Dec-2021	----	----	----		05-Dec-2021	0.25 hrs	46 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_MW-PC_WG_2021-10-04_NP	E125	03-Dec-2021	----	----	----		05-Dec-2021	0.25 hrs	46 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_RD12_WG_2021-10-04_NP	E125	03-Dec-2021	----	----	----		05-Dec-2021	0.25 hrs	46 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_JDW3_WG_2021-10-04_NP	E108	03-Dec-2021	----	----	----		04-Dec-2021	0.25 hrs	24 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_MW-PC_WG_2021-10-04_NP	E108	03-Dec-2021	----	----	----		04-Dec-2021	0.25 hrs	24 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_RD12_WG_2021-10-04_NP	E108	03-Dec-2021	----	----	----		04-Dec-2021	0.25 hrs	24 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_JDW3_WG_2021-10-04_NP	E162	03-Dec-2021	----	----	----		04-Dec-2021	7 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> GH_MW-PC_WG_2021-10-04_NP	E162	03-Dec-2021	----	----	----		04-Dec-2021	7 days	1 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> GH_RD12_WG_2021-10-04_NP	E162	03-Dec-2021	----	----	----		04-Dec-2021	7 days	1 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_JDW3_WG_2021-10-04_NP	E160-L	03-Dec-2021	----	----	----		04-Dec-2021	7 days	1 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_MW-PC_WG_2021-10-04_NP	E160-L	03-Dec-2021	----	----	----		04-Dec-2021	7 days	1 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_RD12_WG_2021-10-04_NP	E160-L	03-Dec-2021	----	----	----		04-Dec-2021	7 days	1 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_JDW3_WG_2021-10-04_NP	E121	03-Dec-2021	----	----	----		04-Dec-2021	3 days	1 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_MW-PC_WG_2021-10-04_NP	E121	03-Dec-2021	----	----	----		04-Dec-2021	3 days	1 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_RD12_WG_2021-10-04_NP	E121	03-Dec-2021	----	----	----		04-Dec-2021	3 days	1 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> GH_JDW3_WG_2021-10-04_NP	E420.Cr-L	03-Dec-2021	----	----	----		08-Dec-2021	180 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_MW-PC_WG_2021-10-04_NP	E420.Cr-L	03-Dec-2021	----	----	----		08-Dec-2021	180 days	5 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_RD12_WG_2021-10-04_NP	E420.Cr-L	03-Dec-2021	----	----	----		08-Dec-2021	180 days	5 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_JDW3_WG_2021-10-04_NP	E508-L	03-Dec-2021	----	----	----		09-Dec-2021	28 days	6 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_MW-PC_WG_2021-10-04_NP	E508-L	03-Dec-2021	----	----	----		09-Dec-2021	28 days	6 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_RD12_WG_2021-10-04_NP	E508-L	03-Dec-2021	----	----	----		09-Dec-2021	28 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_JDW3_WG_2021-10-04_NP	E420	03-Dec-2021	----	----	----		08-Dec-2021	180 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_MW-PC_WG_2021-10-04_NP	E420	03-Dec-2021	----	----	----		08-Dec-2021	180 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_RD12_WG_2021-10-04_NP	E420	03-Dec-2021	----	----	----		08-Dec-2021	180 days	5 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	359587	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	359592	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	359476	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	359548	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	359549	1	20	5.0	5.0	✓
Conductivity in Water	E100	359591	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	361869	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	362306	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	361870	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	359492	1	3	33.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	359694	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	359552	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	359550	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	359551	1	20	5.0	5.0	✓
ORP by Electrode	E125	359644	1	20	5.0	5.0	✓
pH by Meter	E108	359590	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	359547	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	359599	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	361840	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	362247	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	363393	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	361841	1	9	11.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	360668	1	3	33.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	359733	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	359643	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	359587	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	359592	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	359476	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	359548	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	359549	1	20	5.0	5.0	✓
Conductivity in Water	E100	359591	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	361869	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	362306	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	361870	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	359492	1	3	33.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	359694	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	359552	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	359550	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	359551	1	20	5.0	5.0	✓
ORP by Electrode	E125	359644	1	20	5.0	5.0	✓
pH by Meter	E108	359590	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	359547	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	359599	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	361840	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	362247	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	363393	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	361841	1	9	11.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	360668	1	3	33.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	359733	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	359472	1	14	7.1	5.0	✓
Turbidity by Nephelometry	E121	359643	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	359587	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	359592	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	359476	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	359548	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	359549	1	20	5.0	5.0	✓
Conductivity in Water	E100	359591	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	361869	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	362306	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	361870	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	359492	1	3	33.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	359694	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	359552	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	359550	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	359551	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	359547	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	359599	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	361840	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	362247	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	363393	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	361841	1	9	11.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	360668	1	3	33.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	359733	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	359472	1	14	7.1	5.0	✓
Turbidity by Nephelometry	E121	359643	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	359476	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	359548	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	359549	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	361869	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	362306	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	361870	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	359492	1	3	33.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	359694	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	359552	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	359550	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	359551	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	359547	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	361840	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	362247	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	363393	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	361841	2	9	22.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	360668	1	3	33.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	359733	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

---

## QUALITY CONTROL REPORT

**Work Order** : **CG2106347**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-12-03-WG  
**Sampler** : RG/RA  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 04-Dec-2021 08:40  
**Date Analysis Commenced** : 04-Dec-2021  
**Issue Date** : 09-Dec-2021 17:43

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Russell Zhang		Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 359587)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	9.8	12.3	2.5	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 359590)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	pH	----	E108	0.10	pH units	7.54	7.54	0.00%	4%	----
<b>Physical Tests (QC Lot: 359591)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	conductivity	----	E100	2.0	µS/cm	991	993	0.202%	10%	----
<b>Physical Tests (QC Lot: 359592)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	215	207	4.00%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	263	252	4.00%	20%	----
<b>Physical Tests (QC Lot: 359599)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	757	764	0.920%	20%	----
<b>Physical Tests (QC Lot: 359643)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	turbidity	----	E121	0.10	NTU	66.6	67.8	1.79%	15%	----
<b>Physical Tests (QC Lot: 359644)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	496	502	1.20%	15%	----
<b>Anions and Nutrients (QC Lot: 359476)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0115	0.0117	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 359547)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	345	344	0.348%	20%	----
<b>Anions and Nutrients (QC Lot: 359548)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 359549)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.86	0.85	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 359550)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.46	1.46	0.143%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 359551)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 359552)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.044	0.039	0.006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 359694)</b>											
CG2106337-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0039	0.0042	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 359733)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0770	0.0746	3.14%	20%	----
<b>Anions and Nutrients (QC Lot: 362247)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.149	0.152	0.003	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 359492)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.93	1.01	0.09	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 360668)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	carbon, total organic [TOC]	----	E355-L	1.00	mg/L	2.14	2.27	0.13	Diff <2x LOR	----
<b>Total Metals (QC Lot: 361840)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00162	0.00173	6.58%	20%	----
<b>Total Metals (QC Lot: 361841)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	1.06	1.21	13.2%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00014	0.00013	0.000004	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00097	0.00099	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.178	0.200	11.8%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	0.132 µg/L	0.000148	0.000016	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0963 µg/L	0.0000982	2.03%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	114	115	1.34%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	1.63 µg/L	0.00165	1.14%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.0177	0.0176	0.648%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	1.39	1.55	10.9%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.00141	0.00153	8.01%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0086	0.0086	0.00002	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	80.2	81.3	1.36%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0643	0.0661	2.65%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 361841) - continued</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00210	0.00216	2.39%	20%	----
		nickel, total	7440-02-0	E420	0.000050	mg/L	0.00212	0.00225	0.00012	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.26	1.32	4.96%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	59.4 µg/L	0.0582	2.01%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.38	4.55	3.80%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000024	0.000021	0.000002	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	1.14	1.19	3.59%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.146	0.151	3.58%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	127	126	0.535%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000032	0.000035	0.000004	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00010	0.00011	0.000006	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.0130	0.0149	13.7%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00459	0.00482	4.87%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00231	0.00262	0.00031	Diff <2x LOR	----
	zinc, total	7440-66-6	E420	0.0030	mg/L	0.0089	0.0093	0.0004	Diff <2x LOR	----	
<b>Total Metals (QC Lot: 363393)</b>											
CG2106342-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	0.51	0.01	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 361869)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00026	0.00023	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 361870)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0028	0.0034	0.0005	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00021	0.00018	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0843	0.0829	1.66%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0410 µg/L	0.0000389	0.0000021	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	102	106	3.66%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00454	0.00455	0.247%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0068	0.0069	0.0002	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 361870) - continued</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	80.6	77.5	3.94%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00037	0.00040	0.00003	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00204	0.00215	5.03%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00064	0.00064	0.0000006	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.02	1.02	0.360%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	63.7 µg/L	0.0634	0.469%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.62	2.60	0.768%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.14	1.13	0.518%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.139	0.143	2.50%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	121	117	3.78%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00444	0.00457	3.00%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
	zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0019	0.0018	0.00007	Diff <2x LOR	----	
<b>Dissolved Metals (QC Lot: 362306)</b>											
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 359472)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 359587)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	2.4	----
<b>Physical Tests (QCLot: 359591)</b>						
conductivity	----	E100	1	µS/cm	1.4	----
<b>Physical Tests (QCLot: 359592)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 359599)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 359643)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Anions and Nutrients (QCLot: 359476)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 359547)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 359548)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 359549)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 359550)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 359551)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 359552)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 359694)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 359733)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 362247)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 362247) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 359492)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 360668)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 361840)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 361841)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 361841) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 363393)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 361869)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 361870)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Page : 10 of 18  
Work Order : CG2106347  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 361870) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 362306)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 359472)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.0	85.0	115	---
<b>Physical Tests (QCLot: 359587)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 359590)</b>									
pH	---	E108	---	pH units	7 pH units	99.7	98.6	101	---
<b>Physical Tests (QCLot: 359591)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 359592)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 359599)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 359643)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	102	85.0	115	---
<b>Physical Tests (QCLot: 359644)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 359476)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.8	85.0	115	---
<b>Anions and Nutrients (QCLot: 359547)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 359548)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	93.9	85.0	115	---
<b>Anions and Nutrients (QCLot: 359549)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 359550)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 359551)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 359552)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 359694)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	95.1	80.0	120	---
<b>Anions and Nutrients (QCLot: 359733)</b>									



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 359733) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	100	80.0	120	----
<b>Anions and Nutrients (QCLot: 362247)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	89.6	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 359492)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	89.7	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 360668)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	99.9	80.0	120	----
<b>Total Metals (QCLot: 361840)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
<b>Total Metals (QCLot: 361841)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	115	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	117	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	116	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	117	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	110	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	113	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	114	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	115	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	110	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	108	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	115	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	120	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	113	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	110	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	107	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	114	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	116	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	120	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	113	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	108	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 361841) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	114	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	108	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	111	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	114	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	109	80.0	120	----
<b>Total Metals (QCLot: 363393)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	94.2	80.0	120	----
<b>Dissolved Metals (QCLot: 361869)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
<b>Dissolved Metals (QCLot: 361870)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	111	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	111	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	107	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	113	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	109	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.5	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	115	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	112	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	95.8	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 361870) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100.0	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	105	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	106	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	109	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	109	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	104	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 359476)</b>										
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	ammonia, total (as N)	7664-41-7	E298	0.111 mg/L	0.1 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 359547)</b>										
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	sulfate (as SO4)	14808-79-8	E235.SO4	115 mg/L	100 mg/L	115	75.0	125	----
<b>Anions and Nutrients (QCLot: 359548)</b>										
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	bromide	24959-67-9	E235.Br-L	0.528 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 359549)</b>										
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	chloride	16887-00-6	E235.Cl-L	115 mg/L	100 mg/L	115	75.0	125	----
<b>Anions and Nutrients (QCLot: 359550)</b>										
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.86 mg/L	2.5 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 359551)</b>										
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.561 mg/L	0.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 359552)</b>										
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	fluoride	16984-48-8	E235.F	1.12 mg/L	1 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 359694)</b>										
CG2106342-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0486 mg/L	0.05 mg/L	97.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 359733)</b>										
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	phosphorus, total	7723-14-0	E372-U	0.0647 mg/L	0.0676 mg/L	95.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 362247)</b>										
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.52 mg/L	2.5 mg/L	101	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 359492)</b>										
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	carbon, dissolved organic [DOC]	----	E358-L	22.5 mg/L	23.9 mg/L	94.0	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 360668)</b>										
CG2106347-001	GH_MW-PC_WG_2021-10-04_NP	carbon, total organic [TOC]	----	E355-L	21.8 mg/L	23.9 mg/L	91.2	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 361840)</b>										
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	chromium, total	7440-47-3	E420.Cr-L	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
<b>Total Metals (QCLot: 361841)</b>										
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	aluminum, total	7429-90-5	E420	0.212 mg/L	0.2 mg/L	106	70.0	130	----
		calcium, total	7440-70-2	E420	4.04 mg/L	4 mg/L	101	70.0	130	----
		manganese, total	7439-96-5	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		sodium, total	17341-25-2	E420	2.10 mg/L	2 mg/L	105	70.0	130	----
		strontium, total	7440-24-6	E420	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		titanium, total	7440-32-6	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	antimony, total	7440-36-0	E420	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		barium, total	7440-39-3	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0102 mg/L	0.01 mg/L	102	70.0	130	----
		boron, total	7440-42-8	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00391 mg/L	0.004 mg/L	97.9	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		copper, total	7440-50-8	E420	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		iron, total	7439-89-6	E420	1.97 mg/L	2 mg/L	98.5	70.0	130	----
		lead, total	7439-92-1	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		lithium, total	7439-93-2	E420	0.109 mg/L	0.1 mg/L	109	70.0	130	----
		magnesium, total	7439-95-4	E420	1.01 mg/L	1 mg/L	101	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	----
		nickel, total	7440-02-0	E420	0.0395 mg/L	0.04 mg/L	98.9	70.0	130	----
		potassium, total	7440-09-7	E420	4.09 mg/L	4 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, total	7440-21-3	E420	9.20 mg/L	10 mg/L	92.0	70.0	130	----
		silver, total	7440-22-4	E420	0.00385 mg/L	0.004 mg/L	96.3	70.0	130	----
		sulfur, total	7704-34-9	E420	18.6 mg/L	20 mg/L	93.2	70.0	130	----
		thallium, total	7440-28-0	E420	0.00380 mg/L	0.004 mg/L	95.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		uranium, total	7440-61-1	E420	0.00396 mg/L	0.004 mg/L	98.9	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0986 mg/L	0.1 mg/L	98.6	70.0	130	----
		zinc, total	7440-66-6	E420	0.387 mg/L	0.4 mg/L	96.8	70.0	130	----
<b>Total Metals (QCLot: 363393)</b>										
CG2106342-002	Anonymous	mercury, total	7439-97-6	E508-L	4.27 ng/L	5 ng/L	85.4	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 361869)</b>										
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 361870)</b>										
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	aluminum, dissolved	7429-90-5	E421	0.218 mg/L	0.2 mg/L	109	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00894 mg/L	0.01 mg/L	89.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.089 mg/L	0.1 mg/L	89.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00424 mg/L	0.004 mg/L	106	70.0	130	----
		calcium, dissolved	7440-70-2	E421	3.81 mg/L	4 mg/L	95.2	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.03 mg/L	2 mg/L	102	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.1000 mg/L	0.1 mg/L	100.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	1.04 mg/L	1 mg/L	104	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.29 mg/L	4 mg/L	107	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.16 mg/L	10 mg/L	91.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	2.22 mg/L	2 mg/L	111	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.1 mg/L	20 mg/L	100	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00420 mg/L	0.004 mg/L	105	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0399 mg/L	0.04 mg/L	99.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00436 mg/L	0.004 mg/L	109	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.426 mg/L	0.4 mg/L	107	70.0	130	----
<b>Dissolved Metals (QCLot: 362306)</b>										
CG2106347-002	GH_JDW3_WG_2021-10-04_NP	mercury, dissolved	7439-97-6	E509	0.000106 mg/L	0.0001 mg/L	106	70.0	130	----



COC ID: 2021-12-03-WG

RUSH: YES

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job# Greenhills Operation				Lab Name ALS Calgary				Report Format / Distribution			
Project Manager Jeremy Enns				Lab Contact Justine Burmaa				Excel PDF EDD			
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				Phone Number 403 407 1794				Email 4: X X X			
								Email 5: X X X			
								Email 6: X X X			
								Email 7: X X X			
								PO number 739453			

Environmental Division  
Calgary

Work Order Reference  
**CG2106347**



Telephone: +1 403 407 1800

E-DETAILS							ANALYSIS REQUESTED												
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	
						H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4	Sodium bisulphate	ZN acetate, NAOH	H2SO4	H2SO4	Sodium bisulphate		
						ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH/FAH/LEPH/HEPH	SULPHIDE	BOD	COD	Phenols	VOC/VPH/BTEX	
GH_MW-PC_WG_2021-10-04_NP	GH_MW-PC	WG	N	12/3/2021	11:45	G	7												
GH_JDW3_WG_2021-10-04_NP	GH_MW-PC	WG	N	12/3/2021	11:45	G	7												
GH_RD12_WG_2021-10-04_NP	GH_MW-PC	WG	N	12/3/2021	11:45	G	7												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
<b>PLEASE RUSH SAMPLES</b>			<i>[Signature]</i>	12/4 8:40
<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) X	Sampler's Name	RG/RA	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	December 3, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

*[Handwritten initials]*



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2104777**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000**  
**Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-10-07-WG**  
**Sampler** : **rg**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **2**  
**No. of samples analysed** : **2**

**Page** : **1 of 6**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
**Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **08-Oct-2021 08:30**  
**Date Analysis Commenced** : **09-Oct-2021**  
**Issue Date** : **28-Oct-2021 16:47**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Ruby Pham	Lab Assistant	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTS	Dissolved Sulfur concentration exceeds total. Negative bias on Total Sulfur suspected due to presence of volatile sulfur species lost during digestion.
DTSE	Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-TD_W G_2021-10-04_ NP	GH_GA_MW-3_ WG_2021-10-0 4_NP	----	----	----
Client sampling date / time					07-Oct-2021 13:30	07-Oct-2021 15:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104777-001 Result	CG2104777-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	6.2	8.4	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	362	245	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	11.2	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	373	245	----	----	----	
conductivity	----	E100	2.0	µS/cm	727	605	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	363	246	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	280	392	----	----	----	
pH	----	E108	0.10	pH units	8.33	8.21	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	427	336	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	3.9	----	----	----	
turbidity	----	E121	0.10	NTU	1.82	82.9	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	441	299	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	6.7	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.167	0.400	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.29	5.74	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.261	0.632	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.183	0.454	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0074	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0030	0.0388	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	81.1	34.0	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.81	2.28	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.87	2.98	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-TD_W G_2021-10-04_ NP	GH_GA_MW-3_ WG_2021-10-0 4_NP	----	----	----
Client sampling date / time					07-Oct-2021 13:30	07-Oct-2021 15:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104777-001	CG2104777-002	-----	-----	-----	
					Result	Result	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.16	5.80	----	----	----	
cation sum	----	EC101	0.10	meq/L	8.60	6.66	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.9	115	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.15	6.90	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0261	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00017	<0.00010	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0238	0.110	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.391	0.281	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.254	0.0281	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	88.8	44.3	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00555	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.26	<0.10	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	0.00699	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.163	0.077	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000502	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0451	0.0949	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	35.7	32.6	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.524	0.00735	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00285	<0.000050	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00052	0.00332	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.69	2.56	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	0.468	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	6.68	5.01	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	0.000163	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	29.4	39.3	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-TD_W G_2021-10-04_ NP	GH_GA_MW-3_ WG_2021-10-0 4_NP	----	----	----
Client sampling date / time					07-Oct-2021 13:30	07-Oct-2021 15:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104777-001 Result	CG2104777-002 Result	-----	-----	-----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	1.32	2.38	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	30.8	18.5	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000085	<0.000010	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00090 <sup>DLM</sup>	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000616	0.000041	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	0.0043	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	0.0032	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0230	0.104	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.376	0.262	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0921	<0.0050	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	85.8	43.9	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00267	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.26	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.151	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0444	0.0936	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	36.2	33.1	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.521	0.00651	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00255	<0.000050	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00158	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.55	2.47	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-TD_W G_2021-10-04_ NP	GH_GA_MW-3_ WG_2021-10-0 4_NP	----	----	----
Client sampling date / time					07-Oct-2021 13:30	07-Oct-2021 15:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104777-001 Result	CG2104777-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	1.38 <sup>DTSE</sup>	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.42	4.92	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	28.5	38.1	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.14	2.17	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	28.7	138 <sup>DTS</sup>	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000083	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000545	0.000052	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104777</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jeremy Enns	Account Manager	: Justine Buma-a
Address	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 865 3305	Telephone	: +1 403 407 1800
Project	: GREENHILLS OPERATION	Date Samples Received	: 08-Oct-2021 08:30
PO	: VPO00739453	Issue Date	: 28-Oct-2021 16:47
C-O-C number	: 2021-10-07-WG		
Sampler	: rg		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_GA_MW-3_WG_2021-10-04_NP	E298	07-Oct-2021	23-Oct-2021	----	----		23-Oct-2021	28 days	16 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-TD_WG_2021-10-04_NP	E298	07-Oct-2021	23-Oct-2021	----	----		23-Oct-2021	28 days	16 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_GA_MW-3_WG_2021-10-04_NP	E235.Br-L	07-Oct-2021	----	----	----		09-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-TD_WG_2021-10-04_NP	E235.Br-L	07-Oct-2021	----	----	----		09-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_GA_MW-3_WG_2021-10-04_NP	E235.Cl-L	07-Oct-2021	----	----	----		09-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-TD_WG_2021-10-04_NP	E235.Cl-L	07-Oct-2021	----	----	----		09-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> GH_GA_MW-3_WG_2021-10-04_NP	E378-U	07-Oct-2021	----	----	----		09-Oct-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_MW-TD_WG_2021-10-04_NP	E378-U	07-Oct-2021	----	----	----		09-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_GA_MW-3_WG_2021-10-04_NP	E235.F	07-Oct-2021	----	----	----		09-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_MW-TD_WG_2021-10-04_NP	E235.F	07-Oct-2021	----	----	----		09-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_GA_MW-3_WG_2021-10-04_NP	E235.NO3-L	07-Oct-2021	----	----	----		09-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_MW-TD_WG_2021-10-04_NP	E235.NO3-L	07-Oct-2021	----	----	----		09-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_GA_MW-3_WG_2021-10-04_NP	E235.NO2-L	07-Oct-2021	----	----	----		09-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_MW-TD_WG_2021-10-04_NP	E235.NO2-L	07-Oct-2021	----	----	----		09-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE GH_GA_MW-3_WG_2021-10-04_NP	E235.SO4	07-Oct-2021	----	----	----		09-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE GH_MW-TD_WG_2021-10-04_NP	E235.SO4	07-Oct-2021	----	----	----		09-Oct-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA_MW-3_WG_2021-10-04_NP	E318	07-Oct-2021	15-Oct-2021	----	----		19-Oct-2021	28 days	12 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-TD_WG_2021-10-04_NP	E318	07-Oct-2021	15-Oct-2021	----	----		19-Oct-2021	28 days	12 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA_MW-3_WG_2021-10-04_NP	E372-U	07-Oct-2021	15-Oct-2021	----	----		15-Oct-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-TD_WG_2021-10-04_NP	E372-U	07-Oct-2021	15-Oct-2021	----	----		15-Oct-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_GA_MW-3_WG_2021-10-04_NP	E421.Cr-L	07-Oct-2021	16-Oct-2021	----	----		16-Oct-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-TD_WG_2021-10-04_NP	E421.Cr-L	07-Oct-2021	16-Oct-2021	----	----		16-Oct-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_GA_MW-3_WG_2021-10-04_NP	E509	07-Oct-2021	16-Oct-2021	----	----		16-Oct-2021	28 days	9 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_MW-TD_WG_2021-10-04_NP	E509	07-Oct-2021	16-Oct-2021	----	----		16-Oct-2021	28 days	9 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_GA_MW-3_WG_2021-10-04_NP	E421	07-Oct-2021	16-Oct-2021	----	----		16-Oct-2021	180 days	9 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-TD_WG_2021-10-04_NP	E421	07-Oct-2021	16-Oct-2021	----	----		16-Oct-2021	180 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_GA_MW-3_WG_2021-10-04_NP	E358-L	07-Oct-2021	16-Oct-2021	----	----		18-Oct-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_MW-TD_WG_2021-10-04_NP	E358-L	07-Oct-2021	16-Oct-2021	----	----		18-Oct-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA_MW-3_WG_2021-10-04_NP	E355-L	07-Oct-2021	16-Oct-2021	----	----		18-Oct-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-TD_WG_2021-10-04_NP	E355-L	07-Oct-2021	16-Oct-2021	----	----		18-Oct-2021	28 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_GA_MW-3_WG_2021-10-04_NP	E283	07-Oct-2021	----	----	----		17-Oct-2021	14 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_MW-TD_WG_2021-10-04_NP	E283	07-Oct-2021	----	----	----		17-Oct-2021	14 days	10 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_GA_MW-3_WG_2021-10-04_NP	E290	07-Oct-2021	----	----	----		17-Oct-2021	14 days	10 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_MW-TD_WG_2021-10-04_NP	E290	07-Oct-2021	----	----	----		17-Oct-2021	14 days	10 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_GA_MW-3_WG_2021-10-04_NP	E100	07-Oct-2021	----	----	----		17-Oct-2021	28 days	10 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_MW-TD_WG_2021-10-04_NP	E100	07-Oct-2021	----	----	----		17-Oct-2021	28 days	10 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_GA_MW-3_WG_2021-10-04_NP	E125	07-Oct-2021	----	----	----		18-Oct-2021	0.25 hrs	255 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_MW-TD_WG_2021-10-04_NP	E125	07-Oct-2021	----	----	----		18-Oct-2021	0.25 hrs	256 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_GA_MW-3_WG_2021-10-04_NP	E108	07-Oct-2021	----	----	----		17-Oct-2021	0.25 hrs	233 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_MW-TD_WG_2021-10-04_NP	E108	07-Oct-2021	----	----	----		17-Oct-2021	0.25 hrs	235 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_GA_MW-3_WG_2021-10-04_NP	E162	07-Oct-2021	----	----	----		13-Oct-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_MW-TD_WG_2021-10-04_NP	E162	07-Oct-2021	----	----	----		13-Oct-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE GH_GA_MW-3_WG_2021-10-04_NP	E160-L	07-Oct-2021	----	----	----		13-Oct-2021	7 days	6 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE</b> GH_MW-TD_WG_2021-10-04_NP	E160-L	07-Oct-2021	----	----	----		13-Oct-2021	7 days	6 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> GH_GA_MW-3_WG_2021-10-04_NP	E121	07-Oct-2021	----	----	----		10-Oct-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> GH_MW-TD_WG_2021-10-04_NP	E121	07-Oct-2021	----	----	----		10-Oct-2021	3 days	3 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_GA_MW-3_WG_2021-10-04_NP	E420.Cr-L	07-Oct-2021	----	----	----		15-Oct-2021	180 days	8 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_MW-TD_WG_2021-10-04_NP	E420.Cr-L	07-Oct-2021	----	----	----		15-Oct-2021	180 days	8 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_GA_MW-3_WG_2021-10-04_NP	E508-L	07-Oct-2021	----	----	----		19-Oct-2021	28 days	12 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_MW-TD_WG_2021-10-04_NP	E508-L	07-Oct-2021	----	----	----		19-Oct-2021	28 days	12 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_GA_MW-3_WG_2021-10-04_NP	E420	07-Oct-2021	----	----	----		15-Oct-2021	180 days	8 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_MW-TD_WG_2021-10-04_NP	E420	07-Oct-2021	----	----	----		15-Oct-2021	180 days	8 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 8 of 15  
Work Order : CG2104777  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	321727	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	321755	1	6	16.6	5.0	✓
Ammonia by Fluorescence	E298	327726	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	315940	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	315941	1	14	7.1	5.0	✓
Conductivity in Water	E100	321754	1	6	16.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	321086	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	321046	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	321087	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	321546	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	316044	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	315938	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	315942	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	315943	1	14	7.1	5.0	✓
ORP by Electrode	E125	322080	1	7	14.2	5.0	✓
pH by Meter	E108	321753	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	315939	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	317966	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	318963	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	320738	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	323252	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	318962	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	321556	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	319042	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	316240	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	321727	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	321755	1	6	16.6	5.0	✓
Ammonia by Fluorescence	E298	327726	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	315940	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	315941	1	14	7.1	5.0	✓
Conductivity in Water	E100	321754	1	6	16.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	321086	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	321046	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	321087	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	321546	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	316044	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	315938	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	315942	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	315943	1	14	7.1	5.0	✓
ORP by Electrode	E125	322080	1	7	14.2	5.0	✓
pH by Meter	E108	321753	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	315939	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	317966	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	318963	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	320738	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	323252	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	318962	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	321556	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	319042	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	317916	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	316240	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	321727	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	321755	1	6	16.6	5.0	✓
Ammonia by Fluorescence	E298	327726	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	315940	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	315941	1	14	7.1	5.0	✓
Conductivity in Water	E100	321754	1	6	16.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	321086	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	321046	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	321087	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	321546	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	316044	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	315938	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	315942	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	315943	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	315939	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	317966	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	318963	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	320738	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	323252	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	318962	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	321556	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	319042	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	317916	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	316240	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	327726	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	315940	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	315941	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	321086	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	321046	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	321087	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	321546	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	316044	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	315938	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	315942	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	315943	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	315939	1	14	7.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	318963	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	320738	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	323252	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	318962	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	321556	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	319042	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

Page : 15 of 15  
Work Order : CG2104777  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2104777**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-10-07-WG  
**Sampler** : rg  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 08-Oct-2021 08:30  
**Date Analysis Commenced** : 09-Oct-2021  
**Issue Date** : 28-Oct-2021 16:47

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Ruby Pham	Lab Assistant	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia

Page : 2 of 17  
Work Order : CG2104777  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 316240)</b>											
CG2104745-004	Anonymous	turbidity	----	E121	0.10	NTU	4.98	5.06	1.59%	15%	----
<b>Physical Tests (QC Lot: 317966)</b>											
CG2104750-002	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	313	314	0.159%	20%	----
<b>Physical Tests (QC Lot: 321727)</b>											
CG2104750-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 321753)</b>											
CG2104764-002	Anonymous	pH	----	E108	0.10	pH units	8.39	8.42	0.357%	4%	----
<b>Physical Tests (QC Lot: 321754)</b>											
CG2104764-005	Anonymous	conductivity	----	E100	2.0	µS/cm	247	247	0.00%	10%	----
<b>Physical Tests (QC Lot: 321755)</b>											
CG2104764-005	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	130	128	1.71%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	130	131	0.767%	20%	----
<b>Physical Tests (QC Lot: 322080)</b>											
CG2104764-004	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	489	491	0.265%	15%	----
<b>Anions and Nutrients (QC Lot: 315938)</b>											
CG2104773-013	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315939)</b>											
CG2104773-013	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315940)</b>											
CG2104773-013	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315941)</b>											
CG2104773-013	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315942)</b>											
CG2104773-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315943)</b>											
CG2104773-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 316044)</b>											
CG2104773-006	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 319042)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 319042) - continued</b>											
CG2104745-006	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0030	0.0026	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 320738)</b>											
CG2104745-007	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.055	0.084	0.029	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 327726)</b>											
CG2104773-015	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.768	0.782	1.74%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 321546)</b>											
CG2104745-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.34	1.44	0.10	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 321556)</b>											
CG2104745-007	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.49	1.53	0.03	Diff <2x LOR	----
<b>Total Metals (QC Lot: 318962)</b>											
CG2104744-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0036	0.0038	0.0002	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00242	0.00241	0.196%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00013	0.00013	0.000002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0224	0.0226	0.630%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.063	0.063	0.0002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.315 µg/L	0.000318	0.786%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	270	271	0.142%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	33.2 µg/L	0.0332	0.0562%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00052	0.00051	0.00001	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.066	0.066	0.0002	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.730	0.713	2.26%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	107	105	1.91%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.220	0.220	0.206%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00635	0.00623	1.98%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.157	0.155	1.28%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	12.2	12.1	0.113%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	3.16 µg/L	0.00310	1.96%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.82	2.78	1.16%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	11.3	11.3	0.442%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.666	0.662	0.536%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	165	166	0.608%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 318962) - continued</b>											
CG2104744-001	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	0.000144	0.000154	6.21%	20%	----
		tin, total	7440-31-5	E420	0.000010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.000030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.0198	0.0193	2.85%	20%	----
		vanadium, total	7440-62-2	E420	0.000050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.158	0.158	0.199%	20%	----
<b>Total Metals (QC Lot: 318963)</b>											
CG2104744-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 323252)</b>											
CG2104745-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	0.00058 µg/L	0.53	0.05	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 321046)</b>											
CG2104776-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 321086)</b>											
CG2104777-001	GH_MW-TD_WG_2021-10-04_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 321087)</b>											
CG2104777-001	GH_MW-TD_WG_2021-10-04_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	<0.0010	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.000010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.000010	mg/L	0.00014	0.00016	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.000010	mg/L	0.0230	0.0229	0.439%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.376	0.363	3.61%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0921 µg/L	0.0000877	4.83%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	85.8	82.9	3.44%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.26 µg/L	0.00026	0.000002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.151	0.147	2.62%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0444	0.0430	3.26%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	36.2	36.0	0.594%	20%	----
		manganese, dissolved	7439-96-5	E421	0.000010	mg/L	0.521	0.534	2.53%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00255	0.00255	0.0472%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.55	2.55	0.0488%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 321087) - continued</b>											
CG2104777-001	GH_MW-TD_WG_2021-10-04_NP	selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.42	6.33	1.41%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	28.5	28.6	0.214%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.14	1.16	1.40%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	28.7	27.9	2.84%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000083	0.000081	0.000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000545	0.000549	0.702%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
	zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----	



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 316240)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 317916)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 317966)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 321727)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 321754)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 321755)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 315938)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 315939)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 315940)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 315941)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 315942)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 315943)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 316044)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 319042)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 320738)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 327726)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 327726) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 321546)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 321556)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 318962)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 318962) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 318963)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 323252)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 321046)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 321086)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 321087)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 321087) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 316240)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	93.8	85.0	115	---
<b>Physical Tests (QCLot: 317916)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.4	85.0	115	---
<b>Physical Tests (QCLot: 317966)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.5	85.0	115	---
<b>Physical Tests (QCLot: 321727)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 321753)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 321754)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.6	90.0	110	---
<b>Physical Tests (QCLot: 321755)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 322080)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 315938)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 315939)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 315940)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	96.3	85.0	115	---
<b>Anions and Nutrients (QCLot: 315941)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 315942)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 315943)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 316044)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	96.1	80.0	120	---
<b>Anions and Nutrients (QCLot: 319042)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	89.7	80.0	120	---
<b>Anions and Nutrients (QCLot: 320738)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 320738) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	98.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 327726)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	110	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 321546)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	104	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 321556)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	108	80.0	120	----
<b>Total Metals (QCLot: 318962)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	99.6	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	111	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.5	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.8	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.1	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	110	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	107	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	117	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	98.4	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 318962) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 318963)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 323252)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	106	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 321086)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 321087)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.9	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.1	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	94.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	107	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	97.8	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	103	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.5	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 321087) - continued</b>									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	118	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.0	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	92.9	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 315938)</b>										
CG2104773-013	Anonymous	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 315939)</b>										
CG2104773-013	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	100 mg/L	100 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 315940)</b>										
CG2104773-013	Anonymous	bromide	24959-67-9	E235.Br-L	0.486 mg/L	0.5 mg/L	97.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 315941)</b>										
CG2104773-013	Anonymous	chloride	16887-00-6	E235.Cl-L	100 mg/L	100 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 315942)</b>										
CG2104773-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.49 mg/L	2.5 mg/L	99.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 315943)</b>										
CG2104773-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.490 mg/L	0.5 mg/L	97.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 316044)</b>										
CG2104773-007	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0554 mg/L	0.05 mg/L	111	70.0	130	----
<b>Anions and Nutrients (QCLot: 319042)</b>										
CG2104745-007	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0545 mg/L	0.0676 mg/L	80.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 320738)</b>										
CG2104750-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.57 mg/L	2.5 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 327726)</b>										
CG2104782-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 321546)</b>										
CG2104745-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.4 mg/L	23.9 mg/L	97.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 321556)</b>										
CG2104745-007	Anonymous	carbon, total organic [TOC]	----	E355-L	25.5 mg/L	23.9 mg/L	107	70.0	130	----
<b>Total Metals (QCLot: 318962)</b>										
CG2104744-002	Anonymous	aluminum, total	7429-90-5	E420	0.395 mg/L	0.4 mg/L	98.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	0.0408 mg/L	0.04 mg/L	102	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 318962) - continued</b>										
CG2104744-002	Anonymous	beryllium, total	7440-41-7	E420	0.0786 mg/L	0.08 mg/L	98.3	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		boron, total	7440-42-8	E420	0.197 mg/L	0.2 mg/L	98.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00832 mg/L	0.008 mg/L	104	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
		copper, total	7440-50-8	E420	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		iron, total	7439-89-6	E420	3.93 mg/L	4 mg/L	98.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0368 mg/L	0.04 mg/L	92.0	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0437 mg/L	0.04 mg/L	109	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0856 mg/L	0.08 mg/L	107	70.0	130	----
		silicon, total	7440-21-3	E420	19.2 mg/L	20 mg/L	95.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00823 mg/L	0.008 mg/L	103	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00753 mg/L	0.008 mg/L	94.1	70.0	130	----
		tin, total	7440-31-5	E420	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
		titanium, total	7440-32-6	E420	0.0804 mg/L	0.08 mg/L	100	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		zinc, total	7440-66-6	E420	0.782 mg/L	0.8 mg/L	97.7	70.0	130	----
<b>Total Metals (QCLot: 318963)</b>										
CG2104744-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0805 mg/L	0.08 mg/L	101	70.0	130	----
<b>Total Metals (QCLot: 323252)</b>										
CG2104745-002	Anonymous	mercury, total	7439-97-6	E508-L	4.79 ng/L	5 ng/L	95.8	70.0	130	----
<b>Dissolved Metals (QCLot: 321046)</b>										
CG2104776-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000993 mg/L	0.0001 mg/L	99.3	70.0	130	----
<b>Dissolved Metals (QCLot: 321086)</b>										
CG2104777-002	GH_GA_MW-3_WG_2021-10-04_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 321087)</b>										
CG2104777-002	GH_GA_MW-3_WG_2021-1 0-04_NP	aluminum, dissolved	7429-90-5	E421	0.196 mg/L	0.2 mg/L	98.0	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00769 mg/L	0.01 mg/L	76.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00413 mg/L	0.004 mg/L	103	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0172 mg/L	0.02 mg/L	85.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.82 mg/L	2 mg/L	91.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0177 mg/L	0.02 mg/L	88.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0870 mg/L	0.1 mg/L	87.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0190 mg/L	0.02 mg/L	94.9	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0368 mg/L	0.04 mg/L	91.9	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.90 mg/L	4 mg/L	97.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0281 mg/L	0.04 mg/L	70.2	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.23 mg/L	10 mg/L	82.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00326 mg/L	0.004 mg/L	81.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00356 mg/L	0.004 mg/L	89.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0370 mg/L	0.04 mg/L	92.4	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00359 mg/L	0.004 mg/L	89.8	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0972 mg/L	0.1 mg/L	97.2	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.396 mg/L	0.4 mg/L	99.1	70.0	130	----

COC ID: 2021-10-07-WG

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	teckcoal@equikonline.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	DL-Equis-GHO-Field@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:				
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:				
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:				
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:				
								Email 7:				
								PO number	739453			

Environmental Division  
Calgary

Work Order Reference  
**CG2104777**



Telephone : +1 403 407 1800

TAILS							ANALYSIS REQUESTED													
Field Matrix	Hazardous Material (Ycs/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.		Y	Y	N	Y	N	N	N	N	Sodium bisulphate	ZN acetate, NAOH	H2SO4	H2SO4	Sodium bisulphate	
							ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH/PAH/LEPH/HEPH	SULPHIDE	BOD	COD	Phenols	VOC/VPH/BTEX	
GH_MW-TD_WG_2021-10-04_NP	GH_MW-TD	WG	N	10/7/2021	13:30	G	7	1	1	1	1	1	1	1						
GH_GA_MW-3_WG_2021-10-04_NP	GH_GA_MW-3	WG	N	10/7/2021	15:00	G	7	1	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			8:30 GT	Oct 8

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	X	Sampler's Name	RG	Mobile #
Priority (2-3 business days) - 50% surcharge		Sampler's Signature		Date/Time
Emergency (1 Business Day) - 100% surcharge				October 7, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

**10cc**

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2104583**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000**  
                   **Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-10-01-WG**  
**Sampler** : **RG/SS**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **2**  
**No. of samples analysed** : **2**

**Page** : 1 of 6  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
                   **Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **02-Oct-2021 10:00**  
**Date Analysis Commenced** : **03-Oct-2021**  
**Issue Date** : **01-Nov-2021 18:50**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_GA-MW-2_ WG_2021-10-0 4_NP	GH_GA-MW-4_ WG_2021-10-0 4_NP	----	----	----
Client sampling date / time					01-Oct-2021 13:25	01-Oct-2021 11:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104583-001 Result	CG2104583-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	3.2	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	233	191	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	284	233	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	233	191	----	----	----	
conductivity	----	E100	2.0	µS/cm	1300	365	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	737	189	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	439	447	----	----	----	
pH	----	E108	0.10	pH units	8.01	8.14	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	1030	217	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	4.7	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	0.61	<0.10	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0215	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	6.69	1.24	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLDS</sup>	0.194	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.391 <sup>HTD,TKN</sup>	0.088 <sup>HTD</sup>	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	11.0	0.191	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0448	0.0012	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0022	0.0016	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	519	23.0	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.47	3.07	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.99	3.12	----	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_GA-MW-2_WG_2021-10-04_NP	GH_GA-MW-4_WG_2021-10-04_NP	---	---	---
Client sampling date / time					01-Oct-2021 13:25	01-Oct-2021 11:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2104583-001 Result	CG2104583-002 Result	-----	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	16.4	4.35	---	---	---	
cation sum	----	EC101	0.10	meq/L	15.3	4.02	---	---	---	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.3	92.4	---	---	---	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.47	3.94	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0038	0.0038	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00170	0.00014	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00021	<0.00010	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0310	0.0799	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	0.018	0.011	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0783	0.0073	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	194	47.0	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00020	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.95	<0.10	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00946	<0.00050	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000220	<0.000050	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0187	0.0122	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	60.2	17.3	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.108	<0.00010	---	---	---	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0262	0.00158	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00844	<0.00050	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	1.47	0.944	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	31.3	1.48	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	3.53	2.57	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	11.4	5.20	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_GA-MW-2_WG_2021-10-04_NP	GH_GA-MW-4_WG_2021-10-04_NP	----	----	----
Client sampling date / time					01-Oct-2021 13:25	01-Oct-2021 11:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104583-001 Result	CG2104583-002 Result	-----	-----	-----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.721	0.162	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	180	8.94	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000013	<0.000010	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00022	<0.00010	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00948	0.00118	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0137	0.0034	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0012	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00182	0.00014	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00021	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0301	0.0783	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.019	0.012	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0942	0.0058	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	202	49.0	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00018	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.55	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00271	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0204	0.0132	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	56.6	16.2	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0992	<0.00010	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0258	0.00162	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00833	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.54	0.980	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_GA-MW-2_ WG_2021-10-0 4_NP	GH_GA-MW-4_ WG_2021-10-0 4_NP	----	----	----
Client sampling date / time					01-Oct-2021 13:25	01-Oct-2021 11:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104583-001 Result	CG2104583-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	33.2	1.66	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.60	2.47	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	11.1	5.06	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.721	0.160	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	182	8.81	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000012	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00916	0.00113	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0125	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104583</b>	Page	: 1 of 16
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jeremy Enns	Account Manager	: Justine Buma-a
Address	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 865 3305	Telephone	: +1 403 407 1800
Project	: GREENHILLS OPERATION	Date Samples Received	: 02-Oct-2021 10:00
PO	: VPO00739453	Issue Date	: 01-Nov-2021 18:51
C-O-C number	: 2021-10-01-WG		
Sampler	: RG/SS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Method Blank (MB) Values</b>								
Total Metals	QC-MRG2-3138850 01	----	silver, total	7440-22-4	E420	0.000032 <sup>B</sup> mg/L	0.00001 mg/L	Blank result exceeds permitted value
Dissolved Metals	QC-MRG2-3133350 01	----	selenium, dissolved	7782-49-2	E421	0.000064 <sup>B</sup> mg/L	0.00005 mg/L	Blank result exceeds permitted value

**Result Qualifiers**

Qualifier	Description
<b>B</b>	<i>Method Blank exceeds ALS DQO. Associated sample results which are &lt; Limit of Reporting or &gt; 5 times blank level are considered reliable.</i>



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-2_WG_2021-10-04_NP	E298	01-Oct-2021	21-Oct-2021	----	----		21-Oct-2021	28 days	20 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-4_WG_2021-10-04_NP	E298	01-Oct-2021	21-Oct-2021	----	----		21-Oct-2021	28 days	20 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_GA-MW-2_WG_2021-10-04_NP	E235.Br-L	01-Oct-2021	----	----	----		03-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_GA-MW-4_WG_2021-10-04_NP	E235.Br-L	01-Oct-2021	----	----	----		03-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_GA-MW-2_WG_2021-10-04_NP	E235.Cl-L	01-Oct-2021	----	----	----		03-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_GA-MW-4_WG_2021-10-04_NP	E235.Cl-L	01-Oct-2021	----	----	----		03-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> GH_GA-MW-2_WG_2021-10-04_NP	E378-U	01-Oct-2021	----	----	----		03-Oct-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_GA-MW-4_WG_2021-10-04_NP	E378-U	01-Oct-2021	----	----	----		03-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_GA-MW-2_WG_2021-10-04_NP	E235.F	01-Oct-2021	----	----	----		03-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_GA-MW-4_WG_2021-10-04_NP	E235.F	01-Oct-2021	----	----	----		03-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_GA-MW-2_WG_2021-10-04_NP	E235.NO3-L	01-Oct-2021	----	----	----		03-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_GA-MW-4_WG_2021-10-04_NP	E235.NO3-L	01-Oct-2021	----	----	----		03-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_GA-MW-2_WG_2021-10-04_NP	E235.NO2-L	01-Oct-2021	----	----	----		03-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_GA-MW-4_WG_2021-10-04_NP	E235.NO2-L	01-Oct-2021	----	----	----		03-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE GH_GA-MW-2_WG_2021-10-04_NP	E235.SO4	01-Oct-2021	----	----	----		03-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE GH_GA-MW-4_WG_2021-10-04_NP	E235.SO4	01-Oct-2021	----	----	----		03-Oct-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-2_WG_2021-10-04_NP	E318	01-Oct-2021	29-Oct-2021	----	----		31-Oct-2021	28 days	30 days	*	EHT
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-4_WG_2021-10-04_NP	E318	01-Oct-2021	29-Oct-2021	----	----		31-Oct-2021	28 days	30 days	*	EHT
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-2_WG_2021-10-04_NP	E372-U	01-Oct-2021	08-Oct-2021	----	----		08-Oct-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-4_WG_2021-10-04_NP	E372-U	01-Oct-2021	08-Oct-2021	----	----		08-Oct-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_GA-MW-2_WG_2021-10-04_NP	E421.Cr-L	01-Oct-2021	07-Oct-2021	----	----		08-Oct-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_GA-MW-4_WG_2021-10-04_NP	E421.Cr-L	01-Oct-2021	07-Oct-2021	----	----		08-Oct-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_GA-MW-2_WG_2021-10-04_NP	E509	01-Oct-2021	08-Oct-2021	----	----		08-Oct-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_GA-MW-4_WG_2021-10-04_NP	E509	01-Oct-2021	08-Oct-2021	----	----		08-Oct-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_GA-MW-2_WG_2021-10-04_NP	E421	01-Oct-2021	07-Oct-2021	----	----		08-Oct-2021	180 days	7 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_GA-MW-4_WG_2021-10-04_NP	E421	01-Oct-2021	07-Oct-2021	----	----		08-Oct-2021	180 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_GA-MW-2_WG_2021-10-04_NP	E358-L	01-Oct-2021	11-Oct-2021	----	----		12-Oct-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_GA-MW-4_WG_2021-10-04_NP	E358-L	01-Oct-2021	11-Oct-2021	----	----		13-Oct-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-2_WG_2021-10-04_NP	E355-L	01-Oct-2021	11-Oct-2021	----	----		13-Oct-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_GA-MW-4_WG_2021-10-04_NP	E355-L	01-Oct-2021	11-Oct-2021	----	----		13-Oct-2021	28 days	12 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_GA-MW-2_WG_2021-10-04_NP	E283	01-Oct-2021	----	----	----		03-Oct-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_GA-MW-4_WG_2021-10-04_NP	E283	01-Oct-2021	----	----	----		03-Oct-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_GA-MW-2_WG_2021-10-04_NP	E290	01-Oct-2021	----	----	----		08-Oct-2021	14 days	7 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_GA-MW-4_WG_2021-10-04_NP	E290	01-Oct-2021	----	----	----		08-Oct-2021	14 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_GA-MW-2_WG_2021-10-04_NP	E100	01-Oct-2021	----	----	----		08-Oct-2021	28 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_GA-MW-4_WG_2021-10-04_NP	E100	01-Oct-2021	----	----	----		08-Oct-2021	28 days	7 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_GA-MW-2_WG_2021-10-04_NP	E125	01-Oct-2021	----	----	----		12-Oct-2021	0.25 hrs	260 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_GA-MW-4_WG_2021-10-04_NP	E125	01-Oct-2021	----	----	----		12-Oct-2021	0.25 hrs	262 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_GA-MW-2_WG_2021-10-04_NP	E108	01-Oct-2021	----	----	----		08-Oct-2021	0.25 hrs	166 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_GA-MW-4_WG_2021-10-04_NP	E108	01-Oct-2021	----	----	----		08-Oct-2021	0.25 hrs	168 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_GA-MW-2_WG_2021-10-04_NP	E162	01-Oct-2021	----	----	----		05-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_GA-MW-4_WG_2021-10-04_NP	E162	01-Oct-2021	----	----	----		05-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] GH_GA-MW-2_WG_2021-10-04_NP	E160-L	01-Oct-2021	----	----	----		05-Oct-2021	7 days	4 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> GH_GA-MW-4_WG_2021-10-04_NP	E160-L	01-Oct-2021	----	----	----		05-Oct-2021	7 days	4 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> GH_GA-MW-2_WG_2021-10-04_NP	E121	01-Oct-2021	----	----	----		04-Oct-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> GH_GA-MW-4_WG_2021-10-04_NP	E121	01-Oct-2021	----	----	----		04-Oct-2021	3 days	3 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_GA-MW-2_WG_2021-10-04_NP	E420.Cr-L	01-Oct-2021	----	----	----		08-Oct-2021	180 days	7 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_GA-MW-4_WG_2021-10-04_NP	E420.Cr-L	01-Oct-2021	----	----	----		08-Oct-2021	180 days	7 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_GA-MW-2_WG_2021-10-04_NP	E508-L	01-Oct-2021	----	----	----		09-Oct-2021	28 days	8 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_GA-MW-4_WG_2021-10-04_NP	E508-L	01-Oct-2021	----	----	----		09-Oct-2021	28 days	8 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_GA-MW-2_WG_2021-10-04_NP	E420	01-Oct-2021	----	----	----		08-Oct-2021	180 days	7 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_GA-MW-4_WG_2021-10-04_NP	E420	01-Oct-2021	----	----	----		08-Oct-2021	180 days	7 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 9 of 16  
Work Order : CG2104583  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

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EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	309713	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	314980	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	325476	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	309821	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	309822	1	13	7.6	5.0	✓
Conductivity in Water	E100	314978	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	313335	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	314581	2	38	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	313336	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	316583	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	309883	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	309825	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	309823	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	309824	1	13	7.6	5.0	✓
ORP by Electrode	E125	316545	1	19	5.2	5.0	✓
pH by Meter	E108	314979	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	309820	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	310909	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	313885	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	333477	1	18	5.5	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	315706	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	313886	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	316715	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	313479	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	310157	1	8	12.5	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	309713	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	314980	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	325476	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	309821	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	309822	1	13	7.6	5.0	✓
Conductivity in Water	E100	314978	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	313335	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	314581	2	38	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	313336	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	316583	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	309883	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	309825	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	309823	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	309824	1	13	7.6	5.0	✓
ORP by Electrode	E125	316545	1	19	5.2	5.0	✓
pH by Meter	E108	314979	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	309820	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	310909	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	313885	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	333477	1	18	5.5	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	315706	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	313886	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	316715	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	313479	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	310904	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	310157	1	8	12.5	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	309713	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	314980	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	325476	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	309821	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	309822	1	13	7.6	5.0	✓
Conductivity in Water	E100	314978	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	313335	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	314581	2	38	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	313336	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	316583	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	309883	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	309825	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	309823	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	309824	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	309820	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	310909	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	313885	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	333477	1	18	5.5	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	315706	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	313886	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	316715	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	313479	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	310904	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	310157	1	8	12.5	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	325476	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	309821	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	309822	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	313335	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	314581	2	38	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	313336	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	316583	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	309883	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	309825	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	309823	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	309824	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	309820	1	13	7.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	313885	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	333477	1	18	5.5	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	315706	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	313886	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	316715	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	313479	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

Page : 16 of 16  
Work Order : CG2104583  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2104583**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-10-01-WG  
**Sampler** : RG/SS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 02-Oct-2021 10:00  
**Date Analysis Commenced** : 03-Oct-2021  
**Issue Date** : 01-Nov-2021 18:50

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 309713)</b>											
CG2104576-007	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	<10.0	<10.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 310157)</b>											
CG2104583-001	GH_GA-MW-2_WG_2021-10-04_NP	turbidity	----	E121	0.10	NTU	0.61	0.58	0.02	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 310909)</b>											
CG2104576-011	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1670	1640	2.05%	20%	----
<b>Physical Tests (QC Lot: 314978)</b>											
CG2104580-007	Anonymous	conductivity	----	E100	2.0	µS/cm	1770	1770	0.113%	10%	----
<b>Physical Tests (QC Lot: 314979)</b>											
CG2104580-007	Anonymous	pH	----	E108	0.10	pH units	8.00	8.03	0.374%	4%	----
<b>Physical Tests (QC Lot: 314980)</b>											
CG2104580-007	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	298	304	2.29%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	298	304	2.29%	20%	----
<b>Physical Tests (QC Lot: 316545)</b>											
CG2104580-007	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	468	468	0.128%	15%	----
<b>Anions and Nutrients (QC Lot: 309820)</b>											
CG2104583-001	GH_GA-MW-2_WG_2021-10-04_NP	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	519	538	3.54%	20%	----
<b>Anions and Nutrients (QC Lot: 309821)</b>											
CG2104583-001	GH_GA-MW-2_WG_2021-10-04_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 309822)</b>											
CG2104583-001	GH_GA-MW-2_WG_2021-10-04_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	6.69	6.86	2.57%	20%	----
<b>Anions and Nutrients (QC Lot: 309823)</b>											
CG2104583-001	GH_GA-MW-2_WG_2021-10-04_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	11.0	11.4	3.29%	20%	----
<b>Anions and Nutrients (QC Lot: 309824)</b>											
CG2104583-001	GH_GA-MW-2_WG_2021-10-04_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0448	0.0389	0.0059	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 309825)</b>											
CG2104583-001	GH_GA-MW-2_WG_2021-10-04_NP	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 309883)</b>											
CG2104576-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0015	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 313479)</b>											
CG2104580-007	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325476)</b>											
CG2104580-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0059	0.0056	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 333477)</b>											
CG2104583-001	GH_GA-MW-2_WG_2021-10-04_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.391	0.371	0.021	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 316583)</b>											
CG2104580-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.59	1.14	0.45	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 316715)</b>											
CG2104580-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.36	1.50	0.14	Diff <2x LOR	----
<b>Total Metals (QC Lot: 313885)</b>											
CG2104580-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 313886)</b>											
CG2104580-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	0.0105	0.0099	0.0006	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00175	0.00178	0.00003	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0173	0.0172	0.137%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.049	0.049	0.0002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	7.19 µg/L	0.00735	2.19%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	593	616	3.87%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	11.8 µg/L	0.0119	0.993%	20%	----
		copper, total	7440-50-8	E420	0.00100	mg/L	0.00202	0.00209	0.00007	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	0.154	0.170	0.016	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.666	0.656	1.50%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	409	411	0.527%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	0.165	0.166	1.02%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00328	0.00339	3.53%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.299	0.302	0.943%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	14.2	14.3	0.403%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	954 µg/L	0.966	1.28%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	2.60	2.54	2.35%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 313886) - continued</b>											
CG2104580-001	Anonymous	silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	7.93	8.02	1.07%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.697	0.708	1.58%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	668	667	0.118%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.000102	0.000109	0.000007	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0456	0.0471	3.22%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.977	0.978	0.112%	20%	----
<b>Total Metals (QC Lot: 315706)</b>											
CG2104560-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 313335)</b>											
CG2104576-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 313336)</b>											
CG2104576-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0014	<0.0010	0.0004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00020	0.00021	0.0000002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00016	0.00016	0.000004	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0122	0.0118	3.08%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.058	0.057	0.0004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.969 µg/L	0.00100	3.16%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	298	298	0.0256%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	35.9 µg/L	0.0359	0.0378%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.194	0.193	0.680%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000059	0.000058	0.0000010	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0936	0.0930	0.647%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	165	168	2.02%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.960	0.964	0.375%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00186	0.00186	0.171%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.114	0.115	1.21%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.16	5.20	0.750%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	1.22 µg/L	0.00124	1.65%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 313336) - continued</b>											
CG2104576-001	Anonymous	silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.10	3.09	0.0983%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	8.61	9.13	5.79%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.350	0.355	1.57%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	298	305	2.54%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000113	0.000115	1.86%	20%	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0149	0.0146	2.02%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0608	0.0610	0.208%	20%	----
<b>Dissolved Metals (QC Lot: 314581)</b>											
CG2104576-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 314582)</b>											
CG2104583-002	GH_GA-MW-4_WG_2021-10-04_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 309713)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 310157)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 310904)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 310909)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 314978)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 314980)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 309820)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 309821)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 309822)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 309823)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 309824)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 309825)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 309883)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 313479)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 325476)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 333477)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 333477) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 316583)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 316715)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 313885)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 313886)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	# 0.000032	B
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 313886) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 315706)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	---
<b>Dissolved Metals (QCLot: 313335)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 313336)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	# 0.000064	B
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 313336) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 314581)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 314582)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

**Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 309713)</b>									
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	50 mg/L	104	85.0	115	----
<b>Physical Tests (QCLot: 310157)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	92.8	85.0	115	----
<b>Physical Tests (QCLot: 310904)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	96.9	85.0	115	----
<b>Physical Tests (QCLot: 310909)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	98.0	85.0	115	----
<b>Physical Tests (QCLot: 314978)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	----
<b>Physical Tests (QCLot: 314979)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 314980)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	500 mg/L	101	85.0	115	----
<b>Physical Tests (QCLot: 316545)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
<b>Anions and Nutrients (QCLot: 309820)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 309821)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	111	85.0	115	----
<b>Anions and Nutrients (QCLot: 309822)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 309823)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 309824)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	108	90.0	110	----
<b>Anions and Nutrients (QCLot: 309825)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	109	90.0	110	----
<b>Anions and Nutrients (QCLot: 309883)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	94.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 313479)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	104	80.0	120	----
<b>Anions and Nutrients (QCLot: 325476)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 325476) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Anions and Nutrients (QCLot: 333477)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 316583)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 316715)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	109	80.0	120	----
<b>Total Metals (QCLot: 313885)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
<b>Total Metals (QCLot: 313886)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	99.2	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	97.9	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	94.8	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	97.5	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	86.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.0	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.0	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	96.4	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	95.7	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	96.3	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.2	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	104	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	95.8	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	109	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 313886) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.2	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	96.9	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	100.0	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 315706)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	95.8	80.0	120	----
<b>Dissolved Metals (QCLot: 313335)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 313336)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	109	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	103	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	104	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 313336) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.1	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	111	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	106	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.4	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 309820)</b>										
CG2104583-002	GH_GA-MW-4_WG_2021-1 0-04_NP	sulfate (as SO4)	14808-79-8	E235.SO4	98.5 mg/L	100 mg/L	98.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 309821)</b>										
CG2104583-002	GH_GA-MW-4_WG_2021-1 0-04_NP	bromide	24959-67-9	E235.Br-L	0.511 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 309822)</b>										
CG2104583-002	GH_GA-MW-4_WG_2021-1 0-04_NP	chloride	16887-00-6	E235.Cl-L	94.8 mg/L	100 mg/L	94.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 309823)</b>										
CG2104583-002	GH_GA-MW-4_WG_2021-1 0-04_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.58 mg/L	2.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 309824)</b>										
CG2104583-002	GH_GA-MW-4_WG_2021-1 0-04_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.470 mg/L	0.5 mg/L	94.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 309825)</b>										
CG2104583-002	GH_GA-MW-4_WG_2021-1 0-04_NP	fluoride	16984-48-8	E235.F	1.09 mg/L	1 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 309883)</b>										
CG2104576-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0497 mg/L	0.05 mg/L	99.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 313479)</b>										
CG2104580-008	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0589 mg/L	0.0676 mg/L	87.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 325476)</b>										
CG2104586-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 333477)</b>										
CG2104583-002	GH_GA-MW-4_WG_2021-1 0-04_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.57 mg/L	2.5 mg/L	103	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 316583)</b>										
CG2104580-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.3 mg/L	23.9 mg/L	102	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 316715)</b>										
CG2104580-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.3 mg/L	23.9 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 313885)</b>										
CG2104580-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 313886)</b>										
CG2104580-002	Anonymous	aluminum, total	7429-90-5	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, total	7440-36-0	E420	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0368 mg/L	0.04 mg/L	92.1	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00863 mg/L	0.01 mg/L	86.3	70.0	130	----
		boron, total	7440-42-8	E420	0.086 mg/L	0.1 mg/L	86.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00370 mg/L	0.004 mg/L	92.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		copper, total	7440-50-8	E420	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		iron, total	7439-89-6	E420	1.88 mg/L	2 mg/L	93.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0178 mg/L	0.02 mg/L	89.2	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		silicon, total	7440-21-3	E420	9.56 mg/L	10 mg/L	95.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00363 mg/L	0.004 mg/L	90.8	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00350 mg/L	0.004 mg/L	87.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		titanium, total	7440-32-6	E420	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.379 mg/L	0.4 mg/L	94.8	70.0	130	----
<b>Total Metals (QCLot: 315706)</b>										
CG2104560-002	Anonymous	mercury, total	7439-97-6	E508-L	4.77 ng/L	5 ng/L	95.5	70.0	130	----
<b>Dissolved Metals (QCLot: 313335)</b>										
CG2104576-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 313336)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 313336) - continued</b>										
CG2104576-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.212 mg/L	0.2 mg/L	106	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0217 mg/L	0.02 mg/L	109	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	88.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.93 mg/L	2 mg/L	96.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0184 mg/L	0.02 mg/L	92.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0372 mg/L	0.04 mg/L	93.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0470 mg/L	0.04 mg/L	117	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.25 mg/L	10 mg/L	92.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00370 mg/L	0.004 mg/L	92.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00368 mg/L	0.004 mg/L	92.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.401 mg/L	0.4 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 314581)</b>										
CG2104576-004	Anonymous	mercury, dissolved	7439-97-6	E509	0.0001000 mg/L	0.0001 mg/L	100.0	70.0	130	----
<b>Dissolved Metals (QCLot: 314582)</b>										
CG2104584-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000996 mg/L	0.0001 mg/L	99.6	70.0	130	----




COC ID: 2021-10-01-WG

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	teckcoal@equisonline.com	X	X	X
Email	jeremy.enns@teck.com			Email	justine.burmaa@alsglobal.com			Email 2:	DL.Equis-GHO-Field@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:				X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:				
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:				
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:				
								Email 7:				
								PO number	739453			

SAMPLE DETAILS								ANALYSIS REQUESTED													
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	Prep.	Y	Y	N	Y	N	N	N	N	Sodium bisulphate	Zn acetate, NaOH	H2SO4	H2SO4	Sodium bisulphate	
								ALS Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-TKN/TOC	EPH/PAH/EPH/HEPH	SULPHIDE	BOD	COD	Phenols	VOC/PH/BTEX	
GH_GA-MW-2	WG	N	10/1/2021	13:25	G	7		1	1	1	1	1	1	1							
GH_GA-MW-4	WG	N	10/1/2021	11:30	G	7		1	1	1	1	1	1	1							

Environmental Division  
Calgary  
Work Order Reference  
**CG2104583**



INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	10/02/2021

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	RG/SS	Mobile #
Regular (default)	X			
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Sampler's Signature	Date/Time	October 1, 2021

*[Handwritten Signature]*  
10/02/2021

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2104772**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000**  
                   **Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-10-08-WG**  
**Sampler** : **RG/SS**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **1**  
**No. of samples analysed** : **1**

**Page** : 1 of 6  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
                   **Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **09-Oct-2021 08:30**  
**Date Analysis Commenced** : **09-Oct-2021**  
**Issue Date** : **28-Oct-2021 16:43**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.





## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					GH_MW-ERSC-1_WG_2021-10-04_NP	----	----	----	----
Client sampling date / time					08-Oct-2021 13:50	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2104772-001	-----	-----	-----	-----
					Result	---	---	---	---
<b>Physical Tests</b>									
acidity (as CaCO3)	---	E283	2.0	mg/L	2.9	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	177	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	7.2	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	185	---	---	---	---
conductivity	---	E100	2.0	µS/cm	776	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	403	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	460	---	---	---	---
pH	---	E108	0.10	pH units	8.33	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	532	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	4.5	---	---	---	---
turbidity	---	E121	0.10	NTU	1.07	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	216	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	4.3	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0101	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.77	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.126	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.329 <sup>TKN</sup>	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	3.54	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0010	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0145	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	222	---	---	---	---
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	2.75	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	2.63	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-ERSC-1_WG_2021-10-04_NP	----	----	----	----
Client sampling date / time					08-Oct-2021 13:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104772-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	8.68	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	8.30	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	95.6	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.24	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0189	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00012	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00024	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.165	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.015	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0339	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	112	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00034	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00266	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.074	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000232	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0162	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	41.0	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0102	----	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00146	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00077	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.16	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	33.5	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.96	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	5.50	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-ERSC-1_WG_2021-10-04_NP	----	----	----	----
Client sampling date / time					08-Oct-2021 13:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104772-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.426	----	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	87.6	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000016	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00068	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00162	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0086	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0014	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00016	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.150	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0357	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	99.4	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00017	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00104	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000113	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0152	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	37.7	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00656	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00137	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00062	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.08	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-ERSC-1_WG_2021-10-04_NP	----	----	----	----
Client sampling date / time					08-Oct-2021 13:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104772-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	32.0	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.66	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.80	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.386	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	81.3	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00140	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0075	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104772</b>	Page	: 1 of 12
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jeremy Enns	Account Manager	: Justine Buma-a
Address	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 865 3305	Telephone	: +1 403 407 1800
Project	: GREENHILLS OPERATION	Date Samples Received	: 09-Oct-2021 08:30
PO	: VPO00739453	Issue Date	: 28-Oct-2021 16:43
C-O-C number	: 2021-10-08-WG		
Sampler	: RG/SS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E298	08-Oct-2021	23-Oct-2021	----	----		23-Oct-2021	28 days	15 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E235.Br-L	08-Oct-2021	----	----	----		09-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E235.Cl-L	08-Oct-2021	----	----	----		09-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E378-U	08-Oct-2021	----	----	----		09-Oct-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E235.F	08-Oct-2021	----	----	----		09-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E235.NO3-L	08-Oct-2021	----	----	----		09-Oct-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E235.NO2-L	08-Oct-2021	----	----	----		09-Oct-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E235.SO4	08-Oct-2021	----	----	----		09-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E318	08-Oct-2021	15-Oct-2021	----	----		19-Oct-2021	28 days	11 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E372-U	08-Oct-2021	16-Oct-2021	----	----		16-Oct-2021	28 days	8 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E421.Cr-L	08-Oct-2021	17-Oct-2021	----	----		17-Oct-2021	180 days	9 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E509	08-Oct-2021	19-Oct-2021	----	----		19-Oct-2021	28 days	11 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E421	08-Oct-2021	17-Oct-2021	----	----		17-Oct-2021	180 days	9 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E358-L	08-Oct-2021	17-Oct-2021	----	----		20-Oct-2021	28 days	12 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E355-L	08-Oct-2021	17-Oct-2021	----	----		20-Oct-2021	28 days	12 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E283	08-Oct-2021	----	----	----		17-Oct-2021	14 days	9 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE GH_MW-ERSC-1_WG_2021-10-04_NP	E290	08-Oct-2021	----	----	----		17-Oct-2021	14 days	9 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_MW-ERSC-1_WG_2021-10-04_NP	E100	08-Oct-2021	----	----	----		17-Oct-2021	28 days	9 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE GH_MW-ERSC-1_WG_2021-10-04_NP	E125	08-Oct-2021	----	----	----		19-Oct-2021	0.25 hrs	261 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE GH_MW-ERSC-1_WG_2021-10-04_NP	E108	08-Oct-2021	----	----	----		17-Oct-2021	0.25 hrs	215 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE GH_MW-ERSC-1_WG_2021-10-04_NP	E162	08-Oct-2021	----	----	----		14-Oct-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE GH_MW-ERSC-1_WG_2021-10-04_NP	E160-L	08-Oct-2021	----	----	----		14-Oct-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE GH_MW-ERSC-1_WG_2021-10-04_NP	E121	08-Oct-2021	----	----	----		11-Oct-2021	3 days	3 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
HDPE total (nitric acid) GH_MW-ERSC-1_WG_2021-10-04_NP	E420.Cr-L	08-Oct-2021	----	----	----		18-Oct-2021	180 days	10 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
Pre-cleaned amber glass - total (lab preserved) GH_MW-ERSC-1_WG_2021-10-04_NP	E508-L	08-Oct-2021	----	----	----		20-Oct-2021	28 days	12 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_MW-ERSC-1_WG_2021-10-04_NP	E420	08-Oct-2021	----	----	----		18-Oct-2021	180 days	10 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	321759	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	321984	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	327725	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	315940	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	315941	1	14	7.1	5.0	✓
Conductivity in Water	E100	321982	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	321662	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	323068	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	321661	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	322055	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	316043	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	315938	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	315942	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	315943	1	14	7.1	5.0	✓
ORP by Electrode	E125	322451	1	20	5.0	5.0	✓
pH by Meter	E108	321983	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	315939	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	318222	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	321410	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	320738	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	324997	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	321409	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	322063	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	320202	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	316512	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	321759	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	321984	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	327725	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	315940	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	315941	1	14	7.1	5.0	✓
Conductivity in Water	E100	321982	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	321662	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	323068	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	321661	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	322055	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	316043	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	315938	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	315942	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	315943	1	14	7.1	5.0	✓
ORP by Electrode	E125	322451	1	20	5.0	5.0	✓
pH by Meter	E108	321983	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	315939	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	318222	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	321410	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	320738	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	324997	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	321409	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	322063	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	320202	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	318219	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	316512	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	321759	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	321984	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	327725	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	315940	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	315941	1	14	7.1	5.0	✓
Conductivity in Water	E100	321982	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	321662	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	323068	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	321661	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	322055	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	316043	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	315938	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	315942	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	315943	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	315939	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	318222	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	321410	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	320738	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	324997	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	321409	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	322063	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	320202	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	318219	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	316512	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	327725	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	315940	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	315941	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	321662	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	323068	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	321661	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	322055	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	316043	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	315938	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	315942	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	315943	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	315939	1	14	7.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	321410	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	320738	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	324997	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	321409	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	322063	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	320202	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

Page : 12 of 12  
Work Order : CG2104772  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2104772**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-10-08-WG  
**Sampler** : RG/SS  
**Site** : ---  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Oct-2021 08:30  
**Date Analysis Commenced** : 09-Oct-2021  
**Issue Date** : 28-Oct-2021 16:43

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 18  
Work Order : CG2104772  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 316512)</b>											
CG2104769-001	Anonymous	turbidity	----	E121	0.10	NTU	2.31	2.21	4.25%	15%	----
<b>Physical Tests (QC Lot: 318222)</b>											
CG2104769-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	662	660	0.303%	20%	----
<b>Physical Tests (QC Lot: 321759)</b>											
CG2104769-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 321982)</b>											
CG2104769-001	Anonymous	conductivity	----	E100	2.0	µS/cm	891	882	1.02%	10%	----
<b>Physical Tests (QC Lot: 321983)</b>											
CG2104769-001	Anonymous	pH	----	E108	0.10	pH units	8.20	8.16	0.489%	4%	----
<b>Physical Tests (QC Lot: 321984)</b>											
CG2104769-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	310	310	0.00%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	254	254	0.00%	20%	----
<b>Physical Tests (QC Lot: 322451)</b>											
CG2104769-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	459	459	0.0871%	15%	----
<b>Anions and Nutrients (QC Lot: 315938)</b>											
CG2104773-013	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315939)</b>											
CG2104773-013	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315940)</b>											
CG2104773-013	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315941)</b>											
CG2104773-013	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315942)</b>											
CG2104773-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315943)</b>											
CG2104773-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 316043)</b>											
CG2104763-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0020	mg/L	0.115	0.115	0.0193%	20%	----
<b>Anions and Nutrients (QC Lot: 320202)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 320202) - continued</b>											
CG2104769-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 320738)</b>											
CG2104745-007	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.055	0.084	0.029	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 327725)</b>											
CG2104764-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 322055)</b>											
CG2104769-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.59	0.65	0.06	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 322063)</b>											
CG2104769-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.53	<0.50	0.03	Diff <2x LOR	----
<b>Total Metals (QC Lot: 321409)</b>											
CG2104772-001	GH_MW-ERSC-1_WG_20 21-10-04_NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0189	0.0212	0.0023	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00012	0.00012	0.000005	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00024	0.00022	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.165	0.155	6.29%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.015	0.015	0.0002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0339 µg/L	0.0000357	0.0000018	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	112	108	3.34%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00266	0.00264	0.00001	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.074	0.074	0.0006	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000232	0.000224	0.000007	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0162	0.0158	2.06%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	41.0	40.9	0.310%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0102	0.0102	0.127%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00146	0.00148	0.758%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00077	0.00080	0.00003	Diff <2x LOR	----
	potassium, total	7440-09-7	E420	0.050	mg/L	1.16	1.14	1.72%	20%	----	
	selenium, total	7782-49-2	E420	0.050	mg/L	33.5 µg/L	0.0326	2.70%	20%	----	
	silicon, total	7440-21-3	E420	0.10	mg/L	2.96	2.94	0.866%	20%	----	
	silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----	
	sodium, total	17341-25-2	E420	0.050	mg/L	5.50	5.35	2.90%	20%	----	
	strontium, total	7440-24-6	E420	0.00020	mg/L	0.426	0.422	0.867%	20%	----	
	sulfur, total	7704-34-9	E420	0.50	mg/L	87.6	86.6	1.17%	20%	----	



Sub-Matrix: Water

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 321409) - continued</b>											
CG2104772-001	GH_MW-ERSC-1_WG_20 21-10-04_NP	thallium, total	7440-28-0	E420	0.000010	mg/L	0.000016	0.000014	0.000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00068	0.00071	0.00003	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00162	0.00159	1.73%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0086	0.0086	0.000005	Diff <2x LOR	----
<b>Total Metals (QC Lot: 321410)</b>											
CG2104772-001	GH_MW-ERSC-1_WG_20 21-10-04_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00034	0.00035	0.00001	Diff <2x LOR	----
<b>Total Metals (QC Lot: 324997)</b>											
CG2104769-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 321661)</b>											
CG2104769-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0040	0.0038	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	0.00012	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0320	0.0324	1.16%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.018	0.018	0.0006	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.362 µg/L	0.000370	2.08%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	109	110	0.864%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.107	0.108	0.678%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.042	0.043	0.0003	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000336	0.000336	0.0000003	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0126	0.0129	2.42%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	52.3	51.7	1.21%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00863	0.00858	0.570%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00215	0.00212	1.26%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00083	0.00082	0.000004	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.61	1.60	0.236%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	5.91 µg/L	0.00606	2.52%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.34	4.39	0.986%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.91	7.74	2.17%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 321661) - continued</b>											
CG2104769-001	Anonymous	strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.362	0.351	2.97%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	95.4	96.3	1.01%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00198	0.00195	1.26%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0398	0.0401	0.623%	20%	----
<b>Dissolved Metals (QC Lot: 321662)</b>											
CG2104769-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 323068)</b>											
CG2104769-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 316512)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 318219)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 318222)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 321759)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 321982)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 321984)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 315938)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 315939)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 315940)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 315941)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 315942)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 315943)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 316043)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 320202)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 320738)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 327725)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 327725) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 322055)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 322063)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 321409)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 321409) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 321410)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 324997)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	---
<b>Dissolved Metals (QCLot: 321661)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 321661) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 321662)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 323068)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 316512)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	93.0	85.0	115	---
<b>Physical Tests (QCLot: 318219)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	96.8	85.0	115	---
<b>Physical Tests (QCLot: 318222)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	94.8	85.0	115	---
<b>Physical Tests (QCLot: 321759)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	110	85.0	115	---
<b>Physical Tests (QCLot: 321982)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 321983)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 321984)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 322451)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 315938)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 315939)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 315940)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	96.3	85.0	115	---
<b>Anions and Nutrients (QCLot: 315941)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 315942)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 315943)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 316043)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	97.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 320202)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	100	80.0	120	---
<b>Anions and Nutrients (QCLot: 320738)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 320738) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	98.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 327725)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	106	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 322055)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	92.6	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 322063)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 321409)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	90.7	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	95.8	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.1	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.8	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	110	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.5	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.9	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	104	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	107	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.7	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 321409) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.7	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.3	80.0	120	----
<b>Total Metals (QCLot: 321410)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 324997)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 321661)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.2	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.3	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.7	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.4	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.8	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	106	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.7	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 321661) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	94.8	80.0	120	----
<b>Dissolved Metals (QCLot: 321662)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.8	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 315938)</b>										
CG2104773-013	Anonymous	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 315939)</b>										
CG2104773-013	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	100 mg/L	100 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 315940)</b>										
CG2104773-013	Anonymous	bromide	24959-67-9	E235.Br-L	0.486 mg/L	0.5 mg/L	97.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 315941)</b>										
CG2104773-013	Anonymous	chloride	16887-00-6	E235.Cl-L	100 mg/L	100 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 315942)</b>										
CG2104773-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.49 mg/L	2.5 mg/L	99.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 315943)</b>										
CG2104773-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.490 mg/L	0.5 mg/L	97.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 316043)</b>										
CG2104763-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0559 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 320202)</b>										
CG2104769-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0591 mg/L	0.0676 mg/L	87.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 320738)</b>										
CG2104750-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.57 mg/L	2.5 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 327725)</b>										
CG2104773-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0992 mg/L	0.1 mg/L	99.2	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 322055)</b>										
CG2104769-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.7 mg/L	23.9 mg/L	99.2	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 322063)</b>										
CG2104769-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.2 mg/L	23.9 mg/L	105	70.0	130	----
<b>Total Metals (QCLot: 321409)</b>										
CG2104779-001	Anonymous	aluminum, total	7429-90-5	E420	0.212 mg/L	0.2 mg/L	106	70.0	130	----
		antimony, total	7440-36-0	E420	0.0217 mg/L	0.02 mg/L	109	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 321409) - continued</b>										
CG2104779-001	Anonymous	beryllium, total	7440-41-7	E420	0.0432 mg/L	0.04 mg/L	108	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		boron, total	7440-42-8	E420	0.100 mg/L	0.1 mg/L	99.9	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00428 mg/L	0.004 mg/L	107	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		copper, total	7440-50-8	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.0215 mg/L	0.02 mg/L	108	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0227 mg/L	0.02 mg/L	113	70.0	130	----
		nickel, total	7440-02-0	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0431 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, total	7440-21-3	E420	9.95 mg/L	10 mg/L	99.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00434 mg/L	0.004 mg/L	108	70.0	130	----
		sodium, total	17341-25-2	E420	2.24 mg/L	2 mg/L	112	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	22.3 mg/L	20 mg/L	111	70.0	130	----
		thallium, total	7440-28-0	E420	0.00414 mg/L	0.004 mg/L	103	70.0	130	----
		tin, total	7440-31-5	E420	0.0225 mg/L	0.02 mg/L	113	70.0	130	----
		titanium, total	7440-32-6	E420	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		uranium, total	7440-61-1	E420	0.00442 mg/L	0.004 mg/L	110	70.0	130	----
		vanadium, total	7440-62-2	E420	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		zinc, total	7440-66-6	E420	0.408 mg/L	0.4 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 321410)</b>										
CG2104779-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0434 mg/L	0.04 mg/L	108	70.0	130	----
<b>Total Metals (QCLot: 324997)</b>										
CG2104769-002	Anonymous	mercury, total	7439-97-6	E508-L	4.50 ng/L	5 ng/L	89.9	70.0	130	----
<b>Dissolved Metals (QCLot: 321661)</b>										
CG2104769-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.200 mg/L	0.2 mg/L	99.9	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 321661) - continued</b>										
CG2104769-002	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0385 mg/L	0.04 mg/L	96.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00851 mg/L	0.01 mg/L	85.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	87.9	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00396 mg/L	0.004 mg/L	99.1	70.0	130	----
		calcium, dissolved	7440-70-2	E421	3.70 mg/L	4 mg/L	92.5	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0929 mg/L	0.1 mg/L	92.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	0.978 mg/L	1 mg/L	97.8	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.88 mg/L	4 mg/L	96.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.47 mg/L	10 mg/L	94.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00375 mg/L	0.004 mg/L	93.7	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00370 mg/L	0.004 mg/L	92.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00385 mg/L	0.004 mg/L	96.2	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.385 mg/L	0.4 mg/L	96.3	70.0	130	----
<b>Dissolved Metals (QCLot: 321662)</b>										
CG2104769-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
<b>Dissolved Metals (QCLot: 323068)</b>										
CG2104769-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000973 mg/L	0.0001 mg/L	97.3	70.0	130	----



COC ID: **2021-10-08-WG**

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Buma-a			Email 1:	teckcoal@equisonline.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	DL-Equis-GHO-Field@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:				
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:				
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:				
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:				
								Email 7:				
								PO number	<b>739453</b>			

Environmental Division  
Calgary  
Work Order Reference  
**CG2104772**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED													
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Filter	Preserv.	Y	Y	N	Y	N	N	N	N	Sodium bisulphate	ZN acetate, NaOH	H2SO4	H2SO4	Sodium bisulphate	
								ALS_Package-DOC	HG-D-CVAFVA	HG-T-U-CVAFVA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH/PAH/LEPH/HEPH	SULPHIDE	BOD	COD	Phenols	VOC/PH/BTEX	
GH_MW-ERSC-1_WG_2021-10-04_NP	GH_MW-ERSC-1	WG	N	10/8/2021	13:50	G	7	1	1	1	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME

*Handwritten signature and date: 10/19/2021*

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	RG/SS	Mobile #
Regular (default) <input checked="" type="checkbox"/> X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS			
	Sampler's Signature		Date/Time

October 8, 2021

*Large handwritten mark resembling a stylized 'S' or '5'.*

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105834**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000**  
           **Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-11-18-WG**  
**Sampler** : **RG/RA**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **3**  
**No. of samples analysed** : **3**

**Page** : 1 of 7  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
           **Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **19-Nov-2021 08:45**  
**Date Analysis Commenced** : **19-Nov-2021**  
**Issue Date** : **29-Nov-2021 19:10**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	<i>Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.</i>
DLM	<i>Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).</i>



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					GH_MW-GHC-1 B_WG_2021-10 -04_NP	GH_MW-GHC-1 A_WG_2021-10 -04_NP	GH_FOX3_WG_ 2021-07-05_NP	----	----
Client sampling date / time					18-Nov-2021 12:20	18-Nov-2021 13:55	18-Nov-2021 12:20	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105834-001	CG2105834-002	CG2105834-003	-----	-----
					Result	Result	Result	---	---
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	13.8	12.5	12.0	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	275	292	293	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	335	356	358	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	275	292	293	----	----
conductivity	----	E100	2.0	µS/cm	1410	1030	1410	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	784	560	802	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	462	501	457	----	----
pH	----	E108	0.10	pH units	7.72	7.80	7.66	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	1170	758	1120	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	8.8	1.0	13.2	----	----
turbidity	----	E121	0.10	NTU	7.29	0.48	10.8	----	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0194	0.0058	0.0178	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	0.296	<0.250 <sup>DLDS</sup>	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	9.02	1.56	11.3	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLDS</sup>	0.416	0.131	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.090	<0.050	0.205	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0250 <sup>DLDS</sup>	0.0759	<0.0250 <sup>DLDS</sup>	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0096	<0.0050 <sup>DLDS</sup>	0.0209	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0042	0.0011	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0384	0.0048	0.0114	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	571	333	610	----	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.19	1.13	2.43	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.21	1.30	2.22	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-GHC-1 B_WG_2021-10 -04_NP	GH_MW-GHC-1 A_WG_2021-10 -04_NP	GH_FOX3_WG_ 2021-07-05_NP	----	----
Client sampling date / time					18-Nov-2021 12:20	18-Nov-2021 13:55	18-Nov-2021 12:20	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105834-001	CG2105834-002	CG2105834-003	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	17.6	12.8	18.9	----	----	
cation sum	----	EC101	0.10	meq/L	16.0	11.4	16.3	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	90.9	89.1	86.2	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.76	5.78	7.39	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.369	0.0103	0.101	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00132	<0.00010	0.00121	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0345	0.0873	0.0338	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.042	0.033	0.041	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0376	0.0224	0.0262	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	245	156	246	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00065	0.00010	0.00024	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.46	<0.10	0.44	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00125	0.00162	0.00086	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	1.30	0.045	0.914	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000288	0.000061	0.000168	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0244	0.0182	0.0240	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	59.1	54.9	61.2	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.175	0.00042	0.177	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00211	<0.00050	<0.00050	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000996	0.000761	0.00105	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00178	0.00054	0.00168	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.28	1.49	2.30	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	0.304	4.26	0.237	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	7.31	5.24	7.27	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000133	<0.000010	0.000380	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	5.24	5.06	5.26	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-GHC-1 B_WG_2021-10 -04_NP	GH_MW-GHC-1 A_WG_2021-10 -04_NP	GH_FOX3_WG_ 2021-07-05_NP	----	----
Client sampling date / time					18-Nov-2021 12:20	18-Nov-2021 13:55	18-Nov-2021 12:20	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105834-001 Result	CG2105834-002 Result	CG2105834-003 Result	----- ----	----- ----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.723	0.508	0.727	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	230	124	229	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000022	0.000026	0.000020	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00922	0.00072	<0.00240 <sup>DLM</sup>	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00188	0.00312	0.00188	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00061	<0.00050	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0128	<0.0030	0.0107	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0011	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00099	<0.00010	0.00095	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0300	0.0842	0.0315	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.039	0.030	0.040	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0198	0.0177	0.0180	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	221	139	227	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.34	<0.10	0.32	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00036	0.00141	0.00036	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.567	<0.010	0.563	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0223	0.0156	0.0228	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	56.4	51.6	57.1	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.155	<0.00010	0.157	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000974	0.000735	0.00103	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00149	0.00065	0.00162	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.16	1.43	2.18	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-GHC-1 B_WG_2021-10 -04_NP	GH_MW-GHC-1 A_WG_2021-10 -04_NP	GH_FOX3_WG_ 2021-07-05_NP	----	----
Client sampling date / time					18-Nov-2021 12:20	18-Nov-2021 13:55	18-Nov-2021 12:20	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105834-001 Result	CG2105834-002 Result	CG2105834-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.304	4.42	0.237	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.05	4.46	6.15	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.71	4.71	4.81	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.666	0.475	0.695	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	201	108	197	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000016	0.000020	0.000015	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00166	0.00284	0.00173	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0085	0.0026	0.0092	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105834</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jeremy Enns	Account Manager	: Justine Buma-a
Address	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 865 3305	Telephone	: +1 403 407 1800
Project	: GREENHILLS OPERATION	Date Samples Received	: 19-Nov-2021 08:45
PO	: VPO00739453	Issue Date	: 29-Nov-2021 19:11
C-O-C number	: 2021-11-18-WG		
Sampler	: RG/RA		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Total Metals	CG2105834-001	GH_MW-GHC-1B_W G_2021-10-04_NP	silver, total	7440-22-4	E420	43.6 % DUP-H	20%	Duplicate RPD does not meet the DQO for this test.
Total Metals	CG2105834-001	GH_MW-GHC-1B_W G_2021-10-04_NP	titanium, total	7440-32-6	E420	24.4 % DUP-H	20%	Duplicate RPD does not meet the DQO for this test.

**Result Qualifiers**

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_FOX3_WG_2021-07-05_NP	E298	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E298	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E298	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_FOX3_WG_2021-07-05_NP	E235.Br-L	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E235.Br-L	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E235.Br-L	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_FOX3_WG_2021-07-05_NP	E235.Cl-L	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE GH_MW-GHC-1A_WG_2021-10-04_NP	E235.Cl-L	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE GH_MW-GHC-1B_WG_2021-10-04_NP	E235.Cl-L	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_FOX3_WG_2021-07-05_NP	E378-U	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_MW-GHC-1A_WG_2021-10-04_NP	E378-U	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_MW-GHC-1B_WG_2021-10-04_NP	E378-U	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_FOX3_WG_2021-07-05_NP	E235.F	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_MW-GHC-1A_WG_2021-10-04_NP	E235.F	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_MW-GHC-1B_WG_2021-10-04_NP	E235.F	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_FOX3_WG_2021-07-05_NP	E235.NO3-L	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E235.NO3-L	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E235.NO3-L	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_FOX3_WG_2021-07-05_NP	E235.NO2-L	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E235.NO2-L	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E235.NO2-L	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_FOX3_WG_2021-07-05_NP	E235.SO4	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E235.SO4	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E235.SO4	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_FOX3_WG_2021-07-05_NP	E318	18-Nov-2021	24-Nov-2021	----	----		26-Nov-2021	28 days	8 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E318	18-Nov-2021	24-Nov-2021	----	----		26-Nov-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E318	18-Nov-2021	24-Nov-2021	----	----		26-Nov-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_FOX3_WG_2021-07-05_NP	E372-U	18-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E372-U	18-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E372-U	18-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_FOX3_WG_2021-07-05_NP	E421.Cr-L	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E421.Cr-L	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E421.Cr-L	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_FOX3_WG_2021-07-05_NP	E509	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	7 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E509	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E509	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_FOX3_WG_2021-07-05_NP	E421	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E421	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E421	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_FOX3_WG_2021-07-05_NP	E358-L	18-Nov-2021	22-Nov-2021	----	----		23-Nov-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E358-L	18-Nov-2021	22-Nov-2021	----	----		23-Nov-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E358-L	18-Nov-2021	22-Nov-2021	----	----		23-Nov-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_FOX3_WG_2021-07-05_NP	E355-L	18-Nov-2021	22-Nov-2021	----	----		23-Nov-2021	28 days	5 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E355-L	18-Nov-2021	22-Nov-2021	----	----		23-Nov-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E355-L	18-Nov-2021	22-Nov-2021	----	----		23-Nov-2021	28 days	5 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_FOX3_WG_2021-07-05_NP	E283	18-Nov-2021	----	----	----		19-Nov-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E283	18-Nov-2021	----	----	----		19-Nov-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E283	18-Nov-2021	----	----	----		19-Nov-2021	14 days	1 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_FOX3_WG_2021-07-05_NP	E290	18-Nov-2021	----	----	----		22-Nov-2021	14 days	4 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E290	18-Nov-2021	----	----	----		22-Nov-2021	14 days	4 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E290	18-Nov-2021	----	----	----		22-Nov-2021	14 days	4 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> GH_FOX3_WG_2021-07-05_NP	E100	18-Nov-2021	----	----	----		22-Nov-2021	28 days	4 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE GH_MW-GHC-1A_WG_2021-10-04_NP	E100	18-Nov-2021	----	----	----		22-Nov-2021	28 days	4 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE GH_MW-GHC-1B_WG_2021-10-04_NP	E100	18-Nov-2021	----	----	----		22-Nov-2021	28 days	4 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_MW-GHC-1A_WG_2021-10-04_NP	E125	18-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	168 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_FOX3_WG_2021-07-05_NP	E125	18-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	170 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_MW-GHC-1B_WG_2021-10-04_NP	E125	18-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	170 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE GH_MW-GHC-1A_WG_2021-10-04_NP	E108	18-Nov-2021	----	----	----		22-Nov-2021	0.25 hrs	92 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE GH_FOX3_WG_2021-07-05_NP	E108	18-Nov-2021	----	----	----		22-Nov-2021	0.25 hrs	93 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE GH_MW-GHC-1B_WG_2021-10-04_NP	E108	18-Nov-2021	----	----	----		22-Nov-2021	0.25 hrs	93 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE GH_FOX3_WG_2021-07-05_NP	E162	18-Nov-2021	----	----	----		24-Nov-2021	7 days	6 days		✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E162	18-Nov-2021	----	----	----		24-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E162	18-Nov-2021	----	----	----		24-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_FOX3_WG_2021-07-05_NP	E160-L	18-Nov-2021	----	----	----		24-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E160-L	18-Nov-2021	----	----	----		24-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E160-L	18-Nov-2021	----	----	----		24-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_FOX3_WG_2021-07-05_NP	E121	18-Nov-2021	----	----	----		21-Nov-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E121	18-Nov-2021	----	----	----		21-Nov-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E121	18-Nov-2021	----	----	----		21-Nov-2021	3 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> GH_FOX3_WG_2021-07-05_NP	E420.Cr-L	18-Nov-2021	----	----	----		25-Nov-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E420.Cr-L	18-Nov-2021	----	----	----		25-Nov-2021	180 days	7 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E420.Cr-L	18-Nov-2021	----	----	----		25-Nov-2021	180 days	7 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_FOX3_WG_2021-07-05_NP	E508-L	18-Nov-2021	----	----	----		25-Nov-2021	28 days	7 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E508-L	18-Nov-2021	----	----	----		25-Nov-2021	28 days	7 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E508-L	18-Nov-2021	----	----	----		25-Nov-2021	28 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_FOX3_WG_2021-07-05_NP	E420	18-Nov-2021	----	----	----		25-Nov-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_MW-GHC-1A_WG_2021-10-04_NP	E420	18-Nov-2021	----	----	----		25-Nov-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_MW-GHC-1B_WG_2021-10-04_NP	E420	18-Nov-2021	----	----	----		25-Nov-2021	180 days	7 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	348850	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	349776	2	38	5.2	5.0	✓
Ammonia by Fluorescence	E298	352568	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348797	2	30	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	348798	2	30	6.6	5.0	✓
Conductivity in Water	E100	349775	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352189	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352190	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349832	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	348594	2	37	5.4	5.0	✓
Fluoride in Water by IC	E235.F	348801	2	30	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	348799	2	30	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	348800	2	30	6.6	5.0	✓
ORP by Electrode	E125	352817	1	20	5.0	5.0	✓
pH by Meter	E108	349774	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	348796	2	30	6.6	5.0	✓
TDS by Gravimetry	E162	350732	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351882	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	352120	1	12	8.3	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	352999	1	12	8.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351883	2	19	10.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349836	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349395	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	349390	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	348850	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	349776	2	38	5.2	5.0	✓
Ammonia by Fluorescence	E298	352568	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348797	2	30	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	348798	2	30	6.6	5.0	✓
Conductivity in Water	E100	349775	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352189	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352190	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349832	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	348594	2	37	5.4	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	348801	2	30	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	348799	2	30	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	348800	2	30	6.6	5.0	✓
ORP by Electrode	E125	352817	1	20	5.0	5.0	✓
pH by Meter	E108	349774	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	348796	2	30	6.6	5.0	✓
TDS by Gravimetry	E162	350732	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351882	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	352120	1	12	8.3	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	352999	1	12	8.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351883	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349836	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349395	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	350729	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	349390	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	348850	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	349776	2	38	5.2	5.0	✓
Ammonia by Fluorescence	E298	352568	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348797	2	30	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	348798	2	30	6.6	5.0	✓
Conductivity in Water	E100	349775	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352189	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352190	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349832	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	348594	2	37	5.4	5.0	✓
Fluoride in Water by IC	E235.F	348801	2	30	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	348799	2	30	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	348800	2	30	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	348796	2	30	6.6	5.0	✓
TDS by Gravimetry	E162	350732	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351882	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	352120	1	12	8.3	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	352999	1	12	8.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351883	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349836	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349395	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	350729	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	349390	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	352568	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348797	2	30	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	348798	2	30	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352189	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352190	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349832	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	348594	2	37	5.4	5.0	✓
Fluoride in Water by IC	E235.F	348801	2	30	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	348799	2	30	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	348800	2	30	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	348796	2	30	6.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351882	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	352120	1	12	8.3	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	352999	1	12	8.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351883	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349836	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349395	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

Page : 18 of 18  
Work Order : CG2105834  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2105834**

**Page** : 1 of 20

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-11-18-WG  
**Sampler** : RG/RA  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 19-Nov-2021 08:45  
**Date Analysis Commenced** : 19-Nov-2021  
**Issue Date** : 29-Nov-2021 19:10

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
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Owen Cheng		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



Page : 3 of 20  
Work Order : CG2105834  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 348850)</b>											
CG2105830-001	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	13.8	13.3	0.5	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 349390)</b>											
CG2105830-008	Anonymous	turbidity	----	E121	0.10	NTU	1.98	2.11	6.55%	15%	----
<b>Physical Tests (QC Lot: 349774)</b>											
CG2105830-001	Anonymous	pH	----	E108	0.10	pH units	7.90	7.90	0.00%	4%	----
<b>Physical Tests (QC Lot: 349775)</b>											
CG2105830-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1890	1910	1.05%	10%	----
<b>Physical Tests (QC Lot: 349776)</b>											
CG2105830-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	500	476	4.88%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	500	476	4.88%	20%	----
<b>Physical Tests (QC Lot: 349785)</b>											
CG2105834-003	GH_FOX3_WG_2021-07-05_NP	conductivity	----	E100	2.0	µS/cm	1410	1410	0.00%	10%	----
<b>Physical Tests (QC Lot: 349786)</b>											
CG2105834-003	GH_FOX3_WG_2021-07-05_NP	pH	----	E108	0.10	pH units	7.66	7.67	0.130%	4%	----
<b>Physical Tests (QC Lot: 349787)</b>											
CG2105834-003	GH_FOX3_WG_2021-07-05_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	293	285	2.97%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	293	285	2.97%	20%	----
<b>Physical Tests (QC Lot: 350732)</b>											
CG2105830-008	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1530	1500	2.31%	20%	----
<b>Physical Tests (QC Lot: 352817)</b>											
CG2105830-008	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	312	302	3.39%	15%	----
<b>Anions and Nutrients (QC Lot: 348594)</b>											
CG2105827-014	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348595)</b>											
CG2105834-003	GH_FOX3_WG_2021-07-05_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0011	0.0012	0.00001	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 348796)</b>											
CG2105807-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	146	142	3.31%	20%	----
<b>Anions and Nutrients (QC Lot: 348797)</b>											
CG2105807-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	0.302	0.052	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348798)</b>											
CG2105807-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.44	1.45	0.005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348799)</b>											
CG2105807-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	17.5	17.2	1.55%	20%	----
<b>Anions and Nutrients (QC Lot: 348800)</b>											
CG2105807-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.578	0.520	10.6%	20%	----
<b>Anions and Nutrients (QC Lot: 348801)</b>											
CG2105807-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.460	0.435	0.026	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348802)</b>											
CG2105834-002	GH_MW-GHC-1A_WG_20 21-10-04_NP	fluoride	16984-48-8	E235.F	0.100	mg/L	0.416	0.404	0.013	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348803)</b>											
CG2105834-002	GH_MW-GHC-1A_WG_20 21-10-04_NP	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	333	328	1.58%	20%	----
<b>Anions and Nutrients (QC Lot: 348804)</b>											
CG2105834-002	GH_MW-GHC-1A_WG_20 21-10-04_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	0.296	<0.250	0.046	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348805)</b>											
CG2105834-002	GH_MW-GHC-1A_WG_20 21-10-04_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.56	1.88	0.32	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348806)</b>											
CG2105834-002	GH_MW-GHC-1A_WG_20 21-10-04_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.0759	0.0921	0.0162	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348807)</b>											
CG2105834-002	GH_MW-GHC-1A_WG_20 21-10-04_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 349395)</b>											
CG2105830-007	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0056	0.0047	0.0009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352120)</b>											
CG2105834-001	GH_MW-GHC-1B_WG_20 21-10-04_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.090	0.097	0.007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352568)</b>											
CG2105830-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.264	0.257	2.46%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 349832)</b>											
CG2105827-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.30	1.37	0.07	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 349836)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Organic / Inorganic Carbon (QC Lot: 349836) - continued</b>											
CG2105831-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.57	1.45	0.12	Diff <2x LOR	----
<b>Total Metals (QC Lot: 351882)</b>											
CG2105834-001	GH_MW-GHC-1B_WG_20 21-10-04_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00065	0.00072	0.00008	Diff <2x LOR	----
<b>Total Metals (QC Lot: 351883)</b>											
CG2105834-001	GH_MW-GHC-1B_WG_20 21-10-04_NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.369	0.411	10.8%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	1.30	1.30	0.0692%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	0.304 µg/L	0.000295	0.000009	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000133	0.000085	43.6%	20%	DUP-H
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00922	0.0118	24.4%	20%	DUP-H
CG2105834-001	GH_MW-GHC-1B_WG_20 21-10-04_NP	antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00132	0.00140	5.56%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0345	0.0369	6.92%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.042	0.042	0.0009	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0376 µg/L	0.0000377	0.0000001	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	245	242	1.37%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.46 µg/L	0.00054	0.00007	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00125	0.00142	0.00017	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000288	0.000365	0.000078	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0244	0.0242	0.866%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	59.1	57.8	2.16%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.175	0.172	1.47%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000996	0.00105	5.56%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00178	0.00198	0.00020	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.28	2.32	1.66%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	7.31	7.36	0.745%	20%	----
		sodium, total	17341-25-2	E420	0.050	mg/L	5.24	5.05	3.67%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.723	0.712	1.63%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	230	222	3.28%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000022	0.000024	0.000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00188	0.00184	2.26%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00061	0.00105	0.00044	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 351883) - continued</b>											
CG2105834-001	GH_MW-GHC-1B_WG_20 21-10-04_NP	zinc, total	7440-66-6	E420	0.0030	mg/L	0.0128	0.0138	0.0010	Diff <2x LOR	----
<b>Total Metals (QC Lot: 352999)</b>											
CG2105831-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	0.60	0.10	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352189)</b>											
CG2105834-001	GH_MW-GHC-1B_WG_20 21-10-04_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352190)</b>											
CG2105834-001	GH_MW-GHC-1B_WG_20 21-10-04_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00099	0.00100	0.000008	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0300	0.0325	7.78%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.039	0.040	0.0010	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0198 µg/L	0.0000273	0.0000075	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	221	227	3.02%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.34 µg/L	0.00036	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00036	0.00034	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.567	0.581	2.44%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0223	0.0221	0.803%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	56.4	58.0	2.83%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.155	0.160	2.67%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000974	0.00102	4.66%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00149	0.00153	0.00004	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.16	2.22	2.64%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.304 µg/L	0.000257	0.000047	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.05	6.05	0.00581%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.71	4.93	4.61%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.666	0.695	4.24%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	201	203	0.939%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000016	0.000015	0.0000006	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----



Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 352190) - continued</b>											
CG2105834-001	GH_MW-GHC-1B_WG_20 21-10-04_NP	uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00166	0.00168	1.43%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0085	0.0083	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352217)</b>											
CG2105834-001	GH_MW-GHC-1B_WG_20 21-10-04_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 348850)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 349390)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 349775)</b>						
conductivity	----	E100	1	µS/cm	1.3	----
<b>Physical Tests (QCLot: 349776)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 349785)</b>						
conductivity	----	E100	1	µS/cm	1.2	----
<b>Physical Tests (QCLot: 349787)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 350729)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 350732)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 348594)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 348595)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 348796)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 348797)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 348798)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 348799)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 348800)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 348801)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 348802)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 348803)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 348804)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 348805)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 348806)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 348807)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 349395)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 352120)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 352568)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 349832)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 349836)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 351882)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 351883)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 351883) - continued</b>						
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 352999)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	---
<b>Dissolved Metals (QCLot: 352189)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 352190)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 352190) - continued</b>						
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 352217)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 348850)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	108	85.0	115	----
<b>Physical Tests (QCLot: 349390)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	104	85.0	115	----
<b>Physical Tests (QCLot: 349774)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 349775)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	99.4	90.0	110	----
<b>Physical Tests (QCLot: 349776)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	104	85.0	115	----
<b>Physical Tests (QCLot: 349785)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	----
<b>Physical Tests (QCLot: 349786)</b>									
pH	----	E108	----	pH units	7 pH units	99.0	98.6	101	----
<b>Physical Tests (QCLot: 349787)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	108	85.0	115	----
<b>Physical Tests (QCLot: 350729)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	92.6	85.0	115	----
<b>Physical Tests (QCLot: 350732)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	97.1	85.0	115	----
<b>Physical Tests (QCLot: 352817)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----
<b>Anions and Nutrients (QCLot: 348594)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 348595)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	99.7	80.0	120	----
<b>Anions and Nutrients (QCLot: 348796)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	94.6	90.0	110	----
<b>Anions and Nutrients (QCLot: 348797)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	107	85.0	115	----
<b>Anions and Nutrients (QCLot: 348798)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	90.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 348799)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		
						Low	High		
<b>Anions and Nutrients (QCLot: 348799) - continued</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	90.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 348800)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	93.4	90.0	110	----
<b>Anions and Nutrients (QCLot: 348801)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	91.8	90.0	110	----
<b>Anions and Nutrients (QCLot: 348802)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.4	90.0	110	----
<b>Anions and Nutrients (QCLot: 348803)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	----
<b>Anions and Nutrients (QCLot: 348804)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 348805)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 348806)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 348807)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	94.3	90.0	110	----
<b>Anions and Nutrients (QCLot: 349395)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	94.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 352120)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 352568)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 349832)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	98.1	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 349836)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	116	80.0	120	----
<b>Total Metals (QCLot: 351882)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Total Metals (QCLot: 351883)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	111	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 351883) - continued</b>									
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	89.8	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	106	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	107	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	105	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	109	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.7	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	108	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.9	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	105	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	110	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 352999)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	86.2	80.0	120	----
<b>Dissolved Metals (QCLot: 352189)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
<b>Dissolved Metals (QCLot: 352190)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.3	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.3	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	88.4	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 352190) - continued</b>									
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	92.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	84.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.4	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	94.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	89.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.6	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.1	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	94.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.5	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.4	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.6	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	98.3	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.5	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	95.4	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.7	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 348594)</b>										
CG2105828-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0489 mg/L	0.05 mg/L	97.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 348595)</b>										
CG2105835-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0506 mg/L	0.05 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 348796)</b>										
CG2105807-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 348797)</b>										
CG2105807-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.526 mg/L	0.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 348798)</b>										
CG2105807-002	Anonymous	chloride	16887-00-6	E235.Cl-L	116 mg/L	100 mg/L	116	75.0	125	----
<b>Anions and Nutrients (QCLot: 348799)</b>										
CG2105807-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 348800)</b>										
CG2105807-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.542 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 348801)</b>										
CG2105807-002	Anonymous	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 348802)</b>										
CG2105834-003	GH_FOX3_WG_2021-07-05_NP	fluoride	16984-48-8	E235.F	0.932 mg/L	1 mg/L	93.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 348803)</b>										
CG2105834-003	GH_FOX3_WG_2021-07-05_NP	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 348804)</b>										
CG2105834-003	GH_FOX3_WG_2021-07-05_NP	bromide	24959-67-9	E235.Br-L	0.398 mg/L	0.5 mg/L	79.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 348805)</b>										
CG2105834-003	GH_FOX3_WG_2021-07-05_NP	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 348806)</b>										
CG2105834-003	GH_FOX3_WG_2021-07-05_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.59 mg/L	2.5 mg/L	103	75.0	125	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 348807)</b>										
CG2105834-003	GH_FOX3_WG_2021-07-05_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.400 mg/L	0.5 mg/L	79.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 349395)</b>										
CG2105830-008	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0572 mg/L	0.0676 mg/L	84.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 352120)</b>										
CG2105834-002	GH_MW-GHC-1A_WG_2021-10-04_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.57 mg/L	2.5 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 352568)</b>										
CG2105830-011	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.108 mg/L	0.1 mg/L	108	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 349832)</b>										
CG2105827-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.3 mg/L	23.9 mg/L	97.6	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 349836)</b>										
CG2105831-001	Anonymous	carbon, total organic [TOC]	----	E355-L	28.1 mg/L	23.9 mg/L	118	70.0	130	----
<b>Total Metals (QCLot: 351882)</b>										
CG2105834-002	GH_MW-GHC-1A_WG_2021-10-04_NP	chromium, total	7440-47-3	E420.Cr-L	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
<b>Total Metals (QCLot: 351883)</b>										
CG2105834-002	GH_MW-GHC-1A_WG_2021-10-04_NP	aluminum, total	7429-90-5	E420	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, total	7440-36-0	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00992 mg/L	0.01 mg/L	99.2	70.0	130	----
		boron, total	7440-42-8	E420	0.093 mg/L	0.1 mg/L	93.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00398 mg/L	0.004 mg/L	99.4	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0181 mg/L	0.02 mg/L	90.7	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		lithium, total	7439-93-2	E420	0.0975 mg/L	0.1 mg/L	97.5	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, total	7440-02-0	E420	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		potassium, total	7440-09-7	E420	3.88 mg/L	4 mg/L	97.0	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 351883) - continued</b>										
CG2105834-002	GH_MW-GHC-1A_WG_202 1-10-04_NP	selenium, total	7782-49-2	E420	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, total	7440-21-3	E420	9.46 mg/L	10 mg/L	94.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00391 mg/L	0.004 mg/L	97.7	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00387 mg/L	0.004 mg/L	96.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, total	7440-32-6	E420	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		uranium, total	7440-61-1	E420	0.00392 mg/L	0.004 mg/L	98.1	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0999 mg/L	0.1 mg/L	99.9	70.0	130	----
		zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	96.1	70.0	130	----
<b>Total Metals (QCLot: 352999)</b>										
CG2105831-002	Anonymous	mercury, total	7439-97-6	E508-L	6.38 ng/L	5 ng/L	128	70.0	130	----
<b>Dissolved Metals (QCLot: 352189)</b>										
CG2105834-002	GH_MW-GHC-1A_WG_202 1-10-04_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
<b>Dissolved Metals (QCLot: 352190)</b>										
CG2105834-002	GH_MW-GHC-1A_WG_202 1-10-04_NP	aluminum, dissolved	7429-90-5	E421	0.191 mg/L	0.2 mg/L	95.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0355 mg/L	0.04 mg/L	88.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00796 mg/L	0.01 mg/L	79.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.080 mg/L	0.1 mg/L	80.4	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00384 mg/L	0.004 mg/L	95.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0176 mg/L	0.02 mg/L	88.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.86 mg/L	2 mg/L	93.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0175 mg/L	0.02 mg/L	87.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0851 mg/L	0.1 mg/L	85.1	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0186 mg/L	0.02 mg/L	92.8	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0353 mg/L	0.04 mg/L	88.2	70.0	130	----

Page : 20 of 20  
 Work Order : CG2105834  
 Client : Teck Coal Limited  
 Project : GREENHILLS OPERATION



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 352190) - continued</b>										
CG2105834-002	GH_MW-GHC-1A_WG_202 1-10-04_NP	potassium, dissolved	7440-09-7	E421	3.94 mg/L	4 mg/L	98.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0441 mg/L	0.04 mg/L	110	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.47 mg/L	10 mg/L	84.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00374 mg/L	0.004 mg/L	93.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00354 mg/L	0.004 mg/L	88.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0989 mg/L	0.1 mg/L	98.9	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.360 mg/L	0.4 mg/L	90.0	70.0	130	----
<b>Dissolved Metals (QCLot: 352217)</b>										
CG2105834-002	GH_MW-GHC-1A_WG_202 1-10-04_NP	mercury, dissolved	7439-97-6	E509	0.000103 mg/L	0.0001 mg/L	103	70.0	130	----



COC ID: 2021-11-18-WG

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	teckcoal@equisonline.com	X	X	X
Email	jeremv.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	DL-Equis-GHC-Field@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:				
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:				
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:				
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:				
								Email 7:				
								PO number	739453			

SAMPLE DETAILS								ANALYSIS REQUESTED										
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	Preserv.	Y	Y	N	Y	N	N	N	Y	N	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None	
GH_MW-GHC-1B_WG_2021-10-04_NP	GH_MW-GHC-1B	WG	N	11/18/2021	12:20	G	7	ALS_Package-DOC	H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4	Sodium bisulphate		
GH_MW-GHC-1A_WG_2021-10-04_NP	GH_MW-GHC-1A	WG	N	11/18/2021	13:55	G	7	HG-D-CVAF-VA								ZN acetate		
GH_FOX3_WG_2021-07-05_NP	GH_MW-GHC-1B	FD	N	11/18/2021	12:20	G	7	HG-T-U-CVAF-VA								NaOH		
								TECKCOAL-MET-D-VA									BOD	
								TECKCOAL-MET-T-VA										COD
								TECKCOAL-ROUTINE-VA										Phenols
								ALS_Package-TKN/TOC										VOC/PH/BTEX
								EPH/PAH/LEPH/HEPH										
								SULPHIDE										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	11/18/21 8:45
SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	RG/RA	Mobile #	(7)
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	November 18, 2021
Emergency (1 Business Day) - 100% surcharge				
Weekend - Contact ALS				

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2105834**





## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105858**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000**  
**Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-11-19-WG**  
**Sampler** : **JM/RA**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **4**  
**No. of samples analysed** : **4**

**Page** : **1 of 7**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
**Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **20-Nov-2021 08:50**  
**Date Analysis Commenced** : **20-Nov-2021**  
**Issue Date** : **26-Nov-2021 08:47**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
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Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	<i>Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.</i>
DLM	<i>Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).</i>



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					GH_MW-RLP-2_ WG_2021-10-0 4_NP	GH_POTW10_ WG_2021-10-0 4_NP	GH_POTW15_ WG_2021-10-0 4_NP	GH_POTW09_ WG_2021-10-0 4_NP	----
Client sampling date / time					20-Nov-2021	20-Nov-2021	20-Nov-2021	20-Nov-2021	----
Analyte	CAS Number	Method	LOR	Unit	CG2105858-001	CG2105858-002	CG2105858-003	CG2105858-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	8.9	5.4	4.9	<2.0	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	272	227	255	280	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	331	276	311	341	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	272	227	255	280	----
conductivity	----	E100	2.0	µS/cm	1000	729	921	752	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	545	395	492	408	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	421	450	485	427	----
pH	----	E108	0.10	pH units	7.88	7.97	7.84	8.21	----
solids, total dissolved [TDS]	----	E162	10	mg/L	646	472	612	496	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	4.3	1.4	1.8	<1.0	----
turbidity	----	E121	0.10	NTU	4.91	4.69	12.1	0.72	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.172	0.0516	0.0398	0.0286	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.050	<0.250 <sup>DLDS</sup>	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	18.1	8.26	23.6	5.96	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.688	0.849	0.130	0.697	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.345	0.189	0.071	0.052	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.385	0.754	<0.0250 <sup>DLDS</sup>	0.0188	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.143	0.0162	<0.0050 <sup>DLDS</sup>	<0.0010	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0012	0.0011	0.0013	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0054	<0.0020	<0.0020	<0.0020	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	325	205	176	183	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.78	<0.50	0.67	<0.50	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.98	<0.50	0.68	<0.50	----
<b>Ion Balance</b>									



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-RLP-2_ WG_2021-10-0 4_NP	GH_POTW10_ WG_2021-10-0 4_NP	GH_POTW15_ WG_2021-10-0 4_NP	GH_POTW09_ WG_2021-10-0 4_NP	----
Client sampling date / time					20-Nov-2021	20-Nov-2021	20-Nov-2021	20-Nov-2021	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105858-001	CG2105858-002	CG2105858-003	CG2105858-004	-----	
					Result	Result	Result	Result	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	12.8	9.14	9.43	9.61	----	
cation sum	----	EC101	0.10	meq/L	11.6	8.18	10.4	8.52	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	90.6	89.5	110	88.6	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.92	5.54	4.89	6.01	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0348	<0.0030	<0.0030	<0.0030	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00017	<0.00010	<0.00010	<0.00010	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00036	0.00115	0.00162	0.00050	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.138	0.0183	0.0208	0.0326	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.027	0.032	0.018	0.017	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0160	0.0100	0.0076	0.0059	----	
calcium, total	7440-70-2	E420	0.050	mg/L	126	87.5	123	94.6	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00018	<0.00010	<0.00010	<0.00010	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.88	0.18	0.20	0.17	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00104	<0.00050	<0.00050	<0.00050	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.765	0.463	0.874	0.170	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000136	0.000062	<0.000050	<0.000050	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0423	0.0153	0.0147	0.0116	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	59.0	42.8	46.3	43.2	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	1.12	0.0518	0.190	0.178	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00893	0.00282	0.00239	0.00247	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00567	0.00108	0.00080	0.00124	----	
potassium, total	7440-09-7	E420	0.050	mg/L	4.53	1.63	1.54	1.54	----	
selenium, total	7782-49-2	E420	0.050	µg/L	2.76	4.20	0.086	1.25	----	
silicon, total	7440-21-3	E420	0.10	mg/L	4.86	4.80	4.20	4.58	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000225	<0.000010	<0.000010	<0.000010	----	
sodium, total	17341-25-2	E420	0.050	mg/L	13.4	5.03	10.9	7.01	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.401	0.528	0.378	0.348	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-RLP-2_WG_2021-10-04_NP	GH_POTW10_WG_2021-10-04_NP	GH_POTW15_WG_2021-10-04_NP	GH_POTW09_WG_2021-10-04_NP	----
Client sampling date / time					20-Nov-2021	20-Nov-2021	20-Nov-2021	20-Nov-2021	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105858-001	CG2105858-002	CG2105858-003	CG2105858-004	-----	
					Result	Result	Result	Result	----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	115	68.3	91.8	63.5	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000014	0.000011	0.000016	0.000016	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00090 <sup>DLM</sup>	<0.00030	<0.00030	<0.00030	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00438	0.000688	0.00134	0.00207	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00055	<0.00050	<0.00050	<0.00050	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0034	<0.0030	<0.0030	<0.0030	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0018	<0.0010	<0.0010	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00017	<0.00010	<0.00010	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00027	0.00104	0.00158	0.00046	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.127	0.0181	0.0204	0.0313	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.026	0.033	0.018	0.018	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0166	0.0138	0.0103	0.0099	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	120	87.8	121	93.2	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.89	0.18	0.21	0.17	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00036	<0.00020	<0.00020	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.634	0.362	0.863	0.162	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0406	0.0158	0.0145	0.0116	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	59.5	42.8	46.0	42.6	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.12	0.0520	0.191	0.177	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00864	0.00274	0.00239	0.00242	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00470	0.00104	0.00076	0.00119	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.55	1.68	1.53	1.55	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	3.31	4.60	0.077	1.39	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.00	4.64	4.25	4.74	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_MW-RLP-2_WG_2021-10-04_NP	GH_POTW10_WG_2021-10-04_NP	GH_POTW15_WG_2021-10-04_NP	GH_POTW09_WG_2021-10-04_NP	----
Client sampling date / time					20-Nov-2021	20-Nov-2021	20-Nov-2021	20-Nov-2021	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105858-001	CG2105858-002	CG2105858-003	CG2105858-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	13.4	5.03	11.2	7.07	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.386	0.522	0.376	0.348	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	111	68.2	88.3	61.7	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	0.000010	0.000016	0.000016	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00451	0.000702	0.00134	0.00216	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0024	0.0017	0.0013	0.0018	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105858</b>	Page	: 1 of 21
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jeremy Enns	Account Manager	: Justine Buma-a
Address	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 865 3305	Telephone	: +1 403 407 1800
Project	: GREENHILLS OPERATION	Date Samples Received	: 20-Nov-2021 08:50
PO	: VPO00739453	Issue Date	: 26-Nov-2021 08:47
C-O-C number	: 2021-11-19-WG		
Sampler	: JM/RA		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Total Metals	CG2105858-001	GH_MW-RLP-2_WG_ 2021-10-04_NP	silver, total	7440-22-4	E420	123 % <sup>DUP-H</sup>	20%	Duplicate RPD does not meet the DQO for this test.

**Result Qualifiers**

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_MW-RLP-2_WG_2021-10-04_NP	E298	20-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_POTW09_WG_2021-10-04_NP	E298	20-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_POTW10_WG_2021-10-04_NP	E298	20-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_POTW15_WG_2021-10-04_NP	E298	20-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_MW-RLP-2_WG_2021-10-04_NP	E235.Br-L	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_POTW09_WG_2021-10-04_NP	E235.Br-L	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_POTW10_WG_2021-10-04_NP	E235.Br-L	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE GH_POTW15_WG_2021-10-04_NP	E235.Br-L	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE GH_MW-RLP-2_WG_2021-10-04_NP	E235.Cl-L	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE GH_POTW09_WG_2021-10-04_NP	E235.Cl-L	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE GH_POTW10_WG_2021-10-04_NP	E235.Cl-L	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE GH_POTW15_WG_2021-10-04_NP	E235.Cl-L	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_MW-RLP-2_WG_2021-10-04_NP	E378-U	20-Nov-2021	----	----	----		20-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_POTW09_WG_2021-10-04_NP	E378-U	20-Nov-2021	----	----	----		20-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_POTW10_WG_2021-10-04_NP	E378-U	20-Nov-2021	----	----	----		20-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_POTW15_WG_2021-10-04_NP	E378-U	20-Nov-2021	----	----	----		20-Nov-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_MW-RLP-2_WG_2021-10-04_NP	E235.F	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_POTW09_WG_2021-10-04_NP	E235.F	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_POTW10_WG_2021-10-04_NP	E235.F	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_POTW15_WG_2021-10-04_NP	E235.F	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_MW-RLP-2_WG_2021-10-04_NP	E235.NO3-L	20-Nov-2021	----	----	----		20-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_POTW09_WG_2021-10-04_NP	E235.NO3-L	20-Nov-2021	----	----	----		20-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_POTW10_WG_2021-10-04_NP	E235.NO3-L	20-Nov-2021	----	----	----		20-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_POTW15_WG_2021-10-04_NP	E235.NO3-L	20-Nov-2021	----	----	----		20-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_MW-RLP-2_WG_2021-10-04_NP	E235.NO2-L	20-Nov-2021	----	----	----		20-Nov-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_POTW09_WG_2021-10-04_NP	E235.NO2-L	20-Nov-2021	----	----	----		20-Nov-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_POTW10_WG_2021-10-04_NP	E235.NO2-L	20-Nov-2021	----	----	----		20-Nov-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> GH_POTW15_WG_2021-10-04_NP	E235.NO2-L	20-Nov-2021	----	----	----		20-Nov-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_MW-RLP-2_WG_2021-10-04_NP	E235.SO4	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_POTW09_WG_2021-10-04_NP	E235.SO4	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_POTW10_WG_2021-10-04_NP	E235.SO4	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> GH_POTW15_WG_2021-10-04_NP	E235.SO4	20-Nov-2021	----	----	----		20-Nov-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-RLP-2_WG_2021-10-04_NP	E318	20-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW09_WG_2021-10-04_NP	E318	20-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	28 days	5 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW10_WG_2021-10-04_NP	E318	20-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW15_WG_2021-10-04_NP	E318	20-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-RLP-2_WG_2021-10-04_NP	E372-U	20-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW09_WG_2021-10-04_NP	E372-U	20-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW10_WG_2021-10-04_NP	E372-U	20-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW15_WG_2021-10-04_NP	E372-U	20-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	3 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-RLP-2_WG_2021-10-04_NP	E421.Cr-L	20-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW09_WG_2021-10-04_NP	E421.Cr-L	20-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW10_WG_2021-10-04_NP	E421.Cr-L	20-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	4 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW15_WG_2021-10-04_NP	E421.Cr-L	20-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_MW-RLP-2_WG_2021-10-04_NP	E509	20-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_POTW09_WG_2021-10-04_NP	E509	20-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_POTW10_WG_2021-10-04_NP	E509	20-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_POTW15_WG_2021-10-04_NP	E509	20-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_MW-RLP-2_WG_2021-10-04_NP	E421	20-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW09_WG_2021-10-04_NP	E421	20-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW10_WG_2021-10-04_NP	E421	20-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW15_WG_2021-10-04_NP	E421	20-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	4 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_MW-RLP-2_WG_2021-10-04_NP	E358-L	20-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_POTW09_WG_2021-10-04_NP	E358-L	20-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_POTW10_WG_2021-10-04_NP	E358-L	20-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> GH_POTW15_WG_2021-10-04_NP	E358-L	20-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_MW-RLP-2_WG_2021-10-04_NP	E355-L	20-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW09_WG_2021-10-04_NP	E355-L	20-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW10_WG_2021-10-04_NP	E355-L	20-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW15_WG_2021-10-04_NP	E355-L	20-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> GH_MW-RLP-2_WG_2021-10-04_NP	E283	20-Nov-2021	----	----	----		22-Nov-2021	14 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Acidity by Titration</b>										
HDPE GH_POTW09_WG_2021-10-04_NP	E283	20-Nov-2021	----	----	----		22-Nov-2021	14 days	2 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE GH_POTW10_WG_2021-10-04_NP	E283	20-Nov-2021	----	----	----		22-Nov-2021	14 days	2 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE GH_POTW15_WG_2021-10-04_NP	E283	20-Nov-2021	----	----	----		22-Nov-2021	14 days	2 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE GH_MW-RLP-2_WG_2021-10-04_NP	E290	20-Nov-2021	----	----	----		22-Nov-2021	14 days	2 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE GH_POTW09_WG_2021-10-04_NP	E290	20-Nov-2021	----	----	----		22-Nov-2021	14 days	2 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE GH_POTW10_WG_2021-10-04_NP	E290	20-Nov-2021	----	----	----		22-Nov-2021	14 days	2 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE GH_POTW15_WG_2021-10-04_NP	E290	20-Nov-2021	----	----	----		22-Nov-2021	14 days	2 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_MW-RLP-2_WG_2021-10-04_NP	E100	20-Nov-2021	----	----	----		22-Nov-2021	28 days	2 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE GH_POTW09_WG_2021-10-04_NP	E100	20-Nov-2021	----	----	----		22-Nov-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE GH_POTW10_WG_2021-10-04_NP	E100	20-Nov-2021	----	----	----		22-Nov-2021	28 days	2 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE GH_POTW15_WG_2021-10-04_NP	E100	20-Nov-2021	----	----	----		22-Nov-2021	28 days	2 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_MW-RLP-2_WG_2021-10-04_NP	E125	20-Nov-2021	----	----	----		21-Nov-2021	0.25 hrs	38 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_POTW09_WG_2021-10-04_NP	E125	20-Nov-2021	----	----	----		21-Nov-2021	0.25 hrs	38 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_POTW10_WG_2021-10-04_NP	E125	20-Nov-2021	----	----	----		21-Nov-2021	0.25 hrs	38 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE GH_POTW15_WG_2021-10-04_NP	E125	20-Nov-2021	----	----	----		21-Nov-2021	0.25 hrs	38 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE GH_MW-RLP-2_WG_2021-10-04_NP	E108	20-Nov-2021	----	----	----		22-Nov-2021	0.25 hrs	57 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE GH_POTW09_WG_2021-10-04_NP	E108	20-Nov-2021	----	----	----		22-Nov-2021	0.25 hrs	57 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE GH_POTW10_WG_2021-10-04_NP	E108	20-Nov-2021	----	----	----		22-Nov-2021	0.25 hrs	57 hrs		* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> GH_POTW15_WG_2021-10-04_NP	E108	20-Nov-2021	----	----	----		22-Nov-2021	0.25 hrs	57 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> GH_MW-RLP-2_WG_2021-10-04_NP	E162	20-Nov-2021	----	----	----		22-Nov-2021	7 days	2 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> GH_POTW09_WG_2021-10-04_NP	E162	20-Nov-2021	----	----	----		22-Nov-2021	7 days	2 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> GH_POTW10_WG_2021-10-04_NP	E162	20-Nov-2021	----	----	----		22-Nov-2021	7 days	2 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> GH_POTW15_WG_2021-10-04_NP	E162	20-Nov-2021	----	----	----		22-Nov-2021	7 days	2 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_MW-RLP-2_WG_2021-10-04_NP	E160-L	20-Nov-2021	----	----	----		21-Nov-2021	7 days	1 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_POTW09_WG_2021-10-04_NP	E160-L	20-Nov-2021	----	----	----		21-Nov-2021	7 days	1 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_POTW10_WG_2021-10-04_NP	E160-L	20-Nov-2021	----	----	----		21-Nov-2021	7 days	1 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> GH_POTW15_WG_2021-10-04_NP	E160-L	20-Nov-2021	----	----	----		21-Nov-2021	7 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_MW-RLP-2_WG_2021-10-04_NP	E121	20-Nov-2021	----	----	----		21-Nov-2021	3 days	1 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_POTW09_WG_2021-10-04_NP	E121	20-Nov-2021	----	----	----		21-Nov-2021	3 days	1 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_POTW10_WG_2021-10-04_NP	E121	20-Nov-2021	----	----	----		21-Nov-2021	3 days	1 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> GH_POTW15_WG_2021-10-04_NP	E121	20-Nov-2021	----	----	----		21-Nov-2021	3 days	1 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> GH_MW-RLP-2_WG_2021-10-04_NP	E420.Cr-L	20-Nov-2021	----	----	----		24-Nov-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> GH_POTW09_WG_2021-10-04_NP	E420.Cr-L	20-Nov-2021	----	----	----		24-Nov-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> GH_POTW10_WG_2021-10-04_NP	E420.Cr-L	20-Nov-2021	----	----	----		24-Nov-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> GH_POTW15_WG_2021-10-04_NP	E420.Cr-L	20-Nov-2021	----	----	----		24-Nov-2021	180 days	5 days	✔	
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_MW-RLP-2_WG_2021-10-04_NP	E508-L	20-Nov-2021	----	----	----		24-Nov-2021	28 days	5 days	✔	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_POTW09_WG_2021-10-04_NP	E508-L	20-Nov-2021	----	----	----		24-Nov-2021	28 days	5 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_POTW10_WG_2021-10-04_NP	E508-L	20-Nov-2021	----	----	----		24-Nov-2021	28 days	5 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_POTW15_WG_2021-10-04_NP	E508-L	20-Nov-2021	----	----	----		24-Nov-2021	28 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_MW-RLP-2_WG_2021-10-04_NP	E420	20-Nov-2021	----	----	----		24-Nov-2021	180 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_POTW09_WG_2021-10-04_NP	E420	20-Nov-2021	----	----	----		24-Nov-2021	180 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_POTW10_WG_2021-10-04_NP	E420	20-Nov-2021	----	----	----		24-Nov-2021	180 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_POTW15_WG_2021-10-04_NP	E420	20-Nov-2021	----	----	----		24-Nov-2021	180 days	5 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	349757	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	349754	1	5	20.0	5.0	✓
Ammonia by Fluorescence	E298	349437	1	5	20.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	349354	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	349355	1	20	5.0	5.0	✓
Conductivity in Water	E100	349753	1	5	20.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	351540	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	351055	1	5	20.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	351541	1	5	20.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349553	1	5	20.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	349368	1	4	25.0	5.0	✓
Fluoride in Water by IC	E235.F	349358	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	349356	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	349357	1	20	5.0	5.0	✓
ORP by Electrode	E125	349590	1	5	20.0	5.0	✓
pH by Meter	E108	349752	1	5	20.0	5.0	✓
Sulfate in Water by IC	E235.SO4	349353	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	349416	1	4	25.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351538	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	351626	1	6	16.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	351638	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351539	2	5	40.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349555	1	5	20.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349388	1	4	25.0	5.0	✓
Turbidity by Nephelometry	E121	349422	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	349757	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	349754	1	5	20.0	5.0	✓
Ammonia by Fluorescence	E298	349437	1	5	20.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	349354	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	349355	1	20	5.0	5.0	✓
Conductivity in Water	E100	349753	1	5	20.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	351540	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	351055	1	5	20.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	351541	1	5	20.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349553	1	5	20.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	349368	1	4	25.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	349358	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	349356	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	349357	1	20	5.0	5.0	✓
ORP by Electrode	E125	349590	1	5	20.0	5.0	✓
pH by Meter	E108	349752	1	5	20.0	5.0	✓
Sulfate in Water by IC	E235.SO4	349353	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	349416	1	4	25.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351538	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	351626	1	6	16.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	351638	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351539	1	5	20.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349555	1	5	20.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349388	1	4	25.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	349414	1	5	20.0	5.0	✓
Turbidity by Nephelometry	E121	349422	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	349757	1	5	20.0	5.0	✓
Alkalinity Species by Titration	E290	349754	1	5	20.0	5.0	✓
Ammonia by Fluorescence	E298	349437	1	5	20.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	349354	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	349355	1	20	5.0	5.0	✓
Conductivity in Water	E100	349753	1	5	20.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	351540	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	351055	1	5	20.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	351541	1	5	20.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349553	1	5	20.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	349368	1	4	25.0	5.0	✓
Fluoride in Water by IC	E235.F	349358	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	349356	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	349357	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	349353	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	349416	1	4	25.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351538	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	351626	1	6	16.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	351638	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351539	1	5	20.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349555	1	5	20.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349388	1	4	25.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	349414	1	5	20.0	5.0	✓
Turbidity by Nephelometry	E121	349422	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	349437	1	5	20.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	349354	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	349355	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	351540	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	351055	1	5	20.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	351541	1	5	20.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349553	1	5	20.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	349368	1	4	25.0	5.0	✓
Fluoride in Water by IC	E235.F	349358	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	349356	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	349357	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	349353	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351538	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	351626	1	6	16.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	351638	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351539	1	5	20.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349555	1	5	20.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349388	1	4	25.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

Page : 21 of 21  
Work Order : CG2105858  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2105858**

**Page** : 1 of 19

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-11-19-WG  
**Sampler** : JM/RA  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Nov-2021 08:50  
**Date Analysis Commenced** : 20-Nov-2021  
**Issue Date** : 26-Nov-2021 08:47

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia





## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 349416)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	646	596	7.97%	20%	----
<b>Physical Tests (QC Lot: 349422)</b>											
CG2105845-001	Anonymous	turbidity	----	E121	0.10	NTU	0.28	0.25	0.03	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 349590)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	421	418	0.858%	15%	----
<b>Physical Tests (QC Lot: 349752)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	pH	----	E108	0.10	pH units	7.88	7.87	0.127%	4%	----
<b>Physical Tests (QC Lot: 349753)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	conductivity	----	E100	2.0	µS/cm	1000	1000	0.0996%	10%	----
<b>Physical Tests (QC Lot: 349754)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	272	289	6.03%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	272	289	6.03%	20%	----
<b>Physical Tests (QC Lot: 349757)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	8.9	7.3	1.7	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 349353)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	325	325	0.158%	20%	----
<b>Anions and Nutrients (QC Lot: 349354)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 349355)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	18.1	17.8	1.37%	20%	----
<b>Anions and Nutrients (QC Lot: 349356)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.385	0.377	2.04%	20%	----
<b>Anions and Nutrients (QC Lot: 349357)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.143	0.145	1.18%	20%	----
<b>Anions and Nutrients (QC Lot: 349358)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 349358) - continued</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	fluoride	16984-48-8	E235.F	0.100	mg/L	0.688	0.691	0.003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 349368)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 349388)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0054	0.0068	0.0014	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 349437)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.172	0.180	4.43%	20%	----
<b>Anions and Nutrients (QC Lot: 351626)</b>											
CG2105046-006	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.094	0.044	Diff <2x LOR	TKND
<b>Organic / Inorganic Carbon (QC Lot: 349553)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.78	2.98	0.20	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 349555)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.98	3.07	0.09	Diff <2x LOR	----
<b>Total Metals (QC Lot: 351538)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00018	0.00015	0.00003	Diff <2x LOR	----
<b>Total Metals (QC Lot: 351539)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	silver, total	7440-22-4	E420	0.000010	mg/L	0.000225	0.000053	123%	20%	DUP-H
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0348	0.0380	8.81%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00017	0.00017	0.000007	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00036	0.00037	0.000009	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.138	0.130	5.87%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.027	0.028	0.0003	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0160 µg/L	0.0000204	0.0000045	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	126	124	1.13%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.88 µg/L	0.00090	0.00002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00104	0.00106	0.00002	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.765	0.770	0.619%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000136	0.000134	0.000002	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0423	0.0425	0.546%	20%	----



Sub-Matrix: Water

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 351539) - continued</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	magnesium, total	7439-95-4	E420	0.0050	mg/L	59.0	58.6	0.550%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	1.12	1.14	1.81%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00893	0.00881	1.41%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00567	0.00568	0.273%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	4.53	4.50	0.578%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	2.76 µg/L	0.00273	1.16%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.86	4.82	0.994%	20%	----
		sodium, total	17341-25-2	E420	0.050	mg/L	13.4	13.4	0.184%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.401	0.392	2.31%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	115	114	0.180%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000014	0.000014	0.0000006	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00090	mg/L	<0.00090	<0.00090	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00438	0.00436	0.454%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00055	0.00056	0.000008	Diff <2x LOR	----
	zinc, total	7440-66-6	E420	0.0030	mg/L	0.0034	0.0032	0.0002	Diff <2x LOR	----	
<b>Total Metals (QC Lot: 351638)</b>											
CG2105560-004	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	0.00128 µg/L	1.23	0.05	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 351055)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 351540)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 351541)</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0018	0.0018	0.00007	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00017	0.00017	0.000007	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00027	0.00025	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.127	0.130	2.47%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.026	0.027	0.0006	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0166 µg/L	0.0000207	0.0000041	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	120	120	0.242%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.89 µg/L	0.00086	0.00003	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00036	0.00036	0.000005	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 351541) - continued</b>											
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	iron, dissolved	7439-89-6	E421	0.010	mg/L	0.634	0.636	0.360%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0406	0.0421	3.63%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	59.5	58.8	1.17%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.12	1.12	0.191%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00864	0.00862	0.250%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00470	0.00457	0.00012	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.55	4.48	1.53%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	3.31 µg/L	0.00305	8.17%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.00	4.75	5.31%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	13.4	13.4	0.163%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.386	0.377	2.44%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	111	105	5.75%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	0.000012	0.000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
	uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00451	0.00443	1.85%	20%	----	
	vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----	
	zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0024	0.0024	0.00005	Diff <2x LOR	----	

**Qualifiers**

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 349414)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 349416)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 349422)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 349753)</b>						
conductivity	----	E100	1	µS/cm	1.2	----
<b>Physical Tests (QCLot: 349754)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 349757)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 349353)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 349354)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 349355)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 349356)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 349357)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 349358)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 349368)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 349388)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 349437)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 351626)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 351626) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 349553)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 349555)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 351538)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	MBRR
<b>Total Metals (QCLot: 351539)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 351539) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 351638)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 351055)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 351540)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 351541)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 351541) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----

**MBRR** *Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible*





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 349414)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	98.5	85.0	115	----
<b>Physical Tests (QCLot: 349416)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	91.5	85.0	115	----
<b>Physical Tests (QCLot: 349422)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	102	85.0	115	----
<b>Physical Tests (QCLot: 349590)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	102	95.4	104	----
<b>Physical Tests (QCLot: 349752)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 349753)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	----
<b>Physical Tests (QCLot: 349754)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	500 mg/L	105	85.0	115	----
<b>Physical Tests (QCLot: 349757)</b>									
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	50 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 349353)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 349354)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 349355)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 349356)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 349357)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 349358)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 349368)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	93.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 349388)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 349437)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 349437) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Anions and Nutrients (QCLot: 351626)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	106	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 349553)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.4	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 349555)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 351538)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	96.7	80.0	120	----
<b>Total Metals (QCLot: 351539)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	99.5	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	97.1	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	91.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	80.5	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.0	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	94.6	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	97.5	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.2	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	96.2	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	89.4	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	99.1	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	96.9	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	98.9	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.9	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	99.5	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	89.2	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	97.9	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	86.7	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 351539) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	99.6	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	94.1	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.7	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	96.8	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.8	80.0	120	----
<b>Total Metals (QCLot: 351638)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	98.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 351540)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.6	80.0	120	----
<b>Dissolved Metals (QCLot: 351541)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.0	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.2	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	94.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	107	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	86.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.9	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.3	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.5	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.0	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 351541) - continued</b>									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 349353)</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 349354)</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	bromide	24959-67-9	E235.Br-L	0.454 mg/L	0.5 mg/L	90.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 349355)</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	chloride	16887-00-6	E235.Cl-L	97.7 mg/L	100 mg/L	97.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 349356)</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.45 mg/L	2.5 mg/L	97.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 349357)</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.494 mg/L	0.5 mg/L	98.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 349358)</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	fluoride	16984-48-8	E235.F	1.07 mg/L	1 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 349368)</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0518 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 349388)</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	phosphorus, total	7723-14-0	E372-U	0.0532 mg/L	0.0676 mg/L	78.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 349437)</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 351626)</b>										
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.62 mg/L	2.5 mg/L	105	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 349553)</b>										
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	carbon, dissolved organic [DOC]	----	E358-L	25.9 mg/L	23.9 mg/L	108	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 349555)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Organic / Inorganic Carbon (QCLot: 349555) - continued</b>										
CG2105858-001	GH_MW-RLP-2_WG_2021-10-04_NP	carbon, total organic [TOC]	----	E355-L	27.7 mg/L	23.9 mg/L	116	70.0	130	----
<b>Total Metals (QCLot: 351538)</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	chromium, total	7440-47-3	E420.Cr-L	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	----
<b>Total Metals (QCLot: 351539)</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	aluminum, total	7429-90-5	E420	0.180 mg/L	0.2 mg/L	90.0	70.0	130	----
		antimony, total	7440-36-0	E420	0.0181 mg/L	0.02 mg/L	90.3	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0183 mg/L	0.02 mg/L	91.5	70.0	130	----
		barium, total	7440-39-3	E420	0.0182 mg/L	0.02 mg/L	90.9	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0333 mg/L	0.04 mg/L	83.2	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00898 mg/L	0.01 mg/L	89.8	70.0	130	----
		boron, total	7440-42-8	E420	0.076 mg/L	0.1 mg/L	75.5	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00366 mg/L	0.004 mg/L	91.4	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0176 mg/L	0.02 mg/L	87.8	70.0	130	----
		copper, total	7440-50-8	E420	0.0174 mg/L	0.02 mg/L	86.9	70.0	130	----
		iron, total	7439-89-6	E420	1.79 mg/L	2 mg/L	89.4	70.0	130	----
		lead, total	7439-92-1	E420	0.0170 mg/L	0.02 mg/L	85.0	70.0	130	----
		lithium, total	7439-93-2	E420	0.0817 mg/L	0.1 mg/L	81.7	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0186 mg/L	0.02 mg/L	92.8	70.0	130	----
		nickel, total	7440-02-0	E420	0.0346 mg/L	0.04 mg/L	86.6	70.0	130	----
		potassium, total	7440-09-7	E420	3.57 mg/L	4 mg/L	89.2	70.0	130	----
		selenium, total	7782-49-2	E420	0.0384 mg/L	0.04 mg/L	96.0	70.0	130	----
		silicon, total	7440-21-3	E420	8.50 mg/L	10 mg/L	85.0	70.0	130	----
		silver, total	7440-22-4	E420	0.00343 mg/L	0.004 mg/L	85.8	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00334 mg/L	0.004 mg/L	83.5	70.0	130	----
		tin, total	7440-31-5	E420	0.0174 mg/L	0.02 mg/L	87.2	70.0	130	----
		titanium, total	7440-32-6	E420	0.0370 mg/L	0.04 mg/L	92.6	70.0	130	----
		uranium, total	7440-61-1	E420	0.00355 mg/L	0.004 mg/L	88.7	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0927 mg/L	0.1 mg/L	92.7	70.0	130	----
		zinc, total	7440-66-6	E420	0.350 mg/L	0.4 mg/L	87.5	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 351638)</b>										
CG2105794-003	Anonymous	mercury, total	7439-97-6	E508-L	4.78 ng/L	5 ng/L	95.6	70.0	130	----
<b>Dissolved Metals (QCLot: 351055)</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	mercury, dissolved	7439-97-6	E509	0.0000969 mg/L	0.0001 mg/L	96.9	70.0	130	----
<b>Dissolved Metals (QCLot: 351540)</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0382 mg/L	0.04 mg/L	95.5	70.0	130	----
<b>Dissolved Metals (QCLot: 351541)</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	aluminum, dissolved	7429-90-5	E421	0.193 mg/L	0.2 mg/L	96.5	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0184 mg/L	0.02 mg/L	91.9	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0356 mg/L	0.04 mg/L	89.1	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00958 mg/L	0.01 mg/L	95.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.081 mg/L	0.1 mg/L	81.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00387 mg/L	0.004 mg/L	96.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0186 mg/L	0.02 mg/L	93.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0181 mg/L	0.02 mg/L	90.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.87 mg/L	2 mg/L	93.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0872 mg/L	0.1 mg/L	87.2	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.72 mg/L	4 mg/L	93.1	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0433 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.85 mg/L	10 mg/L	88.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00368 mg/L	0.004 mg/L	92.1	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00369 mg/L	0.004 mg/L	92.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00384 mg/L	0.004 mg/L	96.1	70.0	130	----

Page : 19 of 19  
 Work Order : CG2105858  
 Client : Teck Coal Limited  
 Project : GREENHILLS OPERATION



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 351541) - continued</b>										
CG2105858-002	GH_POTW10_WG_2021-10-04_NP	vanadium, dissolved	7440-62-2	E421	0.0976 mg/L	0.1 mg/L	97.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.379 mg/L	0.4 mg/L	94.8	70.0	130	----



COC ID: 2021-11-19-WG

RUSH: Yes

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF		EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Buma-a			Email 1:	teckcoal@equisonline.com	X	X		X
Email	jeremy.enns@teck.com			Email	Justine.bumaa@alsglobal.com			Email 2:	DL-Equis-GHQ-Field@teck.com	X	X		X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:					
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:					
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:					
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:					
								Email 7:					
								PO number	739453				

SAMPLE DETAILS								ANALYSIS REQUESTED													
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	Preserv.	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	EPH/PAH/LEPH/HEPH	SULPHIDE	BOD	COD	Phenols	VOC/PH/BTEX	
GH_MW-RLP-2_WG_2021-10-04_NP	GH_MW-RLP-2	WG	N	11/19/2021	12:50	G	7	1	1	1	1	1	1	1							
GH_POTW10_WG_2021-10-04_NP	GH_POTW10	WG	N	11/19/2021	14:10	G	7	1	1	1	1	1	1	1							
GH_POTW15_WG_2021-10-04_NP	GH_POTW15	WG	N	11/19/2021	14:30	G	7	1	1	1	1	1	1	1							
GH_POTW09_WG_2021-10-04_NP	GH_POTW09	WG	N	11/19/2021	13:35	G	7	1	1	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Please rush samples			<i>[Signature]</i>	20/11 8:50

SERVICE REQUEST (rush - subject to availability)			
Regular (default)		Sampler's Name	JM/RA
Priority (2-3 business days) - 50% surcharge	X	Sampler's Signature	
Day) - 100% surcharge		Mobile #	
Weekend - Contact ALS		Date/Time	November 19, 2021

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2105858**

*[Handwritten mark]*





## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2106085**  
**Client** : **Teck Coal Limited**  
**Contact** : **Jeremy Enns**  
**Address** : **Greenhills Operations BOX 5000**  
**Elkford BC Canada V0B1H0**  
**Telephone** : **250 865 3305**  
**Project** : **GREENHILLS OPERATION**  
**PO** : **VPO00739453**  
**C-O-C number** : **2021-11-26-WG**  
**Sampler** : **RG/RA**  
**Site** : **----**  
**Quote number** : **Teck Coal Master Quote**  
**No. of samples received** : **2**  
**No. of samples analysed** : **2**

**Page** : **1 of 7**  
**Laboratory** : **Calgary - Environmental**  
**Account Manager** : **Justine Buma-a**  
**Address** : **2559 29th Street NE**  
**Calgary AB Canada T1Y 7B5**  
**Telephone** : **+1 403 407 1800**  
**Date Samples Received** : **27-Nov-2021 09:20**  
**Date Analysis Commenced** : **27-Nov-2021**  
**Issue Date** : **03-Dec-2021 16:26**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sam Silveira	Lab Assistant	Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_POTW17_ WG_2021-10-0 4_NP	GH_POTW06_ WG_2021-10-0 4_NP	----	----	----
Client sampling date / time					26-Nov-2021 12:15	26-Nov-2021 12:45	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106085-001 Result	CG2106085-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	6.3	7.5	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	257	312	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	313	380	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	257	312	----	----	----	
conductivity	----	E100	2.0	µS/cm	1040	1290	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	603	776	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	446	445	----	----	----	
pH	----	E108	0.10	pH units	7.75	7.71	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	768	921	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.5	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	5.21	0.28	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0251	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	24.0	17.2	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.270	0.175	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.074	0.229	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.496	0.962	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0016	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	346	492	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.94	0.86	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.94	0.79	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_POTW17_ WG_2021-10-0 4_NP	GH_POTW06_ WG_2021-10-0 4_NP	----	----	----
Client sampling date / time					26-Nov-2021 12:15	26-Nov-2021 12:45	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106085-001 Result	CG2106085-002 Result	-----	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	13.1	17.0	----	----	----	
cation sum	----	EC101	0.10	meq/L	12.5	15.9	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	95.4	93.5	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.34	3.34	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0031	<0.0030	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00073	0.00010	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0344	0.0528	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.020	0.015	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0227	0.0477	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	139	168	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00015	0.00059	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.12	<0.10	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00095	0.0364	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.468	0.039	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000068	0.00227	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0142	0.0125	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	65.3	93.2	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0948	0.00208	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00178	0.000859	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00195	0.00130	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.62	1.62	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	11.0	26.3	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	4.30	4.30	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	9.33	7.95	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_POTW17_ WG_2021-10-0 4_NP	GH_POTW06_ WG_2021-10-0 4_NP	----	----	----
Client sampling date / time					26-Nov-2021 12:15	26-Nov-2021 12:45	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106085-001 Result	CG2106085-002 Result	-----	-----	-----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.376	0.310	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	123	178	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	0.00140	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00209	0.00338	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	0.0072	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00068	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0332	0.0504	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.019	0.015	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0268	0.0579	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	136	162	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00021	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.13	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00132	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.373	0.032	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	0.00103	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0146	0.0130	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	64.0	90.3	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0962	0.00221	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00167	0.000804	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00206	0.00115	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.66	1.67	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GH_POTW17_ WG_2021-10-0 4_NP	GH_POTW06_ WG_2021-10-0 4_NP	----	----	----
Client sampling date / time					26-Nov-2021 12:15	26-Nov-2021 12:45	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106085-001 Result	CG2106085-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	12.6	31.0	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.32	4.26	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	9.92	8.21	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.359	0.294	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	122	172	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00197	0.00333	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0013	0.0046	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106085</b>	Page	: 1 of 16
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jeremy Enns	Account Manager	: Justine Buma-a
Address	: Greenhills Operations BOX 5000 Elkford BC Canada V0B1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 865 3305	Telephone	: +1 403 407 1800
Project	: GREENHILLS OPERATION	Date Samples Received	: 27-Nov-2021 09:20
PO	: VPO00739453	Issue Date	: 03-Dec-2021 16:27
C-O-C number	: 2021-11-26-WG		
Sampler	: RG/RA		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Laboratory Control Sample (LCS) Recoveries</b>								
Dissolved Metals	QC-MRG2-3573150 02	----	bismuth, dissolved	7440-69-9	E421	71.3 % <sup>MES</sup>	80.0-120%	Recovery less than lower control limit

**Result Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_POTW06_WG_2021-10-04_NP	E298	26-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> GH_POTW17_WG_2021-10-04_NP	E298	26-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_POTW06_WG_2021-10-04_NP	E235.Br-L	26-Nov-2021	----	----	----		27-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_POTW17_WG_2021-10-04_NP	E235.Br-L	26-Nov-2021	----	----	----		27-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_POTW06_WG_2021-10-04_NP	E235.Cl-L	26-Nov-2021	----	----	----		27-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> GH_POTW17_WG_2021-10-04_NP	E235.Cl-L	26-Nov-2021	----	----	----		27-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> GH_POTW06_WG_2021-10-04_NP	E378-U	26-Nov-2021	----	----	----		27-Nov-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE GH_POTW17_WG_2021-10-04_NP	E378-U	26-Nov-2021	----	----	----		27-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_POTW06_WG_2021-10-04_NP	E235.F	26-Nov-2021	----	----	----		27-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE GH_POTW17_WG_2021-10-04_NP	E235.F	26-Nov-2021	----	----	----		27-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_POTW06_WG_2021-10-04_NP	E235.NO3-L	26-Nov-2021	----	----	----		27-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE GH_POTW17_WG_2021-10-04_NP	E235.NO3-L	26-Nov-2021	----	----	----		27-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_POTW06_WG_2021-10-04_NP	E235.NO2-L	26-Nov-2021	----	----	----		27-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE GH_POTW17_WG_2021-10-04_NP	E235.NO2-L	26-Nov-2021	----	----	----		27-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE GH_POTW06_WG_2021-10-04_NP	E235.SO4	26-Nov-2021	----	----	----		27-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE GH_POTW17_WG_2021-10-04_NP	E235.SO4	26-Nov-2021	----	----	----		27-Nov-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW06_WG_2021-10-04_NP	E318	26-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW17_WG_2021-10-04_NP	E318	26-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW06_WG_2021-10-04_NP	E372-U	26-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> GH_POTW17_WG_2021-10-04_NP	E372-U	26-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	3 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW06_WG_2021-10-04_NP	E421.Cr-L	26-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW17_WG_2021-10-04_NP	E421.Cr-L	26-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_POTW06_WG_2021-10-04_NP	E509	26-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> GH_POTW17_WG_2021-10-04_NP	E509	26-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> GH_POTW06_WG_2021-10-04_NP	E421	26-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> GH_POTW17_WG_2021-10-04_NP	E421	26-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	5 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> GH_POTW06_WG_2021-10-04_NP	E358-L	26-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	1 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> GH_POTW17_WG_2021-10-04_NP	E358-L	26-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	1 days	✓
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_POTW06_WG_2021-10-04_NP	E355-L	26-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	1 days	✓
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> GH_POTW17_WG_2021-10-04_NP	E355-L	26-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	1 days	✓
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> GH_POTW06_WG_2021-10-04_NP	E283	26-Nov-2021	----	----	----		28-Nov-2021	14 days	2 days	✓
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> GH_POTW17_WG_2021-10-04_NP	E283	26-Nov-2021	----	----	----		28-Nov-2021	14 days	2 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> GH_POTW06_WG_2021-10-04_NP	E290	26-Nov-2021	----	----	----		28-Nov-2021	14 days	2 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> GH_POTW17_WG_2021-10-04_NP	E290	26-Nov-2021	----	----	----		28-Nov-2021	14 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Physical Tests : Conductivity in Water</b>										
<b>HDPE</b> GH_POTW06_WG_2021-10-04_NP	E100	26-Nov-2021	----	----	----		28-Nov-2021	28 days	2 days	✓
<b>Physical Tests : Conductivity in Water</b>										
<b>HDPE</b> GH_POTW17_WG_2021-10-04_NP	E100	26-Nov-2021	----	----	----		28-Nov-2021	28 days	2 days	✓
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> GH_POTW06_WG_2021-10-04_NP	E125	26-Nov-2021	----	----	----		27-Nov-2021	0.25 hrs	25 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> GH_POTW17_WG_2021-10-04_NP	E125	26-Nov-2021	----	----	----		27-Nov-2021	0.25 hrs	25 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
<b>HDPE</b> GH_POTW06_WG_2021-10-04_NP	E108	26-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	48 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
<b>HDPE</b> GH_POTW17_WG_2021-10-04_NP	E108	26-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	48 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> GH_POTW06_WG_2021-10-04_NP	E162	26-Nov-2021	----	----	----		28-Nov-2021	7 days	2 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> GH_POTW17_WG_2021-10-04_NP	E162	26-Nov-2021	----	----	----		28-Nov-2021	7 days	2 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> GH_POTW06_WG_2021-10-04_NP	E160-L	26-Nov-2021	----	----	----		28-Nov-2021	7 days	2 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> GH_POTW17_WG_2021-10-04_NP	E160-L	26-Nov-2021	----	----	----		28-Nov-2021	7 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> GH_POTW06_WG_2021-10-04_NP	E121	26-Nov-2021	----	----	----		27-Nov-2021	3 days	1 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> GH_POTW17_WG_2021-10-04_NP	E121	26-Nov-2021	----	----	----		27-Nov-2021	3 days	1 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_POTW06_WG_2021-10-04_NP	E420.Cr-L	26-Nov-2021	----	----	----		02-Dec-2021	180 days	6 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> GH_POTW17_WG_2021-10-04_NP	E420.Cr-L	26-Nov-2021	----	----	----		02-Dec-2021	180 days	6 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_POTW06_WG_2021-10-04_NP	E508-L	26-Nov-2021	----	----	----		02-Dec-2021	28 days	6 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> GH_POTW17_WG_2021-10-04_NP	E508-L	26-Nov-2021	----	----	----		02-Dec-2021	28 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_POTW06_WG_2021-10-04_NP	E420	26-Nov-2021	----	----	----		02-Dec-2021	180 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> GH_POTW17_WG_2021-10-04_NP	E420	26-Nov-2021	----	----	----		02-Dec-2021	180 days	6 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended



Page : 9 of 16  
Work Order : CG2106085  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

---



Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	354662	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	354629	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354536	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354393	1	2	50.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354394	1	2	50.0	5.0	✓
Conductivity in Water	E100	354631	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	357315	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357148	1	7	14.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	357316	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	354403	1	2	50.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	354371	1	7	14.2	5.0	✓
Fluoride in Water by IC	E235.F	354397	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354395	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354396	1	2	50.0	5.0	✓
ORP by Electrode	E125	354336	1	7	14.2	5.0	✓
pH by Meter	E108	354630	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	354392	1	2	50.0	5.0	✓
TDS by Gravimetry	E162	354457	1	2	50.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	357433	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357292	1	12	8.3	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	357664	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	357434	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	354405	1	2	50.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354437	1	6	16.6	5.0	✓
Turbidity by Nephelometry	E121	354389	1	7	14.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	354662	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	354629	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354536	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354393	1	2	50.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354394	1	2	50.0	5.0	✓
Conductivity in Water	E100	354631	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	357315	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357148	1	7	14.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	357316	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	354403	1	2	50.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	354371	1	7	14.2	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	354397	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354395	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354396	1	2	50.0	5.0	✓
ORP by Electrode	E125	354336	1	7	14.2	5.0	✓
pH by Meter	E108	354630	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	354392	1	2	50.0	5.0	✓
TDS by Gravimetry	E162	354457	1	2	50.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	357433	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357292	1	12	8.3	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	357664	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	357434	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	354405	1	2	50.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354437	1	6	16.6	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	354456	1	3	33.3	5.0	✓
Turbidity by Nephelometry	E121	354389	1	7	14.2	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	354662	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	354629	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354536	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354393	1	2	50.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354394	1	2	50.0	5.0	✓
Conductivity in Water	E100	354631	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	357315	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357148	1	7	14.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	357316	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	354403	1	2	50.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	354371	1	7	14.2	5.0	✓
Fluoride in Water by IC	E235.F	354397	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354395	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354396	1	2	50.0	5.0	✓
Sulfate in Water by IC	E235.SO4	354392	1	2	50.0	5.0	✓
TDS by Gravimetry	E162	354457	1	2	50.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	357433	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357292	1	12	8.3	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	357664	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	357434	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	354405	1	2	50.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354437	1	6	16.6	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	354456	1	3	33.3	5.0	✓
Turbidity by Nephelometry	E121	354389	1	7	14.2	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	354536	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354393	1	2	50.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354394	1	2	50.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	357315	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357148	1	7	14.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	357316	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	354403	1	2	50.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	354371	1	7	14.2	5.0	✓
Fluoride in Water by IC	E235.F	354397	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354395	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354396	1	2	50.0	5.0	✓
Sulfate in Water by IC	E235.SO4	354392	1	2	50.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	357433	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357292	1	12	8.3	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	357664	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	357434	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	354405	1	2	50.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354437	1	6	16.6	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

Page : 16 of 16  
Work Order : CG2106085  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2106085**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Jeremy Enns  
**Address** : Greenhills Operations BOX 5000  
 Elkford BC Canada V0B1H0  
**Telephone** : 250 865 3305  
**Project** : GREENHILLS OPERATION  
**PO** : VPO00739453  
**C-O-C number** : 2021-11-26-WG  
**Sampler** : RG/RA  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-Nov-2021 09:20  
**Date Analysis Commenced** : 27-Nov-2021  
**Issue Date** : 03-Dec-2021 16:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilhaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sam Silveira	Lab Assistant	Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 18  
Work Order : CG2106085  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 354336)</b>											
CG2106079-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	447	448	0.201%	15%	----
<b>Physical Tests (QC Lot: 354389)</b>											
CG2106079-001	Anonymous	turbidity	----	E121	0.10	NTU	1.54	1.52	1.18%	15%	----
<b>Physical Tests (QC Lot: 354457)</b>											
CG2106085-001	GH_POTW17_WG_2021-1 0-04_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	768	765	0.392%	20%	----
<b>Physical Tests (QC Lot: 354629)</b>											
CG2106069-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	439	439	0.0911%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	439	439	0.0911%	20%	----
<b>Physical Tests (QC Lot: 354630)</b>											
CG2106069-001	Anonymous	pH	----	E108	0.10	pH units	7.92	7.93	0.126%	4%	----
<b>Physical Tests (QC Lot: 354631)</b>											
CG2106069-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1180	1160	1.80%	10%	----
<b>Physical Tests (QC Lot: 354662)</b>											
CG2106069-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	5.4	6.3	0.9	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354371)</b>											
CG2106083-010	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0016	0.0015	0.00005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354392)</b>											
CG2106085-001	GH_POTW17_WG_2021-1 0-04_NP	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	346	352	1.74%	20%	----
<b>Anions and Nutrients (QC Lot: 354393)</b>											
CG2106085-001	GH_POTW17_WG_2021-1 0-04_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354394)</b>											
CG2106085-001	GH_POTW17_WG_2021-1 0-04_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	24.0	24.4	1.57%	20%	----
<b>Anions and Nutrients (QC Lot: 354395)</b>											
CG2106085-001	GH_POTW17_WG_2021-1 0-04_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.496	0.497	0.141%	20%	----
<b>Anions and Nutrients (QC Lot: 354396)</b>											
CG2106085-001	GH_POTW17_WG_2021-1 0-04_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	0.0054	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354397)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 354397) - continued</b>											
CG2106085-001	GH_POTW17_WG_2021-1 0-04_NP	fluoride	16984-48-8	E235.F	0.100	mg/L	0.270	0.278	0.008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354437)</b>											
CG2106079-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0066	0.0074	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354536)</b>											
CG2106063-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.299	0.286	4.58%	20%	----
<b>Anions and Nutrients (QC Lot: 357292)</b>											
CG2106089-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.250	mg/L	6.17	6.78	9.43%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 354403)</b>											
CG2106085-001	GH_POTW17_WG_2021-1 0-04_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.94	0.90	0.04	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 354405)</b>											
CG2106085-001	GH_POTW17_WG_2021-1 0-04_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.94	0.93	0.009	Diff <2x LOR	----
<b>Total Metals (QC Lot: 357433)</b>											
CG2106085-001	GH_POTW17_WG_2021-1 0-04_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00015	<0.00010	0.00005	Diff <2x LOR	----
<b>Total Metals (QC Lot: 357434)</b>											
CG2106085-001	GH_POTW17_WG_2021-1 0-04_NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0031	<0.0030	0.00007	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00073	0.00079	0.00006	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0344	0.0359	4.20%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.020	0.021	0.0005	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0227 µg/L	0.0000212	0.0000015	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	139	144	3.15%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.12 µg/L	0.00011	0.00001	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00095	0.00096	0.000009	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.468	0.463	1.01%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000068	0.000067	0.000001	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0142	0.0142	0.145%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	65.3	66.4	1.72%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0948	0.0948	0.00717%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00178	0.00186	4.11%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00195	0.00190	0.00004	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.62	1.63	0.970%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 357434) - continued</b>											
CG2106085-001	GH_POTW17_WG_2021-1 0-04_NP	selenium, total	7782-49-2	E420	0.050	mg/L	11.0 µg/L	0.0108	1.37%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.30	4.41	2.46%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	9.33	9.14	2.02%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.376	0.387	2.69%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	123	124	0.665%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	0.000010	0.0000001	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00209	0.00203	2.93%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 357664)</b>											
CG2106069-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 357148)</b>											
CG2106085-001	GH_POTW17_WG_2021-1 0-04_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 357315)</b>											
CG2106065-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00016	0.00014	0.000010	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 357316)</b>											
CG2106065-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	0.00013	0.000004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0490	0.0468	4.50%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.017	0.017	0.0008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0327 µg/L	0.0000266	0.0000061	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	273	269	1.33%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.68 µg/L	0.00068	0.0000007	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00093	0.00094	0.000006	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0465	0.0450	3.28%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	110	110	0.473%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 357316) - continued</b>											
CG2106065-001	Anonymous	manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00110	0.00108	2.04%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000456	0.000446	0.000010	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00055	0.00053	0.00002	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.97	1.96	0.546%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	227 µg/L	0.227	0.149%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.07	3.08	0.216%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.50	4.68	3.77%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.289	0.298	3.28%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	194	198	1.99%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00576	0.00551	4.43%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0039	0.0038	0.0002	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 354389)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 354456)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 354457)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 354629)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 354631)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 354662)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 354371)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 354392)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 354393)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 354394)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 354395)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 354396)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 354397)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 354437)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 354536)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 357292)</b>						





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 357292) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 354403)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 354405)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 357433)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 357434)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 357434) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 357664)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 357148)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 357315)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 357316)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----

Page : 10 of 18  
Work Order : CG2106085  
Client : Teck Coal Limited  
Project : GREENHILLS OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 357316) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 354336)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
<b>Physical Tests (QCLot: 354389)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
<b>Physical Tests (QCLot: 354456)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	94.8	85.0	115	----
<b>Physical Tests (QCLot: 354457)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	101	85.0	115	----
<b>Physical Tests (QCLot: 354629)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	104	85.0	115	----
<b>Physical Tests (QCLot: 354630)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 354631)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	97.3	90.0	110	----
<b>Physical Tests (QCLot: 354662)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	107	85.0	115	----
<b>Anions and Nutrients (QCLot: 354371)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	104	80.0	120	----
<b>Anions and Nutrients (QCLot: 354392)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 354393)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	109	85.0	115	----
<b>Anions and Nutrients (QCLot: 354394)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 354395)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 354396)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 354397)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 354437)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	97.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 354536)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 354536) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	91.4	85.0	115	----
<b>Anions and Nutrients (QCLot: 357292)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	97.3	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 354403)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	90.4	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 354405)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	92.3	80.0	120	----
<b>Total Metals (QCLot: 357433)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	92.8	80.0	120	----
<b>Total Metals (QCLot: 357434)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	97.2	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.8	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	92.7	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	92.5	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	90.7	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.8	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.9	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	94.3	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	96.8	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.2	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	91.6	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.2	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	93.8	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	94.3	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	97.4	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	96.4	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	94.6	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 357434) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	99.0	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	96.5	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	93.0	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.1	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.5	80.0	120	----
<b>Total Metals (QCLot: 357664)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	84.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 357315)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 357316)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	111	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	# 71.3	80.0	120	MES
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	112	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.2	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	116	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.8	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 357316) - continued</b>									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	107	80.0	120	----

### Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 354371)</b>										
CG2106083-011	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0526 mg/L	0.05 mg/L	105	70.0	130	----
<b>Anions and Nutrients (QCLot: 354392)</b>										
CG2106085-002	GH_POTW06_WG_2021-10-04_NP	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 354393)</b>										
CG2106085-002	GH_POTW06_WG_2021-10-04_NP	bromide	24959-67-9	E235.Br-L	0.575 mg/L	0.5 mg/L	115	75.0	125	----
<b>Anions and Nutrients (QCLot: 354394)</b>										
CG2106085-002	GH_POTW06_WG_2021-10-04_NP	chloride	16887-00-6	E235.Cl-L	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 354395)</b>										
CG2106085-002	GH_POTW06_WG_2021-10-04_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.55 mg/L	2.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 354396)</b>										
CG2106085-002	GH_POTW06_WG_2021-10-04_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.502 mg/L	0.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 354397)</b>										
CG2106085-002	GH_POTW06_WG_2021-10-04_NP	fluoride	16984-48-8	E235.F	0.921 mg/L	1 mg/L	92.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 354437)</b>										
CG2106079-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0503 mg/L	0.0676 mg/L	74.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 354536)</b>										
CG2106096-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0978 mg/L	0.1 mg/L	97.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 357292)</b>										
CG2106089-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	ND mg/L	2.5 mg/L	ND	70.0	130	MSTN
<b>Organic / Inorganic Carbon (QCLot: 354403)</b>										
CG2106085-001	GH_POTW17_WG_2021-10-04_NP	carbon, dissolved organic [DOC]	----	E358-L	23.5 mg/L	23.9 mg/L	98.3	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 354405)</b>										
CG2106085-001	GH_POTW17_WG_2021-10-04_NP	carbon, total organic [TOC]	----	E355-L	23.0 mg/L	23.9 mg/L	96.0	70.0	130	----
<b>Total Metals (QCLot: 357433)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 357433) - continued</b>										
CG2106085-002	GH_POTW06_WG_2021-10-04_NP	chromium, total	7440-47-3	E420.Cr-L	0.0380 mg/L	0.04 mg/L	95.0	70.0	130	----
<b>Total Metals (QCLot: 357434)</b>										
CG2106085-002	GH_POTW06_WG_2021-10-04_NP	aluminum, total	7429-90-5	E420	0.196 mg/L	0.2 mg/L	97.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00928 mg/L	0.01 mg/L	92.8	70.0	130	----
		boron, total	7440-42-8	E420	0.095 mg/L	0.1 mg/L	95.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0186 mg/L	0.02 mg/L	93.1	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0180 mg/L	0.02 mg/L	89.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0958 mg/L	0.1 mg/L	95.8	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, total	7440-02-0	E420	0.0358 mg/L	0.04 mg/L	89.5	70.0	130	----
		potassium, total	7440-09-7	E420	3.85 mg/L	4 mg/L	96.2	70.0	130	----
		selenium, total	7782-49-2	E420	0.0440 mg/L	0.04 mg/L	110	70.0	130	----
		silicon, total	7440-21-3	E420	9.22 mg/L	10 mg/L	92.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00388 mg/L	0.004 mg/L	97.1	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00359 mg/L	0.004 mg/L	89.7	70.0	130	----
		tin, total	7440-31-5	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
		uranium, total	7440-61-1	E420	0.00374 mg/L	0.004 mg/L	93.6	70.0	130	----
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.376 mg/L	0.4 mg/L	94.0	70.0	130	----
<b>Total Metals (QCLot: 357664)</b>										
CG2106069-002	Anonymous	mercury, total	7439-97-6	E508-L	4.67 ng/L	5 ng/L	93.4	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 357148)</b>										
CG2106085-002	GH_POTW06_WG_2021-10-04_NP	mercury, dissolved	7439-97-6	E509	0.000104 mg/L	0.0001 mg/L	104	70.0	130	----
<b>Dissolved Metals (QCLot: 357315)</b>										
CG2106065-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0310 mg/L	0.04 mg/L	77.6	70.0	130	----
<b>Dissolved Metals (QCLot: 357316)</b>										
CG2106065-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.152 mg/L	0.2 mg/L	76.1	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0158 mg/L	0.02 mg/L	79.1	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0158 mg/L	0.02 mg/L	79.1	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0145 mg/L	0.02 mg/L	72.6	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0336 mg/L	0.04 mg/L	83.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0456 mg/L	0.05 mg/L	91.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.077 mg/L	0.1 mg/L	77.4	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00331 mg/L	0.004 mg/L	82.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	3.15 mg/L	4 mg/L	78.7	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0156 mg/L	0.02 mg/L	77.9	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0160 mg/L	0.02 mg/L	80.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.58 mg/L	2 mg/L	78.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0154 mg/L	0.02 mg/L	76.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0856 mg/L	0.1 mg/L	85.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	0.770 mg/L	1 mg/L	77.0	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0154 mg/L	0.02 mg/L	77.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0149 mg/L	0.02 mg/L	74.6	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0311 mg/L	0.04 mg/L	77.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.12 mg/L	4 mg/L	77.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0339 mg/L	0.04 mg/L	84.7	70.0	130	----
		silicon, dissolved	7440-21-3	E421	7.60 mg/L	10 mg/L	76.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00316 mg/L	0.004 mg/L	79.1	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.58 mg/L	2 mg/L	79.1	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.0160 mg/L	0.02 mg/L	79.9	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	15.5 mg/L	20 mg/L	77.6	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00300 mg/L	0.004 mg/L	74.9	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0152 mg/L	0.02 mg/L	76.3	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0307 mg/L	0.04 mg/L	76.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00316 mg/L	0.004 mg/L	79.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0767 mg/L	0.1 mg/L	76.7	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.316 mg/L	0.4 mg/L	79.0	70.0	130	----



## Qualifiers

Qualifier	Description
MSTN	<i>TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.</i>

---

COC ID: 2021-11-26-WG				RUSH: Yes									
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>				<b>OTHER INFO</b>					
Facility Name / Job#: Greenhills Operation				Lab Name: ALS Calgary				Report Format / Distribution					
Project Manager: Jeremy Enns				Lab Contact: Justine Burmaa				Email 1: teckcoal@equisonline.com		Excel	PDF		EDD
Email: jeremy.enns@teck.com				Email: Justine.burmaa@alsglobal.com				Email 2: DL-Equis-GHO-Field@teck.com		X	X		X
Address: P.O. BOX 5000				Address: 2559 29 Street NE				Email 3:					
City: Elkford Province: BC				City: Calgary Province: AB				Email 4:					
Postal Code: V0B1H0 Country: Canada				Postal Code: T1Y 7B5 Country: Can				Email 5:					
Phone Number: 403 407 1794				Phone Number: 403 407 1794				Email 6:					
								Email 7:					
								PO number: 739453					

Environmental Division  
Calgary  
Work Order Reference  
**CG2106085**



Telephone: +1 403 407 1800

S.A.M.P.L.E. DETAILS								ANALYSIS REQUESTED													
Job#	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	Y	Y	N	Y	N	N	N	N	Sodium bisulphate	ZN acetate, NaOH	H2SO4	H2SO4	Sodium bisulphate	
							ANALYSIS														
GH_POTW17_WG_2021-10-04_NP	GH_POTW17	WG	N	11/26/2021	12:15	G	7														
GH_POTW06_WG_2021-10-04_NP	GH_POTW06	WG	N	11/26/2021	12:45	G	7														

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
Please rush samples						[Signature]		27/11 9:20	
SERVICE REQUEST (rush - subject to availability)		Sampler's Name		RG/RA		Mobile #			
Regular (default)		Sampler's Signature				Date/Time		November 26, 2021	
Priority (2-3 business days) - 50% surcharge									
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									

100



SNC-Lavalin  
ATTN: Leslie Harker  
#3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 03-NOV-21  
Report Date: 19-NOV-21 10:26 (MT)  
Version: FINAL

Client Phone: 250-505-6493

## Certificate of Analysis

Lab Work Order #: L2658945  
Project P.O. #: 680806  
Job Reference: 666653  
C of C Numbers:  
Legal Site Desc:

Lovepreet Kaur  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2658945-1 WG 02-NOV-21 11:35 RG_MW_LC3A_W G_2021_11_02_NP	L2658945-2 WG 02-NOV-21 10:35 RG_MW_LC3B_W G_2021_11_02_NP	L2658945-3 WG 02-NOV-21 13:00 RG_MW_LCWC1_ WG_2021_11_02_ NP	L2658945-4 WG 02-NOV-21 14:35 RG_MW_WC2A_ WG_2021_11_02_ NP	L2658945-5 WG 02-NOV-21 14:30 RG_MW_WC2B_ WG_2021_11_02_ NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	717	1340	1070	659	815
	Hardness (as CaCO3) (mg/L)	367	736	567	338	428
	pH (pH)	7.97	8.03	7.86	8.01	7.99
	ORP (mV)	463	452	458	453	449
	Total Suspended Solids (mg/L)	6.1	3.5	48.6	42.7	<1.0
	Total Dissolved Solids (mg/L)	483	1010	770	442	578
	Turbidity (NTU)	5.19	1.04	22.1	7.63	0.11
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.6	5.0	8.3	2.9	4.2
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	206	212	250	206	215
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	206	212	250	206	215
	Ammonia as N (mg/L)	<0.0050	0.0050	0.0091	0.0072	0.0106
	Bicarbonate (HCO3) (mg/L)	251	258	305	251	262
	Bromide (Br) (mg/L)	<0.050	<0.25 <sup>DLDS</sup>	<0.25 <sup>DLDS</sup>	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	1.88	3.30	9.58	1.33	1.41
	Fluoride (F) (mg/L)	0.139	0.12	<0.10 <sup>DLDS</sup>	0.111	0.125
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	96.5	91.3	92.0	94.5	95.4
	Nitrate and Nitrite (as N) (mg/L)	8.84	29.5	17.6	5.41	10.3
	Nitrate (as N) (mg/L)	8.84	29.5	17.6	5.41	10.3
	Nitrite (as N) (mg/L)	0.0017	<0.0050 <sup>DLDS</sup>	0.0120	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.173	<0.050	0.136	<0.050
	Total Nitrogen (mg/L)	8.84	29.7	17.6	5.55	10.3
	Orthophosphate-Dissolved (as P) (mg/L)	0.0017	0.0020	0.0028	0.0012	0.0032
	Phosphorus (P)-Total (mg/L)	0.0406	0.0072	0.0382	0.0431	0.0029
	Sulfate (SO4) (mg/L)	156	510	308	143	206
	Anion Sum (meq/L)	8.06	17.1	12.9	7.52	9.36
	Cation Sum (meq/L)	7.78	15.6	11.9	7.11	8.93
	Cation - Anion Balance (%)	-1.8	-4.6	-4.2	-2.8	-2.4
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.44	1.90	1.90	0.98	1.24
	Total Organic Carbon (mg/L)	1.60	1.57	2.6	1.07	1.03
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	<0.0010	0.0047	0.0011	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2658945-6 WG 02-NOV-21 15:40 RG_MW_ER7A_W G_2021_11_02_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	529			
	Hardness (as CaCO3) (mg/L)	277			
	pH (pH)	8.13			
	ORP (mV)	457			
	Total Suspended Solids (mg/L)	27.9			
	Total Dissolved Solids (mg/L)	322			
	Turbidity (NTU)	11.7			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	3.2			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	272			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	272			
	Ammonia as N (mg/L)	0.0609			
	Bicarbonate (HCO3) (mg/L)	331			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	0.67			
	Fluoride (F) (mg/L)	0.352			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	93.6			
	Nitrate and Nitrite (as N) (mg/L)	<0.0051			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	0.0027			
	Total Kjeldahl Nitrogen (mg/L)	0.253			
	Total Nitrogen (mg/L)	0.256			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0279			
	Sulfate (SO4) (mg/L)	35.9			
	Anion Sum (meq/L)	6.21			
	Cation Sum (meq/L)	5.82			
	Cation - Anion Balance (%)	-3.3			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.19			
	Total Organic Carbon (mg/L)	2.16			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0033			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2658945-1 WG 02-NOV-21 11:35 RG_MW_LC3A_W G_2021_11_02_NP	L2658945-2 WG 02-NOV-21 10:35 RG_MW_LC3B_W G_2021_11_02_NP	L2658945-3 WG 02-NOV-21 13:00 RG_MW_LCWC1_ WG_2021_11_02_ NP	L2658945-4 WG 02-NOV-21 14:35 RG_MW_WC2A_ WG_2021_11_02_ NP	L2658945-5 WG 02-NOV-21 14:30 RG_MW_WC2B_ WG_2021_11_02_ NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	0.00049	0.00090	<0.00010	0.00018	0.00054
	Arsenic (As)-Dissolved (mg/L)	0.00010	0.00011	0.00012	0.00011	0.00012
	Barium (Ba)-Dissolved (mg/L)	0.0654	0.0925	0.152	0.0386	0.0681
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.017	0.016	0.017	0.012	0.015
	Cadmium (Cd)-Dissolved (mg/L)	0.0000206	0.0000375	0.0000399	0.0000259	0.0000394
	Calcium (Ca)-Dissolved (mg/L)	79.6	141	152	84.3	95.0
	Chromium (Cr)-Dissolved (mg/L)	0.00022	0.00022	0.00013	0.00018	0.00019
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00033	0.00073	0.00033	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0441	0.107	0.0379	0.0327	0.0423
	Magnesium (Mg)-Dissolved (mg/L)	40.9	93.5	45.5	30.8	46.3
	Manganese (Mn)-Dissolved (mg/L)	0.00020	0.00067	0.00081	0.00126	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00364	0.00636	0.000996	0.00128	0.00319
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00204	<0.00050	<0.00050	0.00383
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	2.09	3.20	1.42	1.14	2.01
	Selenium (Se)-Dissolved (mg/L)	0.0466	0.158	0.0870	0.0258	0.0490
	Silicon (Si)-Dissolved (mg/L)	2.86	2.42	4.78	2.74	2.82
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	8.93	18.1	12.4	7.77	7.61
	Strontium (Sr)-Dissolved (mg/L)	0.270	0.483	0.489	0.260	0.318
	Sulfur (S)-Dissolved (mg/L)	55.3	169	102	48.8	72.1
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	0.000013	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.00253	0.00670	0.00148	0.00160	0.00283
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0015	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2658945-6 WG 02-NOV-21 15:40 RG_MW_ER7A_W G_2021_11_02_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00082			
	Barium (Ba)-Dissolved (mg/L)	0.0404			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.032			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000063			
	Calcium (Ca)-Dissolved (mg/L)	61.2			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	0.00023			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	0.167			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0056			
	Magnesium (Mg)-Dissolved (mg/L)	30.3			
	Manganese (Mn)-Dissolved (mg/L)	0.139			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00512			
	Nickel (Ni)-Dissolved (mg/L)	0.00092			
	Phosphorus (P)-Dissolved (mg/L)	<0.050			
	Potassium (K)-Dissolved (mg/L)	2.45			
	Selenium (Se)-Dissolved (mg/L)	0.00471			
	Silicon (Si)-Dissolved (mg/L)	5.88			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	4.54			
	Strontium (Sr)-Dissolved (mg/L)	0.240			
	Sulfur (S)-Dissolved (mg/L)	13.5			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	0.00027			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.00335			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2658945-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2658945-1, -2, -3, -4, -5, -6

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2658945

Report Date: 19-NOV-21

Page 1 of 10

Client: SNC-Lavalin  
 #3 - 520 Lake Street  
 Nelson BC V1L 4C6  
 Contact: Leslie Harker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5637830</b>							
<b>WG3654523-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.6		%		85-115	06-NOV-21
<b>WG3654523-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	06-NOV-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5636873</b>							
<b>WG3653478-9</b>	<b>DUP</b>	<b>L2658945-1</b>						
Alkalinity, Total (as CaCO3)		206	208		mg/L	1.1	20	04-NOV-21
<b>WG3653478-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	04-NOV-21
<b>WG3653478-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.1		%		85-115	04-NOV-21
<b>WG3653478-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-NOV-21
<b>WG3653478-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-NOV-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5637790</b>							
<b>WG3654955-6</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			93.1		%		80-120	08-NOV-21
<b>WG3654955-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-NOV-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5636873</b>							
<b>WG3653478-9</b>	<b>DUP</b>	<b>L2658945-1</b>						
Bicarbonate (HCO3)		251	254		mg/L	1.1	20	04-NOV-21
<b>WG3653478-4</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	04-NOV-21
<b>WG3653478-7</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	04-NOV-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5644541</b>							
<b>WG3657425-2</b>	<b>LCS</b>							
Bromide (Br)			104.5		%		85-115	05-NOV-21
<b>WG3657425-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	05-NOV-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2658945

Report Date: 19-NOV-21

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5646480							
<b>WG3658082-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			99.5		%		80-120	13-NOV-21
<b>WG3658082-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-NOV-21
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5646480							
<b>WG3658082-2</b>	<b>LCS</b>							
Total Organic Carbon			98.7		%		80-120	13-NOV-21
<b>WG3658082-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	13-NOV-21
<b>CL-L-IC-N-CL</b> <b>Water</b>								
Batch	R5644541							
<b>WG3657425-2</b>	<b>LCS</b>							
Chloride (Cl)			100.2		%		85-115	05-NOV-21
<b>WG3657425-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	05-NOV-21
<b>CO3-CL</b> <b>Water</b>								
Batch	R5636873							
<b>WG3653478-9</b>	<b>DUP</b>	<b>L2658945-1</b>						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	04-NOV-21
<b>WG3653478-4</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	04-NOV-21
<b>WG3653478-7</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	04-NOV-21
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R5636873							
<b>WG3653478-9</b>	<b>DUP</b>	<b>L2658945-1</b>						
Conductivity (@ 25C)		717	717		uS/cm	0.0	10	04-NOV-21
<b>WG3653478-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.7		%		90-110	04-NOV-21
<b>WG3653478-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.6		%		90-110	04-NOV-21
<b>WG3653478-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	04-NOV-21
<b>WG3653478-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	04-NOV-21
<b>F-IC-N-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2658945

Report Date: 19-NOV-21

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5644541</b>							
<b>WG3657425-2</b>	<b>LCS</b>							
Fluoride (F)			104.4		%		90-110	05-NOV-21
<b>WG3657425-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	05-NOV-21
<b>HG-D-CVAA-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5636435</b>							
<b>WG3653023-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			83.1		%		80-120	05-NOV-21
<b>WG3653023-9</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	05-NOV-21
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5637790</b>							
<b>WG3654955-6</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			95.3		%		80-120	08-NOV-21
Antimony (Sb)-Dissolved			98.0		%		80-120	08-NOV-21
Arsenic (As)-Dissolved			94.1		%		80-120	08-NOV-21
Barium (Ba)-Dissolved			93.8		%		80-120	08-NOV-21
Bismuth (Bi)-Dissolved			101.3		%		80-120	08-NOV-21
Boron (B)-Dissolved			91.7		%		80-120	08-NOV-21
Cadmium (Cd)-Dissolved			93.0		%		80-120	08-NOV-21
Calcium (Ca)-Dissolved			93.2		%		80-120	08-NOV-21
Chromium (Cr)-Dissolved			92.7		%		80-120	08-NOV-21
Cobalt (Co)-Dissolved			93.1		%		80-120	08-NOV-21
Copper (Cu)-Dissolved			91.0		%		80-120	08-NOV-21
Iron (Fe)-Dissolved			106.4		%		80-120	08-NOV-21
Lead (Pb)-Dissolved			95.3		%		80-120	08-NOV-21
Lithium (Li)-Dissolved			93.4		%		80-120	08-NOV-21
Magnesium (Mg)-Dissolved			95.8		%		80-120	08-NOV-21
Manganese (Mn)-Dissolved			92.0		%		80-120	08-NOV-21
Molybdenum (Mo)-Dissolved			97.9		%		80-120	08-NOV-21
Nickel (Ni)-Dissolved			92.4		%		80-120	08-NOV-21
Phosphorus (P)-Dissolved			93.2		%		70-130	08-NOV-21
Potassium (K)-Dissolved			93.8		%		80-120	08-NOV-21
Selenium (Se)-Dissolved			87.8		%		80-120	08-NOV-21
Silicon (Si)-Dissolved			93.8		%		60-140	08-NOV-21
Silver (Ag)-Dissolved			88.4		%		80-120	08-NOV-21



## Quality Control Report

Workorder: L2658945

Report Date: 19-NOV-21

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5637790</b>							
<b>WG3654955-6</b>	<b>LCS</b>							
Sodium (Na)-Dissolved			92.3		%		80-120	08-NOV-21
Strontium (Sr)-Dissolved			96.2		%		80-120	08-NOV-21
Sulfur (S)-Dissolved			93.6		%		80-120	08-NOV-21
Thallium (Tl)-Dissolved			95.2		%		80-120	08-NOV-21
Tin (Sn)-Dissolved			96.2		%		80-120	08-NOV-21
Titanium (Ti)-Dissolved			92.8		%		80-120	08-NOV-21
Uranium (U)-Dissolved			87.9		%		80-120	08-NOV-21
Vanadium (V)-Dissolved			93.9		%		80-120	08-NOV-21
Zinc (Zn)-Dissolved			87.4		%		80-120	08-NOV-21
Zirconium (Zr)-Dissolved			93.3		%		80-120	08-NOV-21
<b>WG3654955-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-NOV-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-NOV-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-NOV-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-NOV-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-NOV-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-NOV-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-NOV-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-NOV-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-NOV-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	08-NOV-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-NOV-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-NOV-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-21



## Quality Control Report

Workorder: L2658945

Report Date: 19-NOV-21

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5637790</b>							
<b>WG3654955-5</b>	<b>MB</b>							
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-NOV-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-NOV-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-NOV-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-NOV-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-NOV-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-NOV-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-NOV-21
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5653860</b>							
<b>WG3660828-2</b>	<b>LCS</b>							
Ammonia as N			96.2		%		85-115	17-NOV-21
<b>WG3660828-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	17-NOV-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5644541</b>							
<b>WG3657425-2</b>	<b>LCS</b>							
Nitrite (as N)			103.4		%		90-110	05-NOV-21
<b>WG3657425-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	05-NOV-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5644541</b>							
<b>WG3657425-2</b>	<b>LCS</b>							
Nitrate (as N)			100.1		%		90-110	05-NOV-21
<b>WG3657425-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	05-NOV-21
<b>OH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5636873</b>							
<b>WG3653478-9</b>	<b>DUP</b>	<b>L2658945-1</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	04-NOV-21
<b>WG3653478-4</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	04-NOV-21
<b>WG3653478-7</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2658945

Report Date: 19-NOV-21

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>OH-CL</b>	<b>Water</b>							
Batch	R5636873							
<b>WG3653478-7 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	04-NOV-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5638367							
<b>WG3655157-1 CRM</b>		<b>CL-ORP</b>						
ORP			228		mV		210-230	09-NOV-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5638736							
<b>WG3655363-6 LCS</b>								
Phosphorus (P)-Total			102.7		%		80-120	09-NOV-21
<b>WG3655363-5 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	09-NOV-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5636873							
<b>WG3653478-9 DUP</b>		<b>L2658945-1</b>						
pH		7.97	7.99	J	pH	0.02	0.2	04-NOV-21
<b>WG3653478-5 LCS</b>								
pH			7.00		pH		6.9-7.1	04-NOV-21
<b>WG3653478-8 LCS</b>								
pH			7.01		pH		6.9-7.1	04-NOV-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5636945							
<b>WG3652686-6 LCS</b>								
Orthophosphate-Dissolved (as P)			102.4		%		80-120	04-NOV-21
<b>WG3652686-5 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-NOV-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5644541							
<b>WG3657425-2 LCS</b>								
Sulfate (SO4)			104.2		%		90-110	05-NOV-21
<b>WG3657425-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	05-NOV-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2658945

Report Date: 19-NOV-21

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5637912</b>							
<b>WG3653127-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.1		%		85-115	07-NOV-21
<b>WG3653127-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	07-NOV-21
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5644742</b>							
<b>WG3656829-22</b>	<b>DUP</b>	<b>L2658945-5</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	12-NOV-21
<b>WG3656829-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.0		%		75-125	11-NOV-21
<b>WG3656829-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			111.0		%		75-125	11-NOV-21
<b>WG3656829-7</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			103.0		%		75-125	11-NOV-21
<b>WG3656829-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			102.0		%		75-125	11-NOV-21
<b>WG3656829-9</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.0		%		75-125	11-NOV-21
<b>WG3656829-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-NOV-21
<b>WG3656829-2</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-NOV-21
<b>WG3656829-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-NOV-21
<b>WG3656829-4</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-NOV-21
<b>WG3656829-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-NOV-21
<b>WG3656829-21</b>	<b>MS</b>	<b>L2658945-6</b>						
Total Kjeldahl Nitrogen			88.0		%		70-130	12-NOV-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5638438</b>							
<b>WG3654472-2</b>	<b>LCS</b>							
Total Suspended Solids			89.6		%		85-115	08-NOV-21
<b>WG3654472-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	08-NOV-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2658945

Report Date: 19-NOV-21

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5636948</b>							
<b>WG3652487-5</b>	<b>LCS</b>							
Turbidity			106.0		%		85-115	05-NOV-21
<b>WG3652487-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	05-NOV-21

# Quality Control Report

Workorder: L2658945

Report Date: 19-NOV-21

Page 9 of 10

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2658945

Report Date: 19-NOV-21

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	02-NOV-21 11:35	09-NOV-21 11:20	0.25	168	hours	EHTR-FM
	2	02-NOV-21 10:35	09-NOV-21 11:20	0.25	169	hours	EHTR-FM
	3	02-NOV-21 13:00	09-NOV-21 11:20	0.25	166	hours	EHTR-FM
	4	02-NOV-21 14:35	09-NOV-21 11:20	0.25	165	hours	EHTR-FM
	5	02-NOV-21 14:30	09-NOV-21 11:20	0.25	165	hours	EHTR-FM
	6	02-NOV-21 15:40	09-NOV-21 11:20	0.25	164	hours	EHTR-FM
pH							
	1	02-NOV-21 11:35	04-NOV-21 00:00	0.25	36	hours	EHTR-FM
	2	02-NOV-21 10:35	04-NOV-21 00:00	0.25	37	hours	EHTR-FM
	3	02-NOV-21 13:00	04-NOV-21 00:00	0.25	35	hours	EHTR-FM
	4	02-NOV-21 14:35	04-NOV-21 00:00	0.25	33	hours	EHTR-FM
	5	02-NOV-21 14:30	04-NOV-21 00:00	0.25	34	hours	EHTR-FM
	6	02-NOV-21 15:40	04-NOV-21 00:00	0.25	32	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2658945 were received on 03-NOV-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2658945-COFC

COC Number: 21 -

Page of

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																																																	
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply					<b>EMERGENCY</b>																																												
Contact: Leslie Harker		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>4 day [P4-20%]</b> <input type="checkbox"/>		<b>3 day [P3-25%]</b> <input type="checkbox"/>			<b>1 Business day [E1 - 100%]</b> <input type="checkbox"/>			<b>Same Day, Weekend or Statutory holiday [E2 -200%]</b> <input type="checkbox"/> (Laboratory opening fees may apply)																																									
Phone: 250-505-6493		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		<b>2 day [P2-50%]</b> <input type="checkbox"/>																																																	
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Date and Time Required for all E&P TATs:																																																	
Street: 520 Lake Street		Emails: SNC - 'Leslie.Harker' 'Melissa.MacDonald'		For tests that can not be performed according to the service level selected, you will be contacted.																																																	
City/Province: Nelson, BC		Teck - Thais.Lamana@teck.com, Jessica.Mackie@teck.com		<b>Analysis Request</b>																																																	
Postal Code: V1L 4C6		teck.lab.results@teck.com																																																			
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>Invoice Distribution</b>		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																	
Copy of invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input checked="" type="checkbox"/> FAX		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>F/P</td><td>P</td><td>F/P</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>DOC (C-DIS-ORG-LOW-CL)</td> <td>TOC (C-TOT-ORG-LOW-CL)</td> <td>BCMDG D-Met +Hg (MET-D-BCMDG-CL)</td> <td>Total N Calc. (N-T-CALC-CL)</td> <td>Nitrate + Nitrite Calc. (N2N3-CALC-CL)</td> <td>Teck Routine (TECKCOAL-ROUTINE-CL)</td> <td>TKN (TKN-L-F-CL)</td> <td>Bicarbonate (BIC-CL)</td> <td>Carbonate (CO3-CL)</td> <td>Hydroxide (OH-CL)</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>										F/P	P	F/P																		DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)										
F/P	P	F/P																																																			
DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)																																												
Company:		Emails: Leslie.Harker@snc-lavalin.com		SAMPLES ON HOLD Sample is hazardous (please provide further detail) NUMBER OF CONTAINERS																																																	
Contact:		payables@snc-lavalin.com																																																			
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																																																			
ALS Account # / Quote #:		AFE/Cost Center:																																																			
Job #:		Major/Minor Code:																																																			
PO / AFE:		Requisitioner:																																																			
LSD:		Location:																																																			
ALS Lab Work Order # (lab use only):		ALS Contact: Opeyemi Adetola 403-407-1792		Sampler:																																																	
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC	TOC	BCMDG	Total N	Nitrate	Teck Routine	TKN	Bicarbonate	Carbonate	Hydroxide																																						
	<del>RG_MW_ER1A</del>	<del>RG_MW_ER1A</del>	<del>02-11-21</del>	<del>11:35</del>	<del>WG</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>																																		
	<del>RG_MW_ER1B</del>	<del>RG_MW_ER1B</del>	<del>02-11-21</del>	<del>11:35</del>	<del>WG</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>																																		
	<del>RG_MW_ER2A</del>	<del>RG_MW_ER2A</del>	<del>02-11-21</del>	<del>11:35</del>	<del>WG</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>																																		
	<del>RG_MW_ER2B</del>	<del>RG_MW_ER2B</del>	<del>02-11-21</del>	<del>11:35</del>	<del>WG</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>																																		
	RG_MW_LC3A_WG_2021_11_02.NP	RG_MW_LC3A	02-11-21	11:35	WG	R	R	R	R	R	R	R	R	R	R	R	R	R	R																																		
	RG_MW_LC3B_WG_2021_11_02.NP	RG_MW_LC3B	02-11-21	10:35	WG	R	R	R	R	R	R	R	R	R	R	R	R	R	R																																		
	<del>RG_MW_LC3C</del>	<del>RG_MW_LC3C</del>	<del>02-11-21</del>	<del>11:35</del>	<del>WG</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>																																		
	RG_MW_LCWC1_WG_2021_11_02.NP	RG_MW_LCWC1	02-11-21	13:00	WG	R	R	R	R	R	R	R	R	R	R	R	R	R	R																																		
	RG_MW_WC2A_WG_2021_11_02.NP	RG_MW_WC2A	02-11-21	14:35	WG	R	R	R	R	R	R	R	R	R	R	R	R	R	R																																		
	RG_MW_WC2B_WG_2021_11_02.NP	RG_MW_WC2B	02-11-21	14:30	WG	R	R	R	R	R	R	R	R	R	R	R	R	R	R																																		
	RG_MW_ERTA_WG_2021_11_02.NP	RG_MW_ERTA	02-11-21	15:40	WG	R	R	R	R	R	R	R	R	R	R	R	R	R	R																																		
	<del>RG_MW_ERTB</del>	<del>RG_MW_ERTB</del>	<del>02-11-21</del>	<del>15:40</del>	<del>WG</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>																																		
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																																																	
Are samples taken from a Regulated DW System?		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/>					SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																																												
<input checked="" type="checkbox"/> NO				Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/>					Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																																												
Are samples for human consumption/ use?		Teck Facility Name: (please select the applicable Facility)		Cooling Initiated <input type="checkbox"/>																																																	
<input checked="" type="checkbox"/> NO		REP-Regional Effects Program FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C																																												
				4																																																	
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>		<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																																																	
Released by: <i>JH</i>		Received by: <i>A</i>		Date: 11/3		Time: 15:40		Received by: <i>JSD</i>		Date:		Time:																																									



SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 18-NOV-21  
Report Date: 28-NOV-21 15:54 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2664088  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Lovepreet Kaur  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2664088-1	L2664088-2	L2664088-3	L2664088-4	L2664088-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	17-NOV-21	17-NOV-21	17-NOV-21	17-NOV-21	17-NOV-21
		Sampled Time	12:55	13:00	10:05	11:00	15:10
		Client ID	GH_MW-MC-1S_WG_2021_2021_11_17_NP	GH_MW-MC-1D_WG_2021_2021_11_17_NP	GH_MW-MC-2S_WG_2021_2021_11_17_NP	GH_MW-MC-2D_WG_2021_2021_11_17_NP	GH_MW-LC1-B_WG_2021_11_17_NP
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		300	402	643	1970	320
	Hardness (as CaCO3) (mg/L)		157	118	323	23.3	166
	pH (pH)		8.38	8.47	8.37	9.18	8.37
	ORP (mV)		424	445	449	418	459
	Total Suspended Solids (mg/L)		<4.0 <sup>HTD</sup>	4.0 <sup>HTD</sup>	<1.0 <sup>HTD</sup>	3.9 <sup>HTD</sup>	<1.0 <sup>HTD</sup>
	Total Dissolved Solids (mg/L)		169	210	315	1140	173
	Turbidity (NTU)		<0.10	3.08	0.26	27.2	0.72
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		2.3	1.8	21.6	<1.0	4.8
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		152	195	313	508	162
	Alkalinity, Carbonate (as CaCO3) (mg/L)		7.4	11.4	12.8	130	8.2
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		160	206	326	638	170
	Ammonia as N (mg/L)		<0.0050	0.0395	<0.0050	0.64	<0.0050
	Bicarbonate (HCO3) (mg/L)		186	238	382	620	198
	Bromide (Br) (mg/L)		<0.050	0.102	<0.050	0.83	<0.050
	Carbonate (CO3) (mg/L)		<5.0	6.8	7.7	78.0	<5.0
	Chloride (Cl) (mg/L)		0.31	20.6	2.60	263	0.28
	Fluoride (F) (mg/L)		0.128	0.737	0.101	2.56	0.101
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)		86.4	91.9	90.6	97.5	86.8
	Nitrate and Nitrite (as N) (mg/L)		0.107	<0.0051	0.342	<0.025	0.148
	Nitrate (as N) (mg/L)		0.107	<0.0050	0.342	<0.025 <sup>DLDS</sup>	0.148
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		<0.050	<0.050	0.113	0.690	<0.050
	Total Nitrogen (mg/L)		0.107	<0.050	0.455	0.690	0.148
	Orthophosphate-Dissolved (as P) (mg/L)		0.0021	0.0023	0.0055	0.298 <sup>DLHC</sup>	0.0022
	Phosphorus (P)-Total (mg/L)		<0.0020	0.0055	0.0062	0.284 <sup>DLHC</sup>	0.0020
Sulfate (SO4) (mg/L)		21.9	<0.30	68.3	20.1	21.9	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		0.96	0.90	2.31	2.19	1.35
	Total Organic Carbon (mg/L)		1.20	0.86	2.22	3.49	0.76 <sup>DTC</sup>
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0010	0.0038	0.0017	0.0315 <sup>DLDS</sup>	<0.0010
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00010
	Arsenic (As)-Dissolved (mg/L)		<0.00010	0.00105	0.00017	0.00149 <sup>DLDS</sup>	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0502	0.851	0.125	0.136 <sup>DLDS</sup>	0.0477

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2664088-6	L2664088-7	L2664088-8
		Description	WG	WG	WG
		Sampled Date	17-NOV-21	17-NOV-21	17-NOV-21
		Sampled Time	14:40	15:40	12:00
		Client ID	GH_MW_LC2-A_WG_2021_11_17_NP	GH_MW_LC2-B_WG_2021_11_17_NP	GH_MW_MC10-A_WG_2021_11_17_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	306	336	397	
	Hardness (as CaCO3) (mg/L)	159	174	123	
	pH (pH)	8.39	8.39	8.49	
	ORP (mV)	450	449	433	
	Total Suspended Solids (mg/L)	<1.0 <sup>HTD</sup>	<1.0 <sup>HTD</sup>	4.5 <sup>HTD</sup>	
	Total Dissolved Solids (mg/L)	157	179	198	
	Turbidity (NTU)	<0.10	<0.10	4.10	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.7	5.7	1.1	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	156	169	200	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	8.6	9.6	13.4	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	165	179	213	
	Ammonia as N (mg/L)	<0.0050	<0.0050	0.0435	
	Bicarbonate (HCO3) (mg/L)	191	206	244	
	Bromide (Br) (mg/L)	<0.050	<0.050	0.100	
	Carbonate (CO3) (mg/L)	5.2	5.8	8.0	
	Chloride (Cl) (mg/L)	0.57	0.28	20.6	
	Fluoride (F) (mg/L)	0.137	0.131	0.724	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	87.3	87.3	91.8	
	Nitrate and Nitrite (as N) (mg/L)	0.0762	0.154	<0.0051	
	Nitrate (as N) (mg/L)	0.0762	0.154	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050	
	Total Nitrogen (mg/L)	0.076	0.154	<0.050	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0015	0.0020	0.0011	
	Phosphorus (P)-Total (mg/L)	0.0058	<0.0020	0.0047	
Sulfate (SO4) (mg/L)	19.8	21.6	<0.30		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.95	0.91	0.88	
	Total Organic Carbon (mg/L)	0.83	0.82	0.83	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	<0.0010	0.0042	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	0.00108	
	Barium (Ba)-Dissolved (mg/L)	0.0705	0.0499	0.850	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2664088-1 WG 17-NOV-21 12:55 GH_MW-MC- 1S_WG_2021_ 2021_11_17_NP	L2664088-2 WG 17-NOV-21 13:00 GH_MW-MC- 1D_WG_2021_ 2021_11_17_NP	L2664088-3 WG 17-NOV-21 10:05 GH_MW-MC- 2S_WG_2021_ 2021_11_17_NP	L2664088-4 WG 17-NOV-21 11:00 GH_MW-MC- 2D_WG_2021_ 2021_11_17_NP	L2664088-5 WG 17-NOV-21 15:10 GH_MW-LC1- B_WG_2021_11_1 7_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.00010 DLDS	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.00025 DLDS	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	0.088	0.035	0.845 DLDS	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	0.0000534	<0.000025 DLDS	0.0000084
	Calcium (Ca)-Dissolved (mg/L)	44.8	24.6	84.4	3.92 DLDS	47.0
	Chromium (Cr)-Dissolved (mg/L)	0.00024	<0.00010	0.00019	<0.00050 DLDS	0.00026
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00050 DLDS	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	0.00044	<0.0010 DLDS	0.00064
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.193	<0.010	<0.050 DLDS	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.00025 DLDS	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0015	0.0827	0.0270	1.03 DLDS	0.0030
	Magnesium (Mg)-Dissolved (mg/L)	10.9	13.8	27.2	3.29 DLDS	11.8
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.121	0.00114	0.0446 DLDS	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050 DLDS	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00105	0.00684	0.00111	0.00093 DLDS	0.00149
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00068	<0.0025 DLDS	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	0.28 DLDS	<0.050
	Potassium (K)-Dissolved (mg/L)	0.37	1.27	1.25	1.90 DLDS	0.45
	Selenium (Se)-Dissolved (mg/L)	0.000908	0.000279	0.00207	0.00690 DLDS	0.00132
	Silicon (Si)-Dissolved (mg/L)	1.78	3.19	4.01	3.23 DLDS	1.82
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000050 DLDS	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.677	44.8	18.6	452 DLDS	0.906
	Strontium (Sr)-Dissolved (mg/L)	0.196	0.386	0.271	0.231 DLDS	0.205
	Sulfur (S)-Dissolved (mg/L)	7.79	4.91	24.9	570 DLDS	8.92
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000050 DLDS	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00020	<0.00010	<0.00050 DLDS	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.0015 DLDS	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000663	0.000136	0.00107	0.000672 DLDS	0.000819
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.0025 DLDS	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0011	0.0012	<0.0050 DLDS	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.0010 DLDS	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2664088-6	L2664088-7	L2664088-8
		Description	WG	WG	WG
		Sampled Date	17-NOV-21	17-NOV-21	17-NOV-21
		Sampled Time	14:40	15:40	12:00
		Client ID	GH_MW_LC2-A_WG_2021_11_17_NP	GH_MW_LC2-B_WG_2021_11_17_NP	GH_MW_MC10-A_WG_2021_11_17_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	<0.010	0.090
	Cadmium (Cd)-Dissolved (mg/L)		0.0000056	0.0000153	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)		43.1	49.6	25.2
	Chromium (Cr)-Dissolved (mg/L)		0.00022	0.00028	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)		<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	0.195
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0049	0.0031	0.0814
	Magnesium (Mg)-Dissolved (mg/L)		12.4	12.2	14.6
	Manganese (Mn)-Dissolved (mg/L)		<0.00010	<0.00010	0.122
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00152	0.00152	0.00683
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		0.52	0.52	1.32
	Selenium (Se)-Dissolved (mg/L)		0.000954	0.00127	0.000249
	Silicon (Si)-Dissolved (mg/L)		2.01	1.89	3.24
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		1.72	0.889	45.5
	Strontium (Sr)-Dissolved (mg/L)		0.180	0.192	0.383
	Sulfur (S)-Dissolved (mg/L)		7.66	8.20	1.12
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	0.00022
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.000894	0.000817	0.000137
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Additional Comments for Sample Listed:

Samplenum	Matrix	Report Remarks	Sample Comment:
L2664088-1	Water	Note: limited samples	
L2664088-2	Water	Note: limited samples	
L2664088-3	Water	Note: limited samples	
L2664088-4	Water	Note: limited samples	
L2664088-5	Water	Note: limited samples	
L2664088-6	Water	Note: limited samples	
L2664088-7	Water	Note: limited samples	
L2664088-8	Water	Note: limited samples	

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2664088-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2664088-1, -2, -3, -4, -5, -6, -7, -8

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			

## Reference Information

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2664088

Report Date: 28-NOV-21

Page 1 of 12

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5654567</b>							
<b>WG3661903-3</b>	<b>DUP</b>	<b>L2664088-1</b>						
Acidity (as CaCO3)		2.3	2.9	J	mg/L	0.6	2	19-NOV-21
<b>WG3661903-2</b>	<b>LCS</b>		107.9		%		85-115	19-NOV-21
Acidity (as CaCO3)								
<b>WG3661903-1</b>	<b>MB</b>		1.8		mg/L		2	19-NOV-21
Acidity (as CaCO3)								
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5655218</b>							
<b>WG3661169-6</b>	<b>DUP</b>	<b>L2664088-8</b>						
Alkalinity, Total (as CaCO3)		213	208		mg/L	2.6	20	19-NOV-21
<b>WG3661169-2</b>	<b>LCS</b>		108.6		%		85-115	19-NOV-21
Alkalinity, Total (as CaCO3)								
<b>WG3661169-5</b>	<b>LCS</b>		108.0		%		85-115	19-NOV-21
Alkalinity, Total (as CaCO3)								
<b>WG3661169-1</b>	<b>MB</b>		<1.0		mg/L		1	19-NOV-21
Alkalinity, Total (as CaCO3)								
<b>WG3661169-4</b>	<b>MB</b>		<1.0		mg/L		1	19-NOV-21
Alkalinity, Total (as CaCO3)								
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5655471</b>							
<b>WG3662798-3</b>	<b>DUP</b>	<b>L2664088-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	22-NOV-21
<b>WG3662798-2</b>	<b>LCS</b>		100.2		%		80-120	22-NOV-21
Beryllium (Be)-Dissolved								
<b>WG3662798-1</b>	<b>MB</b>		<0.000020		mg/L		0.00002	22-NOV-21
Beryllium (Be)-Dissolved								
<b>WG3662798-4</b>	<b>MS</b>	<b>L2664088-1</b>	89.4		%		70-130	22-NOV-21
Beryllium (Be)-Dissolved								
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5655218</b>							
<b>WG3661169-6</b>	<b>DUP</b>	<b>L2664088-8</b>						
Bicarbonate (HCO3)		244	236		mg/L	3.2	20	19-NOV-21
<b>WG3661169-1</b>	<b>MB</b>		<5.0		mg/L		5	19-NOV-21
Bicarbonate (HCO3)								
<b>WG3661169-4</b>	<b>MB</b>		<5.0		mg/L		5	19-NOV-21
Bicarbonate (HCO3)								
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2664088

Report Date: 28-NOV-21

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5654446</b>							
<b>WG3661715-3</b>	<b>DUP</b>	<b>L2664088-8</b>						
Bromide (Br)		0.100	0.099		mg/L	0.7	20	18-NOV-21
<b>WG3661715-2</b>	<b>LCS</b>							
Bromide (Br)			101.0		%		85-115	18-NOV-21
<b>WG3661715-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	18-NOV-21
<b>WG3661715-4</b>	<b>MS</b>	<b>L2664088-8</b>						
Bromide (Br)			102.2		%		75-125	18-NOV-21
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5656761</b>							
<b>WG3664464-3</b>	<b>DUP</b>	<b>L2664088-3</b>						
Dissolved Organic Carbon		2.31	2.30		mg/L	0.3	20	23-NOV-21
<b>WG3664464-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			116.3		%		80-120	23-NOV-21
<b>WG3664464-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-NOV-21
<b>WG3664464-4</b>	<b>MS</b>	<b>L2664088-3</b>						
Dissolved Organic Carbon			90.5		%		70-130	23-NOV-21
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5656761</b>							
<b>WG3664464-3</b>	<b>DUP</b>	<b>L2664088-3</b>						
Total Organic Carbon		2.22	2.30		mg/L	3.9	20	23-NOV-21
<b>WG3664464-2</b>	<b>LCS</b>							
Total Organic Carbon			108.2		%		80-120	23-NOV-21
<b>WG3664464-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	23-NOV-21
<b>WG3664464-4</b>	<b>MS</b>	<b>L2664088-3</b>						
Total Organic Carbon			90.5		%		70-130	23-NOV-21
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5654446</b>							
<b>WG3661715-3</b>	<b>DUP</b>	<b>L2664088-8</b>						
Chloride (Cl)		20.6	20.5		mg/L	0.3	20	18-NOV-21
<b>WG3661715-2</b>	<b>LCS</b>							
Chloride (Cl)			103.2		%		85-115	18-NOV-21
<b>WG3661715-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	18-NOV-21
<b>WG3661715-4</b>	<b>MS</b>	<b>L2664088-8</b>						
Chloride (Cl)			106.3		%		75-125	18-NOV-21





## Quality Control Report

Workorder: L2664088

Report Date: 28-NOV-21

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CO3-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5655218</b>							
<b>WG3661169-6</b>	<b>DUP</b>	<b>L2664088-8</b>						
Carbonate (CO3)		8.0	8.5		mg/L	5.8	20	19-NOV-21
<b>WG3661169-1</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	19-NOV-21
<b>WG3661169-4</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	19-NOV-21
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5655218</b>							
<b>WG3661169-6</b>	<b>DUP</b>	<b>L2664088-8</b>						
Conductivity (@ 25C)		397	395		uS/cm	0.5	10	19-NOV-21
<b>WG3661169-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.2		%		90-110	19-NOV-21
<b>WG3661169-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.7		%		90-110	19-NOV-21
<b>WG3661169-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-NOV-21
<b>WG3661169-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-NOV-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5654446</b>							
<b>WG3661715-3</b>	<b>DUP</b>	<b>L2664088-8</b>						
Fluoride (F)		0.724	0.716		mg/L	1.2	20	18-NOV-21
<b>WG3661715-2</b>	<b>LCS</b>							
Fluoride (F)			102.0		%		90-110	18-NOV-21
<b>WG3661715-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	18-NOV-21
<b>WG3661715-4</b>	<b>MS</b>	<b>L2664088-8</b>						
Fluoride (F)			106.1		%		75-125	18-NOV-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5654560</b>							
<b>WG3661961-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.9		%		80-120	19-NOV-21
<b>WG3661961-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-NOV-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2664088

Report Date: 28-NOV-21

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5655471</b>							
<b>WG3662798-3</b>	<b>DUP</b>	<b>L2664088-1</b>						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-NOV-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-NOV-21
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-NOV-21
Barium (Ba)-Dissolved		0.0502	0.0509		mg/L	1.2	20	22-NOV-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-NOV-21
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	22-NOV-21
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	22-NOV-21
Calcium (Ca)-Dissolved		44.8	44.6		mg/L	0.3	20	22-NOV-21
Chromium (Cr)-Dissolved		0.00024	0.00022		mg/L	7.9	20	22-NOV-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-NOV-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	22-NOV-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	22-NOV-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-NOV-21
Lithium (Li)-Dissolved		0.0015	0.0017		mg/L	18	20	22-NOV-21
Magnesium (Mg)-Dissolved		10.9	11.0		mg/L	0.7	20	22-NOV-21
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-NOV-21
Molybdenum (Mo)-Dissolved		0.00105	0.00111		mg/L	5.4	20	22-NOV-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-NOV-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-NOV-21
Potassium (K)-Dissolved		0.37	0.37		mg/L	0.3	20	22-NOV-21
Selenium (Se)-Dissolved		0.000908	0.000889		mg/L	2.1	20	22-NOV-21
Silicon (Si)-Dissolved		1.78	1.83		mg/L	3.0	20	22-NOV-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-NOV-21
Sodium (Na)-Dissolved		0.677	0.670		mg/L	1.0	20	22-NOV-21
Strontium (Sr)-Dissolved		0.196	0.199		mg/L	1.3	20	22-NOV-21
Sulfur (S)-Dissolved		7.79	8.08		mg/L	3.6	20	22-NOV-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-NOV-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-NOV-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	22-NOV-21
Uranium (U)-Dissolved		0.000663	0.000663		mg/L	0.1	20	22-NOV-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-NOV-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-NOV-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	22-NOV-21
<b>WG3662798-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2664088

Report Date: 28-NOV-21

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5655471</b>							
<b>WG3662798-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.8		%		80-120	22-NOV-21
Antimony (Sb)-Dissolved			105.5		%		80-120	22-NOV-21
Arsenic (As)-Dissolved			97.1		%		80-120	22-NOV-21
Barium (Ba)-Dissolved			100.8		%		80-120	22-NOV-21
Bismuth (Bi)-Dissolved			96.2		%		80-120	22-NOV-21
Boron (B)-Dissolved			102.3		%		80-120	22-NOV-21
Cadmium (Cd)-Dissolved			97.9		%		80-120	22-NOV-21
Calcium (Ca)-Dissolved			93.1		%		80-120	22-NOV-21
Chromium (Cr)-Dissolved			97.4		%		80-120	22-NOV-21
Cobalt (Co)-Dissolved			97.1		%		80-120	22-NOV-21
Copper (Cu)-Dissolved			93.2		%		80-120	22-NOV-21
Iron (Fe)-Dissolved			90.9		%		80-120	22-NOV-21
Lead (Pb)-Dissolved			97.1		%		80-120	22-NOV-21
Lithium (Li)-Dissolved			103.1		%		80-120	22-NOV-21
Magnesium (Mg)-Dissolved			99.7		%		80-120	22-NOV-21
Manganese (Mn)-Dissolved			93.4		%		80-120	22-NOV-21
Molybdenum (Mo)-Dissolved			99.0		%		80-120	22-NOV-21
Nickel (Ni)-Dissolved			94.0		%		80-120	22-NOV-21
Phosphorus (P)-Dissolved			103.4		%		70-130	22-NOV-21
Potassium (K)-Dissolved			101.7		%		80-120	22-NOV-21
Selenium (Se)-Dissolved			92.4		%		80-120	22-NOV-21
Silicon (Si)-Dissolved			95.4		%		60-140	22-NOV-21
Silver (Ag)-Dissolved			96.9		%		80-120	22-NOV-21
Sodium (Na)-Dissolved			96.4		%		80-120	22-NOV-21
Strontium (Sr)-Dissolved			94.2		%		80-120	22-NOV-21
Sulfur (S)-Dissolved			111.7		%		80-120	22-NOV-21
Thallium (Tl)-Dissolved			97.8		%		80-120	22-NOV-21
Tin (Sn)-Dissolved			98.3		%		80-120	22-NOV-21
Titanium (Ti)-Dissolved			99.4		%		80-120	22-NOV-21
Uranium (U)-Dissolved			98.0		%		80-120	22-NOV-21
Vanadium (V)-Dissolved			100.1		%		80-120	22-NOV-21
Zinc (Zn)-Dissolved			96.4		%		80-120	22-NOV-21
Zirconium (Zr)-Dissolved			96.7		%		80-120	22-NOV-21
<b>WG3662798-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2664088

Report Date: 28-NOV-21

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5655471</b>							
<b>WG3662798-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	22-NOV-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	22-NOV-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	22-NOV-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	22-NOV-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	22-NOV-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	22-NOV-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	22-NOV-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	22-NOV-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	22-NOV-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	22-NOV-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	22-NOV-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	22-NOV-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	22-NOV-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	22-NOV-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	22-NOV-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	22-NOV-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	22-NOV-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	22-NOV-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	22-NOV-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	22-NOV-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	22-NOV-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	22-NOV-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	22-NOV-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	22-NOV-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	22-NOV-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	22-NOV-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	22-NOV-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	22-NOV-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	22-NOV-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	22-NOV-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	22-NOV-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	22-NOV-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	22-NOV-21
<b>WG3662798-4</b>	<b>MS</b>	<b>L2664088-1</b>						



## Quality Control Report

Workorder: L2664088

Report Date: 28-NOV-21

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5655471</b>							
<b>WG3662798-4 MS</b>		<b>L2664088-1</b>						
Aluminum (Al)-Dissolved			93.0		%		70-130	22-NOV-21
Antimony (Sb)-Dissolved			102.3		%		70-130	22-NOV-21
Arsenic (As)-Dissolved			93.7		%		70-130	22-NOV-21
Barium (Ba)-Dissolved			93.6		%		70-130	22-NOV-21
Bismuth (Bi)-Dissolved			91.2		%		70-130	22-NOV-21
Boron (B)-Dissolved			97.6		%		70-130	22-NOV-21
Cadmium (Cd)-Dissolved			96.6		%		70-130	22-NOV-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	22-NOV-21
Chromium (Cr)-Dissolved			93.9		%		70-130	22-NOV-21
Cobalt (Co)-Dissolved			95.6		%		70-130	22-NOV-21
Copper (Cu)-Dissolved			93.6		%		70-130	22-NOV-21
Iron (Fe)-Dissolved			91.3		%		70-130	22-NOV-21
Lead (Pb)-Dissolved			95.8		%		70-130	22-NOV-21
Lithium (Li)-Dissolved			92.6		%		70-130	22-NOV-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	22-NOV-21
Manganese (Mn)-Dissolved			90.2		%		70-130	22-NOV-21
Molybdenum (Mo)-Dissolved			96.9		%		70-130	22-NOV-21
Nickel (Ni)-Dissolved			92.7		%		70-130	22-NOV-21
Phosphorus (P)-Dissolved			94.9		%		70-130	22-NOV-21
Potassium (K)-Dissolved			92.2		%		70-130	22-NOV-21
Selenium (Se)-Dissolved			93.1		%		70-130	22-NOV-21
Silicon (Si)-Dissolved			85.0		%		70-130	22-NOV-21
Silver (Ag)-Dissolved			94.1		%		70-130	22-NOV-21
Sodium (Na)-Dissolved			93.1		%		70-130	22-NOV-21
Strontium (Sr)-Dissolved			98.7		%		70-130	22-NOV-21
Thallium (Tl)-Dissolved			93.5		%		70-130	22-NOV-21
Tin (Sn)-Dissolved			94.8		%		70-130	22-NOV-21
Titanium (Ti)-Dissolved			95.5		%		70-130	22-NOV-21
Uranium (U)-Dissolved			92.3		%		70-130	22-NOV-21
Vanadium (V)-Dissolved			93.7		%		70-130	22-NOV-21
Zinc (Zn)-Dissolved			95.4		%		70-130	22-NOV-21
Zirconium (Zr)-Dissolved			94.0		%		70-130	22-NOV-21

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2664088

Report Date: 28-NOV-21

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5657978</b>							
<b>WG3665709-3</b>	<b>DUP</b>	<b>L2664088-1</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	25-NOV-21
<b>WG3665709-2</b>	<b>LCS</b>		111.0		%		85-115	25-NOV-21
Ammonia as N								
<b>WG3665709-1</b>	<b>MB</b>		<0.0050		mg/L		0.005	25-NOV-21
Ammonia as N								
<b>WG3665709-4</b>	<b>MS</b>	<b>L2664088-2</b>	112.0		%		75-125	25-NOV-21
Ammonia as N								
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5654446</b>							
<b>WG3661715-3</b>	<b>DUP</b>	<b>L2664088-8</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-NOV-21
<b>WG3661715-2</b>	<b>LCS</b>		103.3		%		90-110	18-NOV-21
Nitrite (as N)								
<b>WG3661715-1</b>	<b>MB</b>		<0.0010		mg/L		0.001	18-NOV-21
Nitrite (as N)								
<b>WG3661715-4</b>	<b>MS</b>	<b>L2664088-8</b>	107.2		%		75-125	18-NOV-21
Nitrite (as N)								
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5654446</b>							
<b>WG3661715-3</b>	<b>DUP</b>	<b>L2664088-8</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	18-NOV-21
<b>WG3661715-2</b>	<b>LCS</b>		105.0		%		90-110	18-NOV-21
Nitrate (as N)								
<b>WG3661715-1</b>	<b>MB</b>		<0.0050		mg/L		0.005	18-NOV-21
Nitrate (as N)								
<b>WG3661715-4</b>	<b>MS</b>	<b>L2664088-8</b>	106.9		%		75-125	18-NOV-21
Nitrate (as N)								
<b>OH-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5655218</b>							
<b>WG3661169-6</b>	<b>DUP</b>	<b>L2664088-8</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	19-NOV-21
<b>WG3661169-1</b>	<b>MB</b>		<5.0		mg/L		5	19-NOV-21
Hydroxide (OH)								
<b>WG3661169-4</b>	<b>MB</b>		<5.0		mg/L		5	19-NOV-21
Hydroxide (OH)								
<b>ORP-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2664088

Report Date: 28-NOV-21

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL Water</b>								
Batch	R5657576							
WG3665328-1	CRM	CL-ORP						
ORP			223		mV		210-230	25-NOV-21
WG3665328-2	DUP	L2664088-2						
ORP		445	442	J	mV	3.7	15	25-NOV-21
<b>P-T-L-COL-CL Water</b>								
Batch	R5657065							
WG3664504-2	LCS							
Phosphorus (P)-Total			96.4		%		80-120	24-NOV-21
WG3664504-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-NOV-21
<b>PH-CL Water</b>								
Batch	R5655218							
WG3661169-6	DUP	L2664088-8						
pH		8.49	8.49	J	pH	0.00	0.2	19-NOV-21
WG3661169-2	LCS							
pH			7.01		pH		6.9-7.1	19-NOV-21
WG3661169-5	LCS							
pH			7.00		pH		6.9-7.1	19-NOV-21
<b>PO4-DO-L-COL-CL Water</b>								
Batch	R5654012							
WG3661149-3	DUP	L2664088-8						
Orthophosphate-Dissolved (as P)		0.0011	0.0013		mg/L	11	20	18-NOV-21
WG3661149-2	LCS							
Orthophosphate-Dissolved (as P)			105.0		%		80-120	18-NOV-21
WG3661149-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	18-NOV-21
WG3661149-4	MS	L2664088-8						
Orthophosphate-Dissolved (as P)			103.5		%		70-130	18-NOV-21
<b>SO4-IC-N-CL Water</b>								
Batch	R5654446							
WG3661715-3	DUP	L2664088-8						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	18-NOV-21
WG3661715-2	LCS							
Sulfate (SO4)			103.1		%		90-110	18-NOV-21
WG3661715-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	18-NOV-21
WG3661715-4	MS	L2664088-8						



## Quality Control Report

Workorder: L2664088

Report Date: 28-NOV-21

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
Water								
Batch R5654446								
WG3661715-4	MS	L2664088-8						
Sulfate (SO4)			104.1		%		75-125	18-NOV-21
<b>SOLIDS-TDS-CL</b>								
Water								
Batch R5655266								
WG3661428-2	LCS							
Total Dissolved Solids			92.1		%		85-115	19-NOV-21
WG3661428-1	MB							
Total Dissolved Solids			<10		mg/L		10	19-NOV-21
<b>TKN-L-F-CL</b>								
Water								
Batch R5655216								
WG3662576-3	DUP	L2664088-1						
Total Kjeldahl Nitrogen		<0.050	0.058	RPD-NA	mg/L	N/A	20	20-NOV-21
WG3662576-2	LCS							
Total Kjeldahl Nitrogen			98.0		%		75-125	20-NOV-21
WG3662576-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-NOV-21
WG3662576-4	MS	L2664088-2						
Total Kjeldahl Nitrogen			92.0		%		70-130	20-NOV-21
<b>TSS-L-CL</b>								
Water								
Batch R5657562								
WG3665327-2	LCS							
Total Suspended Solids			92.2		%		85-115	25-NOV-21
WG3665327-1	MB							
Total Suspended Solids			<1.0		mg/L		1	25-NOV-21
<b>TURBIDITY-CL</b>								
Water								
Batch R5654861								
WG3662179-2	LCS							
Turbidity			103.0		%		85-115	20-NOV-21
WG3662179-1	MB							
Turbidity			<0.10		NTU		0.1	20-NOV-21



# Quality Control Report

Workorder: L2664088

Report Date: 28-NOV-21

Page 11 of 12

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2664088

Report Date: 28-NOV-21

Page 12 of 12

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	17-NOV-21 12:55	25-NOV-21 16:40	0.25	196	hours	EHTR-FM
	2	17-NOV-21 13:00	25-NOV-21 16:40	0.25	196	hours	EHTR-FM
	3	17-NOV-21 10:05	25-NOV-21 16:40	0.25	198	hours	EHTR-FM
	4	17-NOV-21 11:00	25-NOV-21 16:40	0.25	198	hours	EHTR-FM
	5	17-NOV-21 15:10	25-NOV-21 16:40	0.25	193	hours	EHTR-FM
	6	17-NOV-21 14:40	25-NOV-21 16:40	0.25	194	hours	EHTR-FM
	7	17-NOV-21 15:40	25-NOV-21 16:40	0.25	193	hours	EHTR-FM
	8	17-NOV-21 12:00	25-NOV-21 16:40	0.25	197	hours	EHTR-FM
Total Suspended Solids	1	17-NOV-21 12:55	25-NOV-21 15:35	7	8	days	EHT
	2	17-NOV-21 13:00	25-NOV-21 15:35	7	8	days	EHT
	3	17-NOV-21 10:05	25-NOV-21 15:35	7	8	days	EHT
	4	17-NOV-21 11:00	25-NOV-21 15:35	7	8	days	EHT
	5	17-NOV-21 15:10	25-NOV-21 15:35	7	8	days	EHT
	6	17-NOV-21 14:40	25-NOV-21 15:35	7	8	days	EHT
	7	17-NOV-21 15:40	25-NOV-21 15:35	7	8	days	EHT
	8	17-NOV-21 12:00	25-NOV-21 15:35	7	8	days	EHT
pH	1	17-NOV-21 12:55	19-NOV-21 10:00	0.25	45	hours	EHTR-FM
	2	17-NOV-21 13:00	19-NOV-21 10:00	0.25	45	hours	EHTR-FM
	3	17-NOV-21 10:05	19-NOV-21 10:00	0.25	48	hours	EHTR-FM
	4	17-NOV-21 11:00	19-NOV-21 10:00	0.25	47	hours	EHTR-FM
	5	17-NOV-21 15:10	19-NOV-21 10:00	0.25	43	hours	EHTR-FM
	6	17-NOV-21 14:40	19-NOV-21 10:00	0.25	43	hours	EHTR-FM
	7	17-NOV-21 15:40	19-NOV-21 10:00	0.25	42	hours	EHTR-FM
	8	17-NOV-21 12:00	19-NOV-21 10:00	0.25	46	hours	EHTR-FM

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2664088 were received on 18-NOV-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2664088-COFC

COC Number:

Page 1 of 3

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																	
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																	
Contact: Genevieve Pomerleau		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>PRIORITY (Business days)</b>			<b>EMERGENCY</b>														
Phone: Tel.:250-354-1664 ext. 53216 Cell.: 250-505-2847		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%] <input type="checkbox"/>			1 Business day [E1 - 100%] <input type="checkbox"/>														
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>			Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>														
Street: 520 Lake Street		Emails: SNC - 'genevieve.pomerleau'		Date and Time Required for all E&P TATs:																	
City/Province: Nelson, BC		vicky.lipinski@snclavalin.com		For tests that can not be performed according to the service level selected, you will be contacted.																	
Postal Code: V1L 4C6		Teck - 'crystal.sabel' and 'sarah.therrien' @teck.com		<b>Analysis Request</b>																	
<b>Invoice To</b>		<b>Invoice Distribution</b>		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																	
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		F/P P F/P																	
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: genevieve.pomerleau@snclavalin.com		DOC (C-DIS-ORG-LOW-CL)																	
Company:		payables@snclavalin.com		TOC (C-TOT-ORG-LOW-CL)																	
Contact:				BCMDG D-Met.+Hg (MET-D-BCMDG-CL)																	
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>		Total N Calc. (N-T-CALC-CL)																	
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#		Nitrate + Nitrite Calc. (N2N3-CALC-CL)																	
Job #: Greenhills Operations		Major/Minor Code: Routing Code:		Teck Routine (TECKCOAL-ROUTINE-CL)																	
PO / AFE: 658004		Requisitioner:		TKN (TKN-L-F-CL)																	
LSD:		Location:		Bicarbonate (BIC-CL)																	
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhillon 403-907-4784		Carbonate (CO3-CL)																	
		Sampler: JVG, JM		Hydroxide (OH-CL)																	
				SAMPLES ON HOLD																	
				Sample is hazardous (please provide further detail)																	
				NUMBER OF CONTAINERS																	
ALS Sample # (lab use only)		Sample Identification &/or Coordinates (This description will appear on the report)		Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type											
1		GH_MW-MC-1S_WG_2021_11_17_NP		GH_MW-MC-1S		17 Nov 21		1255		WG											
2		GH_MW-MC-1D_WG_2021_11_17_NP		GH_MW-MC-1D		17 Nov 21		1300		WG											
3		GH_MW-MC-2S_WG_2021_11_17_NP		GH_MW-MC-2S		17 Nov 21		1005		WG											
4		GH_MW-MC-2D_WG_2021_11_17_NP		GH_MW-MC-2D		17 Nov 21		11:00		WG											
		<del>GH_MW-Willow-1S_WG_2021_11_17_NP</del>		<del>GH_MW-Willow-1S</del>						WG											
		<del>GH_MW-Willow-1D_WG_2021_11_17_NP</del>		<del>GH_MW-Willow-1D</del>						WG											
		<del>GH_MW-Willow-2S_WG_2021_11_17_NP</del>		<del>GH_MW-Willow-2S</del>						WG											
		<del>GH_MW-Willow-2D_WG_2021_11_17_NP</del>		<del>GH_MW-Willow-2D</del>						WG											
		<del>GH_MW-Willow-3S_WG_2021_11_17_NP</del>		<del>GH_MW-Willow-3S</del>						WG											
		<del>GH_MW-Willow-3D_WG_2021_11_17_NP</del>		<del>GH_MW-Willow-3D</del>						WG											
		<del>GH_MW-Wolf-1S_WG_2021_11_17_NP</del>		<del>GH_MW-Wolf-1S</del>						WG											
		<del>GH_MW-Wolf-1D_WG_2021_11_17_NP</del>		<del>GH_MW-Wolf-1D</del>						WG											
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>										<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>									
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com										Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>									
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)										Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>									
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS										Cooling Initiated <input type="checkbox"/>									
												INITIAL COOLER TEMPERATURES °C									
												FINAL COOLER TEMPERATURES °C									
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>										<b>FINAL SHIPMENT RECEPTION (lab use only)</b>									
Released by: <i>[Signature]</i>		Date: 11/17/21		Time: 1:00		Received by: <i>[Signature]</i>		Date: 11/18		Time: 8:30		Received by:		Date:		Time:					

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



L2664088-COFC

COC Number:

Report To		Report Format / Distribution			Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																			
Contact and company name below will appear on the final report		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)	Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																			
Company:	SNC-Lavalin	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		PRIORITY (Business Days)	4 day [P4-20%]	<input type="checkbox"/>	EMERGENCY	1 Business day [E1 - 100%]			<input type="checkbox"/>	Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]										
Contact:	Genevieve Pomerleau						3 day [P3-25%]	<input type="checkbox"/>																
Phone:	Tel.:250-354-1664 ext. 53216. Cell.: 250-505-2847						2 day [P2-50%]	<input type="checkbox"/>																
Company address below will appear on the final report		Emails: SNC - 'genevieve.pomerleau'			Date and Time Required for all E&P TATs:																			
Street:	520 Lake Street	vicky.lipinski@sncclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																			
City/Province:	Nelson, BC	Teck - 'crystal.sabel' and 'sarah.therrien' @teck.com			Analysis Request																			
Postal Code:	V1L 4C6	Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																			
Invoice To	Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Select Invoice Distribution: <input checked="" type="checkbox"/> .EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P	P	F/P																	
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: genevieve.pomerleau@sncclavalin.com			DOC (C-DIS-ORG-LOW-CL)   TOC (C-TOT-ORG-LOW-CL)   BCMMDG D-Met.+Hg (MET-D-BCMMDG-CL)   Total N Calc. (N-T-CALC-CL)   Nitrate + Nitrite Calc. (N2N3-CALC-CL)   Teck Routine (TECKCOAL-ROUTINE-CL)   TKN (TKN-L-F-CL)   Bicarbonate (BIC-CL)   Carbonate (CO3-CL)   Hydroxide (OH-CL)																			
Company:		Emails: payables@sncclavalin.com																						
Contact:																								
Project Information		Oil and Gas Required Fields (client use)																						
ALS Account # / Quote #: MOR125/ Q72340		AFE/Cost Center:		PO#																				
Job #: Greenhills Operations		Major/Minor Code:		Routing Code:																				
PO / AFE: 658004		Requisitioner:																						
LSD:		Location:																						
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784		Sampler: JVG, JM																				
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type											SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS						
	GH_MW_Woif-2S_WG_2021 NP	GH_MW_Woif-2S			WG																			
	GH_MW_Woif-2D_WG_2021 NP	GH_MW_Woif-2D			WG																			
	GH_MW_LC1-A_WG_2021_11_17_NP	GH_MW_LC1-A			WG																			
5	GH_MW_LC1-B_WG_2021_11_17_NP	GH_MW_LC1-B	17 Nov 21	13:10	WG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
6	GH_MW_LC2-A_WG_2021_11_17_NP	GH_MW_LC2-A	17 Nov 21	14:40	WG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
7	GH_MW_LC2-B_WG_2021_11_17_NP	GH_MW_LC2-B	17 Nov 21	15:40	WG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	GH_MW_WC1-A_WG_2021 NP	GH_MW_WC1-A			WG																			
	GH_MW_WC1-B_WG_2021 NP	GH_MW_WC1-B			WG																			
	GH_MW_WC1-C_WG_2021 NP	GH_MW_WC1-C			WG																			

Drinking Water (DW) Samples <sup>1</sup> (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				SAMPLE CONDITION AS RECEIVED (lab use only)					
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com				Frozen <input type="checkbox"/>		SIF Observations Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)				Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/>		Custody seal intact Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS				Cooling Initiated <input type="checkbox"/>					
						INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C			
						4					
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (lab use only)				FINAL SHIPMENT RECEPTION (lab use only)			
Released by: <i>Den Vangred</i>		Date: 2/11/17		Time: 1700		Received by: <i>[Signature]</i>		Date: 2/11/18		Time: 1500	



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2664088-COFC

COC Number:

Page 3 of 3

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<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																			
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																			
Contact: Genevieve Pomerleau		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		PRIORITY (Business Days)			EMERGENCY																
Phone: Tel.: 250-354-1664 ext. 53216 Cell.: 250-505-2847		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%] <input type="checkbox"/>			1 Business day [E1 - 100%] <input type="checkbox"/>																
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>			Same Day, Weekend or Statutory holiday [E2 - 200%] <input type="checkbox"/>																
Street: 520 Lake Street		Emails: SNC - 'genevieve.pomerleau'		2 day [P2-50%] <input type="checkbox"/>			Date and Time Required for all E&P TATs:																
City/Province: Nelson, BC		vicky.lipinski@snclavalin.com		For tests that can not be performed according to the service level selected, you will be contacted.																			
Postal Code: V1L 4C6		Teck - 'crystal.sabel' and 'sarah.therrien'@teck.com		<b>Analysis Request</b>																			
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>Invoice Distribution</b>		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																			
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		F/P P F/P P																			
Company:		Emails: tyler.gale@snclavalin.com		DOC (C-DIS-ORG-LOW-CL)																			
Contact:		payables@snclavalin.com		TOC (C-TOT-ORG-LOW-CL)																			
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>		BCMDG D-Met.+Hg (MET-D-BCMDG-CL)																			
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#		Total N Calc. (N-T-CALC-CL)																			
Job #: Greenhills Operations		Major/Minor Code: Routing Code:		Nitrate + Nitrite Calc. (N2N3-CALC-CL)																			
PO / AFE: 658004		Requisitioner:		Teck Routine (TECKCOAL-ROUTINE-CL)																			
LSD:		Location:		TKN (TKN-L-F-CL)																			
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784		Sampler:		Bicarbonate (BIC-CL)																	
ALS Sample # (lab use only)		Sample Identification &/or Coordinates		Teck Sample Location (sys_loc_code)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type		Carbonate (CO3-CL)											
GH_MW_MC10-A_WG_2021_11 NP		GH_MW_MC10-A		17 NOV 21		12:00		WG		Hydroxide (OH-CL)													
GH_MW_MC11-A_WG_2021 NP		GH_MW_MC11-A						WG		SAMPLES ON HOLD													
GH_MW_MC10-B_WG_2021 NP		GH_MW_MC10-B						WG		Sample is hazardous (please provide further details)													
GH_MW_MC10-C_WG_2021 NP		GH_MW_MC10-C						WG		NUMBER OF CONTAINERS													
Drinking Water (DW) Samples <sup>1</sup> (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)																			
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																			
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																			
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input type="checkbox"/>																			
				INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C																			
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																	
Released by:		Date:		Time:		Received by:		Date:		Time:		Received by:		Date:		Time:							

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1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



SNC-Lavalin  
ATTN: Tyler Gale  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 24-NOV-21  
Report Date: 14-FEB-22 18:09 (MT)  
Version: FINAL REV. 2

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2665992  
Project P.O. #: 674842 / 681309  
Job Reference: 674842  
C of C Numbers:  
Legal Site Desc:

Comments: Correct Sample ID

Lovepreet Kaur  
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2665992-1	L2665992-2	L2665992-3	L2665992-4	L2665992-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	23-NOV-21	23-NOV-21	23-NOV-21	23-NOV-21	23-NOV-21
		Sampled Time	12:50	12:40	15:30	14:10	11:00
		Client ID	GH_MW_GHC_2A _WG_2021_11_23 _NP	GH_MW_GHC_2B _WG_2021_11_23 _NP	GH_MW_GHC_3B _WG_2021_11_23 _NP	GH_MW_GHC_4B _WG_2021_11_23 _NP	GH_MW_GAC_1 WG_2021_11_23 NP
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		1210	687	672	1120	1670
	Hardness (as CaCO3) (mg/L)		685	369	380	646	1040
	pH (pH)		7.78	8.04	8.19	8.12	8.04
	ORP (mV)		382	456	483	462	310
	Total Suspended Solids (mg/L)		11.9	4.7	<1.0	4.0	12.1
	Total Dissolved Solids (mg/L)		906	461	406	827	1510
	Turbidity (NTU)		7.81	18.6	0.32	1.84	18.9
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		18.2	7.6	13.6	11.5	8.1
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		345	325	366	273	154
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		345	325	366	273	154
	Ammonia as N (mg/L)		0.217	0.0064	0.0190	<0.0050	0.0462
	Bicarbonate (HCO3) (mg/L)		420	397	447	333	188
	Bromide (Br) (mg/L)		<0.25 <sup>DLDS</sup>	<0.050	<0.050	<0.25 <sup>DLDS</sup>	<0.25 <sup>DLDS</sup>
	Carbonate (CO3) (mg/L)		<5.0 <sup>DLDS</sup>	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)		<0.50 <sup>DLDS</sup>	1.44	0.98	5.95	2.68
	Fluoride (F) (mg/L)		0.14	0.108	0.205	0.12	0.10
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)		98.2	90.0	92.0	89.4	89.1
	Nitrate and Nitrite (as N) (mg/L)		<0.025 <sup>DLDS</sup>	0.0971	0.426	1.43	<0.025 <sup>DLDS</sup>
	Nitrate (as N) (mg/L)		<0.025 <sup>DLDS</sup>	0.0971	0.424	1.43	<0.025 <sup>DLDS</sup>
	Nitrite (as N) (mg/L)		<0.0050 <sup>DLDS</sup>	<0.0010	0.0026	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>
	Total Kjeldahl Nitrogen (mg/L)		0.212	0.055	0.113	0.215	0.094
	Total Nitrogen (mg/L)		0.212	0.152	0.539	1.65	0.094
	Orthophosphate-Dissolved (as P) (mg/L)		0.0027	0.0038	0.0024	0.0049	0.0010
	Phosphorus (P)-Total (mg/L)		0.0126	0.0127	<0.0020	0.0050	0.0031
	Sulfate (SO4) (mg/L)		433	100	54.8	435	983
	Anion Sum (meq/L)		15.9	8.64	8.53	14.8	23.6
	Cation Sum (meq/L)		15.6	7.78	7.85	13.2	21.1
Cation - Anion Balance (%)		-0.9	-5.3	-4.2	-5.6	-5.7	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		1.10	1.97	2.21	2.21	2.93
	Total Organic Carbon (mg/L)		0.97	1.77	2.91	2.11	2.73
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0010	0.0028	<0.0010	<0.0010	<0.0050 <sup>DLDS</sup>

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2665992-6 WG 23-NOV-21 08:40 GH_MW_FC2_WG _2021_11_23_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	541			
	Hardness (as CaCO3) (mg/L)	229			
	pH (pH)	8.26			
	ORP (mV)	416			
	Total Suspended Solids (mg/L)	2.6			
	Total Dissolved Solids (mg/L)	310			
	Turbidity (NTU)	1.54			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	3.7			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	287			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	287			
	Ammonia as N (mg/L)	0.265			
	Bicarbonate (HCO3) (mg/L)	350			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	3.94			
	Fluoride (F) (mg/L)	0.181			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	89.3			
	Nitrate and Nitrite (as N) (mg/L)	0.0355			
	Nitrate (as N) (mg/L)	0.0302			
	Nitrite (as N) (mg/L)	0.0053			
	Total Kjeldahl Nitrogen (mg/L)	0.290			
	Total Nitrogen (mg/L)	0.326			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0019			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	35.2			
	Anion Sum (meq/L)	6.59			
	Cation Sum (meq/L)	5.89			
	Cation - Anion Balance (%)	-5.6			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.44			
	Total Organic Carbon (mg/L)	1.36			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2665992-1	L2665992-2	L2665992-3	L2665992-4	L2665992-5
					WG	WG	WG	WG	WG
		23-NOV-21	12:50		23-NOV-21	23-NOV-21	23-NOV-21	23-NOV-21	23-NOV-21
					12:50	12:40	15:30	14:10	11:00
					GH_MW_GHC_2A	GH_MW_GHC_2B	GH_MW_GHC_3B	GH_MW_GHC_4B	GH_MW_GAC_1
					_WG_2021_11_23	_WG_2021_11_23	_WG_2021_11_23	_WG_2021_11_23	WG_2021_11_23
					_NP	_NP	_NP	_NP	_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050
	Arsenic (As)-Dissolved (mg/L)	0.00032	<0.00010	0.00011	0.00012	0.00193			DLDS
	Barium (Ba)-Dissolved (mg/L)	0.00979	0.0601	0.0455	0.0655	0.0200			DLDS
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.00010			DLDS
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.00025			DLDS
	Boron (B)-Dissolved (mg/L)	0.225	0.054	0.026	0.018	<0.050			DLDS
	Cadmium (Cd)-Dissolved (mg/L)	0.0000232	0.0000095	0.0000053	0.0000382	<0.000025			DLDS
	Calcium (Ca)-Dissolved (mg/L)	213	108	98.4	156	294			DLDS
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00016	<0.00010	0.00013	<0.00050			DLDS
	Cobalt (Co)-Dissolved (mg/L)	0.00026	<0.00010	<0.00010	<0.00010	<0.00050			DLDS
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	0.00025	<0.0010			DLDS
	Iron (Fe)-Dissolved (mg/L)	0.041	<0.010	<0.010	<0.010	2.09			DLDS
	Lead (Pb)-Dissolved (mg/L)	0.000197	<0.000050	<0.000050	<0.000050	<0.00025			DLDS
	Lithium (Li)-Dissolved (mg/L)	0.0540	0.0179	0.0248	0.0099	0.0114			DLDS
	Magnesium (Mg)-Dissolved (mg/L)	37.0	23.9	32.7	62.5	73.4			DLDS
	Manganese (Mn)-Dissolved (mg/L)	1.22	0.00050	0.0106	0.00012	0.658			DLDS
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			DLDS
	Molybdenum (Mo)-Dissolved (mg/L)	0.000358	0.000456	0.00131	0.000466	0.00155			DLDS
	Nickel (Ni)-Dissolved (mg/L)	0.00120	0.00061	<0.00050	0.00055	<0.0025			DLDS
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.25			DLDS
	Potassium (K)-Dissolved (mg/L)	3.74	1.41	1.55	1.73	1.49			DLDS
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000337	0.000333	0.0402	<0.00025			DLDS
	Silicon (Si)-Dissolved (mg/L)	7.27	4.93	5.01	5.01	5.07			DLDS
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050			DLDS
	Sodium (Na)-Dissolved (mg/L)	40.9	8.61	4.83	5.89	4.40			DLDS
	Strontium (Sr)-Dissolved (mg/L)	0.799	0.271	0.464	0.323	0.587			DLDS
	Sulfur (S)-Dissolved (mg/L)	152	34.6	19.2	144	320			DLDS
	Thallium (Tl)-Dissolved (mg/L)	0.000015	<0.000010	<0.000010	<0.000010	<0.000050			DLDS
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050			DLDS
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.0015			DLDS
	Uranium (U)-Dissolved (mg/L)	0.000316	0.000563	0.00199	0.00159	0.000415			DLDS
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.0025			DLDS
	Zinc (Zn)-Dissolved (mg/L)	0.0030	0.0013	<0.0010	<0.0010	<0.0050			DLDS
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.0010			DLDS

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2665992-6 WG 23-NOV-21 08:40 GH_MW_FC2_WG _2021_11_23_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	0.00026			
	Arsenic (As)-Dissolved (mg/L)	0.00013			
	Barium (Ba)-Dissolved (mg/L)	0.0775			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.154			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000090			
	Calcium (Ca)-Dissolved (mg/L)	55.5			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	0.00039			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	0.011			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0259			
	Magnesium (Mg)-Dissolved (mg/L)	21.9			
	Manganese (Mn)-Dissolved (mg/L)	0.106			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00250			
	Nickel (Ni)-Dissolved (mg/L)	0.00094			
	Phosphorus (P)-Dissolved (mg/L)	<0.050			
	Potassium (K)-Dissolved (mg/L)	1.78			
	Selenium (Se)-Dissolved (mg/L)	0.000088			
	Silicon (Si)-Dissolved (mg/L)	4.64			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	28.7			
	Strontium (Sr)-Dissolved (mg/L)	1.76			
	Sulfur (S)-Dissolved (mg/L)	11.6			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.00128			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0013			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Ammonia as N	MS-B	L2665992-1, -2, -3, -4, -5, -6
Matrix Spike	Sulfate (SO4)	MS-B	L2665992-1, -2, -3, -4, -5, -6

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2665992

Report Date: 14-FEB-22

Page 1 of 10

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Tyler Gale

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5658026</b>							
<b>WG3665935-3</b>	<b>DUP</b>	<b>L2665992-3</b>						
Acidity (as CaCO3)		13.6	14.9		mg/L	8.9	20	25-NOV-21
<b>WG3665935-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			97.8		%		85-115	25-NOV-21
<b>WG3665935-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	25-NOV-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5658826</b>							
<b>WG3666844-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			111.1		%		85-115	26-NOV-21
<b>WG3666844-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-NOV-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5660100</b>							
<b>WG3667582-6</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			94.1		%		80-120	30-NOV-21
<b>WG3667582-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-NOV-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5658826</b>							
<b>WG3666844-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	26-NOV-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5657923</b>							
<b>WG3665793-3</b>	<b>DUP</b>	<b>L2665992-2</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-NOV-21
<b>WG3665793-2</b>	<b>LCS</b>							
Bromide (Br)			103.9		%		85-115	25-NOV-21
<b>WG3665793-6</b>	<b>LCS</b>							
Bromide (Br)			98.8		%		85-115	25-NOV-21
<b>WG3665793-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	25-NOV-21
<b>WG3665793-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	25-NOV-21
<b>WG3665793-4</b>	<b>MS</b>	<b>L2665992-2</b>						
Bromide (Br)			106.5		%		75-125	25-NOV-21
	<b>Water</b>							



## Quality Control Report

Workorder: L2665992

Report Date: 14-FEB-22

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5658306</b>							
<b>WG3666225-3</b>	<b>DUP</b>	<b>L2665992-1</b>						
Dissolved Organic Carbon		1.10	1.14		mg/L	2.9	20	26-NOV-21
<b>WG3666225-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.3		%		80-120	26-NOV-21
<b>WG3666225-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-NOV-21
<b>WG3666225-4</b>	<b>MS</b>	<b>L2665992-1</b>						
Dissolved Organic Carbon			99.1		%		70-130	26-NOV-21
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5658306</b>							
<b>WG3666225-3</b>	<b>DUP</b>	<b>L2665992-1</b>						
Total Organic Carbon		0.97	0.99		mg/L	2.8	20	26-NOV-21
<b>WG3666225-2</b>	<b>LCS</b>							
Total Organic Carbon			105.0		%		80-120	26-NOV-21
<b>WG3666225-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	26-NOV-21
<b>WG3666225-4</b>	<b>MS</b>	<b>L2665992-1</b>						
Total Organic Carbon			101.4		%		70-130	26-NOV-21
<b>CL-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5657923</b>							
<b>WG3665793-3</b>	<b>DUP</b>	<b>L2665992-2</b>						
Chloride (Cl)		1.44	1.42		mg/L	1.3	20	25-NOV-21
<b>WG3665793-2</b>	<b>LCS</b>							
Chloride (Cl)			102.0		%		85-115	25-NOV-21
<b>WG3665793-6</b>	<b>LCS</b>							
Chloride (Cl)			100.4		%		85-115	25-NOV-21
<b>WG3665793-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	25-NOV-21
<b>WG3665793-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	25-NOV-21
<b>WG3665793-4</b>	<b>MS</b>	<b>L2665992-2</b>						
Chloride (Cl)			108.1		%		75-125	25-NOV-21
<b>CO3-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5658826</b>							
<b>WG3666844-1</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	26-NOV-21
<b>EC-L-PCT-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2665992

Report Date: 14-FEB-22

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch R5658826								
WG3666844-2 LCS								
Conductivity (@ 25C)			98.4		%		90-110	26-NOV-21
WG3666844-1 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	26-NOV-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch R5657923								
WG3665793-3 DUP								
Fluoride (F)		L2665992-2 0.108	0.108		mg/L	0.5	20	25-NOV-21
WG3665793-2 LCS								
Fluoride (F)			97.2		%		90-110	25-NOV-21
WG3665793-6 LCS								
Fluoride (F)			97.3		%		90-110	25-NOV-21
WG3665793-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	25-NOV-21
WG3665793-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	25-NOV-21
WG3665793-4 MS								
Fluoride (F)		L2665992-2	106.5		%		75-125	25-NOV-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
Batch R5658173								
WG3666053-2 LCS								
Mercury (Hg)-Dissolved			99.4		%		80-120	26-NOV-21
WG3666053-1 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	26-NOV-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
Batch R5660100								
WG3667582-6 LCS								
Aluminum (Al)-Dissolved			97.0		%		80-120	30-NOV-21
Antimony (Sb)-Dissolved			106.7		%		80-120	30-NOV-21
Arsenic (As)-Dissolved			99.7		%		80-120	30-NOV-21
Barium (Ba)-Dissolved			98.3		%		80-120	30-NOV-21
Bismuth (Bi)-Dissolved			97.2		%		80-120	30-NOV-21
Boron (B)-Dissolved			90.6		%		80-120	30-NOV-21
Cadmium (Cd)-Dissolved			99.1		%		80-120	30-NOV-21
Calcium (Ca)-Dissolved			92.8		%		80-120	30-NOV-21
Chromium (Cr)-Dissolved			96.5		%		80-120	30-NOV-21
Cobalt (Co)-Dissolved			98.6		%		80-120	30-NOV-21





## Quality Control Report

Workorder: L2665992

Report Date: 14-FEB-22

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5660100</b>							
<b>WG3667582-6</b>		<b>LCS</b>						
Copper (Cu)-Dissolved			95.4		%		80-120	30-NOV-21
Iron (Fe)-Dissolved			93.3		%		80-120	30-NOV-21
Lead (Pb)-Dissolved			95.8		%		80-120	30-NOV-21
Lithium (Li)-Dissolved			98.3		%		80-120	30-NOV-21
Magnesium (Mg)-Dissolved			94.3		%		80-120	30-NOV-21
Manganese (Mn)-Dissolved			94.8		%		80-120	30-NOV-21
Molybdenum (Mo)-Dissolved			99.97		%		80-120	30-NOV-21
Nickel (Ni)-Dissolved			97.5		%		80-120	30-NOV-21
Phosphorus (P)-Dissolved			99.5		%		70-130	30-NOV-21
Potassium (K)-Dissolved			97.8		%		80-120	30-NOV-21
Selenium (Se)-Dissolved			91.7		%		80-120	30-NOV-21
Silicon (Si)-Dissolved			96.6		%		60-140	30-NOV-21
Silver (Ag)-Dissolved			100.5		%		80-120	30-NOV-21
Sodium (Na)-Dissolved			94.9		%		80-120	30-NOV-21
Strontium (Sr)-Dissolved			94.3		%		80-120	30-NOV-21
Sulfur (S)-Dissolved			101.1		%		80-120	30-NOV-21
Thallium (Tl)-Dissolved			94.8		%		80-120	30-NOV-21
Tin (Sn)-Dissolved			92.8		%		80-120	30-NOV-21
Titanium (Ti)-Dissolved			95.4		%		80-120	30-NOV-21
Uranium (U)-Dissolved			100.7		%		80-120	30-NOV-21
Vanadium (V)-Dissolved			98.2		%		80-120	30-NOV-21
Zinc (Zn)-Dissolved			94.4		%		80-120	30-NOV-21
Zirconium (Zr)-Dissolved			100.3		%		80-120	30-NOV-21
<b>WG3667582-5</b>		<b>MB</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-NOV-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-NOV-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-NOV-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-NOV-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-21



## Quality Control Report

Workorder: L2665992

Report Date: 14-FEB-22

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5660100</b>							
<b>WG3667582-5</b>	<b>MB</b>							
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-NOV-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-NOV-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-NOV-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-NOV-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-NOV-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	30-NOV-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-NOV-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-NOV-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-NOV-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-NOV-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	30-NOV-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-NOV-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-NOV-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-NOV-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	30-NOV-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5659425</b>							
<b>WG3667337-3</b>	<b>DUP</b>	<b>L2665992-1</b>						
Ammonia as N		0.217	0.222		mg/L	2.4	20	29-NOV-21
<b>WG3667337-2</b>	<b>LCS</b>							
Ammonia as N			102.9		%		85-115	29-NOV-21
<b>WG3667337-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-NOV-21
<b>WG3667337-4</b>	<b>MS</b>	<b>L2665992-1</b>						
Ammonia as N			N/A	MS-B	%		-	29-NOV-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2665992

Report Date: 14-FEB-22

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5657923</b>							
<b>WG3665793-3</b>	<b>DUP</b>	<b>L2665992-2</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-NOV-21
<b>WG3665793-2</b>	<b>LCS</b>							
Nitrite (as N)			104.4		%		90-110	25-NOV-21
<b>WG3665793-6</b>	<b>LCS</b>							
Nitrite (as N)			98.0		%		90-110	25-NOV-21
<b>WG3665793-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	25-NOV-21
<b>WG3665793-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	25-NOV-21
<b>WG3665793-4</b>	<b>MS</b>	<b>L2665992-2</b>						
Nitrite (as N)			104.7		%		75-125	25-NOV-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5657923</b>							
<b>WG3665793-3</b>	<b>DUP</b>	<b>L2665992-2</b>						
Nitrate (as N)		0.0971	0.0965		mg/L	0.6	20	25-NOV-21
<b>WG3665793-2</b>	<b>LCS</b>							
Nitrate (as N)			102.6		%		90-110	25-NOV-21
<b>WG3665793-6</b>	<b>LCS</b>							
Nitrate (as N)			100.3		%		90-110	25-NOV-21
<b>WG3665793-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	25-NOV-21
<b>WG3665793-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	25-NOV-21
<b>WG3665793-4</b>	<b>MS</b>	<b>L2665992-2</b>						
Nitrate (as N)			106.8		%		75-125	25-NOV-21
<b>OH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5658826</b>							
<b>WG3666844-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	26-NOV-21
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5661811</b>							
<b>WG3669076-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			92.9		%		80-120	02-DEC-21
<b>WG3669076-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-DEC-21
<b>PH-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2665992

Report Date: 14-FEB-22

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R5658826							
<b>WG3666844-2</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	26-NOV-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5657610							
<b>WG3665412-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.0		%		80-120	25-NOV-21
<b>WG3665412-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	25-NOV-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5657923							
<b>WG3665793-3</b>	<b>DUP</b>	<b>L2665992-2</b>						
Sulfate (SO4)		100	100		mg/L	0.1	20	25-NOV-21
<b>WG3665793-2</b>	<b>LCS</b>							
Sulfate (SO4)			104.6		%		90-110	25-NOV-21
<b>WG3665793-6</b>	<b>LCS</b>							
Sulfate (SO4)			102.7		%		90-110	25-NOV-21
<b>WG3665793-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	25-NOV-21
<b>WG3665793-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	25-NOV-21
<b>WG3665793-4</b>	<b>MS</b>	<b>L2665992-2</b>						
Sulfate (SO4)			N/A	MS-B	%		-	25-NOV-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5658904							
<b>WG3666296-2</b>	<b>LCS</b>							
Total Dissolved Solids			94.7		%		85-115	27-NOV-21
<b>WG3666296-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	27-NOV-21
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5658065							
<b>WG3665723-3</b>	<b>DUP</b>	<b>L2665992-1</b>						
Total Kjeldahl Nitrogen		0.212	0.212		mg/L	0.0	20	25-NOV-21
<b>WG3665723-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.0		%		75-125	25-NOV-21
<b>WG3665723-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-NOV-21
<b>WG3665723-4</b>	<b>MS</b>	<b>L2665992-2</b>						



## Quality Control Report

Workorder: L2665992

Report Date: 14-FEB-22

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5658065							
<b>WG3665723-4 MS</b>		<b>L2665992-2</b>						
Total Kjeldahl Nitrogen			108.0		%		70-130	25-NOV-21
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5658859							
<b>WG3666294-2 LCS</b>								
Total Suspended Solids			94.4		%		85-115	28-NOV-21
<b>WG3666294-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	28-NOV-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5656841							
<b>WG3664514-2 LCS</b>								
Turbidity			103.4		%		85-115	24-NOV-21
<b>WG3664514-1 MB</b>								
Turbidity			<0.10		NTU		0.1	24-NOV-21

# Quality Control Report

Workorder: L2665992

Report Date: 14-FEB-22

Page 9 of 10

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2665992

Report Date: 14-FEB-22

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	23-NOV-21 12:50	29-NOV-21 12:00	0.25	143	hours	EHTR-FM
	2	23-NOV-21 12:40	29-NOV-21 12:00	0.25	143	hours	EHTR-FM
	3	23-NOV-21 15:30	29-NOV-21 12:00	0.25	140	hours	EHTR-FM
	4	23-NOV-21 14:10	29-NOV-21 12:00	0.25	142	hours	EHTR-FM
	5	23-NOV-21 11:00	29-NOV-21 12:00	0.25	145	hours	EHTR-FM
	6	23-NOV-21 08:40	29-NOV-21 12:00	0.25	147	hours	EHTR-FM
pH							
	1	23-NOV-21 12:50	26-NOV-21 13:00	0.25	72	hours	EHTR-FM
	2	23-NOV-21 12:40	26-NOV-21 13:00	0.25	72	hours	EHTR-FM
	3	23-NOV-21 15:30	26-NOV-21 13:00	0.25	70	hours	EHTR-FM
	4	23-NOV-21 14:10	26-NOV-21 13:00	0.25	71	hours	EHTR-FM
	5	23-NOV-21 11:00	26-NOV-21 13:00	0.25	74	hours	EHTR-FM
	6	23-NOV-21 08:40	26-NOV-21 13:00	0.25	76	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2665992 were received on 24-NOV-21 08:37.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2665992-COFC

<b>Report To</b> Contact and company name below will appear on the final report			<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>														
Company: SNC-Lavalin			Select Report Format: <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply														
Contact: Tyler Gale			Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			<b>4 day [P4-20%]</b> <input type="checkbox"/>					<b>1 Business day [E1 - 100%]</b> <input type="checkbox"/>									
Phone: Tel.:250-464-5672			<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			<b>3 day [P3-25%]</b> <input type="checkbox"/>					<b>Same Day, Weekend or Statutory holiday [E2 -200%]</b> <input type="checkbox"/>									
Company address below will appear on the final report			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			<b>2 day [P2-50%]</b> <input type="checkbox"/>					<b>(Laboratory opening fees may apply)</b> <input type="checkbox"/>									
Street: 4500 Mennie Rd			Emails: SNC - 'Tyler.Gale', 'Jen.vonGradulewski'			Date and Time Required for all E&P TATs:														
City/Province: Cranbrook, BC			Stefan Homphries, Vicky Lipinski,			For tests that can not be performed according to the service level selected, you will be contacted.														
Postal Code: V1C 4J6			Teck: Crystal.Sabel@teck.com Sarah.Thornton			<b>Analysis Request</b>														
<b>Invoice To</b>			<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below														
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P P F/P P														
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			Emails: Tyler.Gale@snc.lavalin.com			DOC (C-DIS-ORG-LOW-CL)														
Company:			payables@snc.lavalin.com			TOC (C-TOT-ORG-LOW-CL)														
Contact:						BC MDG D-Met. + Hg (TECKCOAL-MET-D)														
<b>Project Information</b>			<b>Oil and Gas Required Fields (client use)</b>			Total N Calc. (N-T-CALC-CL)														
ALS Account # / Quote #: MOR125 / Q78198			AFE/Cost Center: PO#			Nitrate + Nitrite Calc. (N2N3-CALC-CL)														
Job #: 674842			Major/Minor Code: Routing Code:			Teck Routine (TECKCOAL-ROUTINE-CL)														
PO / AFE: 674842 / 1681309			Requisitioner: Location:			TKN (TKN-L-F-CL)														
LSD:			ALS Contact: Sampler: JNGJL			Bicarbonate (BIC-CL)														
<b>ALS Lab Work Order # (lab use only):</b>			<b>ALS Contact:</b>			Carbonate (CO3-CL)														
<b>ALS Sample # (lab use only)</b>			<b>Sample Identification &amp;/or Coordinates</b>			<b>Teck Sample Location (sys_loc_code)</b>			<b>Date (dd-mmm-yy)</b>		<b>Time (hh:mm)</b>		<b>Sample Type</b>							
This description will appear on the report			For Teck data upload to EQUIS database																	
GH_MW_GHC_2A_WG_2021_11-23_NP			GH_MW_GHC_2A			23 Nov 21		12:50		WG		R		R R R R R R R R R R R R R R R R R R R R R R						
GH_MW_GHC_2B_WG_2021_11-23_NP			GH_MW_GHC_2B			23 Nov 21		12:40		WG		R		R R R R R R R R R R R R R R R R R R R R R R						
GH_MW_GHC_3B_WG_2021_11-23_NP			GH_MW_GHC_3B			23 Nov 21		15:30		WG		R		R R R R R R R R R R R R R R R R R R R R R R						
GH_MW_GHC_4B_WG_2021_11-23_NP			GH_MW_GHC_4B			23 Nov 21		14:10		WG		R		R R R R R R R R R R R R R R R R R R R R R R						
GH_MW_GAC_1_WG_2021_11-23_NP			GH_MW_GAC_1			23 Nov 21		11:00		WG		R		R R R R R R R R R R R R R R R R R R R R R R						
<del>GH_MW_GAC_2_WG_2021_11-23_NP</del>			<del>GH_MW_GAC_2</del>			<del></del>		<del></del>		<del>WG</del>		<del>R</del>		<del>R R R R R R R R R R R R R R R R R R R R R R</del>						
<del>GH_MW_E1_WG_2021_11-23_NP</del>			<del>GH_MW_E1_1A</del>			<del></del>		<del></del>		<del>WG</del>		<del>R</del>		<del>R R R R R R R R R R R R R R R R R R R R R R</del>						
<del>GH_MW_TC_1_WG_2021_11-23_NP</del>			<del>GH_MW_TC_1</del>			<del></del>		<del></del>		<del>WG</del>		<del>R</del>		<del>R R R R R R R R R R R R R R R R R R R R R R</del>						
<del>GH_MW_FC1_WG_2021_11-23_NP</del>			<del>GH_MW_FC1</del>			<del></del>		<del></del>		<del>WG</del>		<del>R</del>		<del>R R R R R R R R R R R R R R R R R R R R R R</del>						
GH_MW_FC2_WG_2021_11-23_NP			GH_MW_FC2			23 Nov 21		8:40		WG		R		R R R R R R R R R R R R R R R R R R R R R R						
<del>GH_MW_FC_3_WG_2021_11-23_NP</del>			<del>GH_MW_FC_3</del>			<del></del>		<del></del>		<del>WG</del>		<del>R</del>		<del>R R R R R R R R R R R R R R R R R R R R R R</del>						
<b>Drinking Water (DW) Samples (client use)</b>			<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>						<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>											
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO			Quote: G75429						Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>											
Are samples for human consumption/use? <input checked="" type="checkbox"/> NO			Teck Facility Name: (please select the applicable Facility)						Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>											
			GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS						Cooling Initiated <input type="checkbox"/>											
									INITIAL COOLER TEMPERATURES °C											
									FINAL COOLER TEMPERATURES °C											
									2											
<b>SHIPMENT RELEASE (client use)</b>			<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>						<b>FINAL SHIPMENT RECEPTION (lab use only)</b>											
Released by: Ryan Schoeman			Received by:						Received by:											
Date: 2021-11-23			Date:						Date: 11/24/21											
Time: 1700			Time:						Time: 8:37											





SNC-Lavalin  
ATTN: KIM HARRER  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 27-NOV-21  
Report Date: 07-DEC-21 08:41 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2667104  
Project P.O. #: 683032  
Job Reference:  
C of C Numbers: 674842-2020  
Legal Site Desc:

Lovepreet Kaur  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2667104-1 WG 26-NOV-21 12:00 GH_MW_MC10A_ WG_2021_11_26_ NP	L2667104-2 WG 26-NOV-21 12:00 GH_MW_MC10B_ WG_2021_11_26_ NP	L2667104-3 WG 26-NOV-21 12:00 GH_MW_MC10C_ WG_2021_11_26_ NP	L2667104-4 WG 26-NOV-21 10:10 GH_MW_EF1A_W G_2021_11_26_NP	L2667104-5 WG 26-NOV-21 10:00 GH_MW_EF1B_W G_2021_11_26_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	322	<2.0	<2.0	362	318
	Hardness (as CaCO3) (mg/L)	186	<0.50	<0.50	180	184
	pH (pH)	8.26	5.51	5.11	7.83	8.28
	ORP (mV)	486	479	500	450	464
	Total Suspended Solids (mg/L)	1.2	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	209	<10	<10	193	205
	Turbidity (NTU)	0.39	<0.10	<0.10	<0.10	0.31
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	1.8	1.9	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	158	<1.0	<1.0	138	156
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	158	<1.0	<1.0	138	156
	Ammonia as N (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0102
	Bicarbonate (HCO3) (mg/L)	192	<5.0	<5.0	169	190
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	0.73	<0.10	<0.10	0.86	0.74
	Fluoride (F) (mg/L)	0.154	<0.020	<0.020	0.161	0.153
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	99.9	0.0	0.0	108	99.9
	Nitrate and Nitrite (as N) (mg/L)	0.320	<0.0051	<0.0051	0.315	0.320
	Nitrate (as N) (mg/L)	0.320	<0.0050	<0.0050 <sup>HTD</sup>	0.315	0.320
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.134	<0.050	<0.050	<0.050	0.099
	Total Nitrogen (mg/L)	0.454	<0.050	<0.050	0.315	0.418
	Orthophosphate-Dissolved (as P) (mg/L)	0.0021	0.0010	<0.0010	0.0014	0.0019
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	0.0026	<0.0020
	Sulfate (SO4) (mg/L)	27.8	<0.30	<0.30	26.6	27.9
	Anion Sum (meq/L)	3.78	<0.10	<0.10	3.38	3.74
	Cation Sum (meq/L)	3.77	<0.10	<0.10	3.66	3.74
Cation - Anion Balance (%)	-0.1	0.0	0.0	4.0	0.0	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.25	0.68 <sup>RRV</sup>	<0.50	1.08	0.81
	Total Organic Carbon (mg/L)	1.08	<0.50 <sup>RRV</sup>	<0.50	0.98	1.16
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0011	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2667104-1 WG 26-NOV-21 12:00 GH_MW_MC10A_ WG_2021_11_26_ NP	L2667104-2 WG 26-NOV-21 12:00 GH_MW_MC10B_ WG_2021_11_26_ NP	L2667104-3 WG 26-NOV-21 12:00 GH_MW_MC10C_ WG_2021_11_26_ NP	L2667104-4 WG 26-NOV-21 10:10 GH_MW_EF1A_W G_2021_11_26_NP	L2667104-5 WG 26-NOV-21 10:00 GH_MW_EF1B_W G_2021_11_26_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0569	<0.00010	<0.00010	0.0600	0.0568
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000081	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	53.3	<0.050	<0.050	50.8	52.3
	Chromium (Cr)-Dissolved (mg/L)	0.00027	<0.00010	<0.00010	0.00026	0.00022
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00023 <sup>RRV</sup>	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0027	<0.0010	<0.0010	0.0033	0.0026
	Magnesium (Mg)-Dissolved (mg/L)	12.8	<0.0050	<0.0050	12.9	13.0
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.00011 <sup>RRV</sup>	<0.00010	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00100	<0.000050	<0.000050	0.00104	0.000964
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.38	<0.10	<0.10	0.40	0.38
	Selenium (Se)-Dissolved (mg/L)	0.00238	<0.000050	<0.000050	0.00207	0.00210
	Silicon (Si)-Dissolved (mg/L)	1.90	<0.050	<0.050	2.08	1.89
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.10	<0.050	<0.050	1.25	1.04
	Strontium (Sr)-Dissolved (mg/L)	0.208	<0.00020	<0.00020	0.199	0.209
	Sulfur (S)-Dissolved (mg/L)	9.31	<0.50	<0.50	8.18	9.27
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000764	<0.000010	<0.000010	0.000733	0.000754
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.		
RRV	Reported Result Verified By Repeat Analysis		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)

## Reference Information

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL**      Water      Dissolved Metals in Water by CRC ICPMS      APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL**      Water      Total Nitrogen (Calculation)      APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL**      Water      Nitrate+Nitrite      CALCULATION

**NH3-L-F-CL**      Water      Ammonia, Total (as N)      J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL**      Water      Nitrite in Water by IC (Low Level)      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**      Water      Nitrate in Water by IC (Low Level)      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL**      Water      Hydroxide in Water      APHA 2320 B-Potentiometric Titration

**ORP-CL**      Water      Oxidation reduction potential by elect.      ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**      Water      Phosphorus (P)-Total      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL**      Water      pH      APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**      Water      Orthophosphate-Dissolved (as P)      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**      Water      Sulfate in Water by IC      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**      Water      Total Dissolved Solids      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

## Reference Information

<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

674842-2020

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2667104

Report Date: 07-DEC-21

Page 1 of 12

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: KIM HARRER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
Batch	R5660107							
<b>WG3668296-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.1		%		85-115	30-NOV-21
<b>WG3668296-1</b>	<b>MB</b>							
Acidity (as CaCO3)			2.0		mg/L		2	30-NOV-21
<b>ALK-MAN-CL</b>		<b>Water</b>						
Batch	R5659400							
<b>WG3667434-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.5		%		85-115	29-NOV-21
<b>WG3667434-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-NOV-21
<b>BE-D-L-CCMS-CL</b>		<b>Water</b>						
Batch	R5667037							
<b>WG3670416-3</b>	<b>DUP</b>	<b>L2667104-2</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	06-DEC-21
<b>WG3670416-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.8		%		80-120	06-DEC-21
<b>WG3670416-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-DEC-21
<b>WG3670416-4</b>	<b>MS</b>	<b>L2667104-2</b>						
Beryllium (Be)-Dissolved			94.3		%		70-130	06-DEC-21
<b>BIC-CL</b>		<b>Water</b>						
Batch	R5659400							
<b>WG3667434-7</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	29-NOV-21
<b>BR-L-IC-N-CL</b>		<b>Water</b>						
Batch	R5659465							
<b>WG3667473-3</b>	<b>DUP</b>	<b>L2667104-2</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	28-NOV-21
<b>WG3667473-2</b>	<b>LCS</b>							
Bromide (Br)			103.7		%		85-115	28-NOV-21
<b>WG3667473-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	28-NOV-21
<b>WG3667473-4</b>	<b>MS</b>	<b>L2667104-3</b>						
Bromide (Br)			108.1		%		75-125	28-NOV-21
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2667104

Report Date: 07-DEC-21

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5660166							
<b>WG3668322-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			95.2		%		80-120	30-NOV-21
<b>WG3668322-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-NOV-21
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5660166							
<b>WG3668322-2</b>	<b>LCS</b>							
Total Organic Carbon			98.9		%		80-120	30-NOV-21
<b>WG3668322-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	30-NOV-21
<b>CL-L-IC-N-CL</b> <b>Water</b>								
Batch	R5659465							
<b>WG3667473-3</b>	<b>DUP</b>	<b>L2667104-2</b>						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	28-NOV-21
<b>WG3667473-2</b>	<b>LCS</b>							
Chloride (Cl)			101.8		%		85-115	28-NOV-21
<b>WG3667473-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	28-NOV-21
<b>WG3667473-4</b>	<b>MS</b>	<b>L2667104-3</b>						
Chloride (Cl)			112.7		%		75-125	28-NOV-21
<b>CO3-CL</b> <b>Water</b>								
Batch	R5659400							
<b>WG3667434-7</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	29-NOV-21
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R5659400							
<b>WG3667434-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.0		%		90-110	29-NOV-21
<b>WG3667434-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	29-NOV-21
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R5659465							
<b>WG3667473-3</b>	<b>DUP</b>	<b>L2667104-2</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	28-NOV-21
<b>WG3667473-2</b>	<b>LCS</b>							
Fluoride (F)			100.6		%		90-110	28-NOV-21





## Quality Control Report

Workorder: L2667104

Report Date: 07-DEC-21

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5659465</b>							
<b>WG3667473-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	28-NOV-21
<b>WG3667473-4</b>	<b>MS</b>	<b>L2667104-3</b>						
Fluoride (F)			112.2		%		75-125	28-NOV-21
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5666958</b>							
<b>WG3670687-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			93.7		%		80-120	06-DEC-21
<b>WG3670687-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	06-DEC-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5667037</b>							
<b>WG3670416-3</b>	<b>DUP</b>	<b>L2667104-2</b>						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	06-DEC-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-DEC-21
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-DEC-21
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-DEC-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-DEC-21
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-DEC-21
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	06-DEC-21
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	06-DEC-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-DEC-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-DEC-21
Copper (Cu)-Dissolved		0.00023	0.00024		mg/L	4.0	20	06-DEC-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-DEC-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-DEC-21
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	06-DEC-21
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	06-DEC-21
Manganese (Mn)-Dissolved		0.00011	0.00011		mg/L	1.8	20	06-DEC-21
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-DEC-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-DEC-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	06-DEC-21
Potassium (K)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	06-DEC-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-DEC-21
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	06-DEC-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-DEC-21



## Quality Control Report

Workorder: L2667104

Report Date: 07-DEC-21

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5667037</b>							
<b>WG3670416-3</b>	<b>DUP</b>	<b>L2667104-2</b>						
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	06-DEC-21
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	06-DEC-21
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	06-DEC-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-DEC-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-DEC-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	06-DEC-21
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-DEC-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-DEC-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	06-DEC-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	06-DEC-21
<b>WG3670416-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.8		%		80-120	06-DEC-21
Antimony (Sb)-Dissolved			103.5		%		80-120	06-DEC-21
Arsenic (As)-Dissolved			95.4		%		80-120	06-DEC-21
Barium (Ba)-Dissolved			98.0		%		80-120	06-DEC-21
Bismuth (Bi)-Dissolved			102.2		%		80-120	06-DEC-21
Boron (B)-Dissolved			96.0		%		80-120	06-DEC-21
Cadmium (Cd)-Dissolved			100.4		%		80-120	06-DEC-21
Calcium (Ca)-Dissolved			99.9		%		80-120	06-DEC-21
Chromium (Cr)-Dissolved			97.0		%		80-120	06-DEC-21
Cobalt (Co)-Dissolved			96.9		%		80-120	06-DEC-21
Copper (Cu)-Dissolved			95.5		%		80-120	06-DEC-21
Iron (Fe)-Dissolved			90.8		%		80-120	06-DEC-21
Lead (Pb)-Dissolved			101.3		%		80-120	06-DEC-21
Lithium (Li)-Dissolved			97.5		%		80-120	06-DEC-21
Magnesium (Mg)-Dissolved			99.7		%		80-120	06-DEC-21
Manganese (Mn)-Dissolved			97.6		%		80-120	06-DEC-21
Molybdenum (Mo)-Dissolved			105.2		%		80-120	06-DEC-21
Nickel (Ni)-Dissolved			95.0		%		80-120	06-DEC-21
Phosphorus (P)-Dissolved			106.6		%		70-130	06-DEC-21
Potassium (K)-Dissolved			101.2		%		80-120	06-DEC-21
Selenium (Se)-Dissolved			99.4		%		80-120	06-DEC-21
Silicon (Si)-Dissolved			98.3		%		60-140	06-DEC-21
Silver (Ag)-Dissolved			100.3		%		80-120	06-DEC-21



## Quality Control Report

Workorder: L2667104

Report Date: 07-DEC-21

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5667037</b>							
<b>WG3670416-2 LCS</b>								
Sodium (Na)-Dissolved			99.1		%		80-120	06-DEC-21
Strontium (Sr)-Dissolved			98.2		%		80-120	06-DEC-21
Sulfur (S)-Dissolved			96.0		%		80-120	06-DEC-21
Thallium (Tl)-Dissolved			102.4		%		80-120	06-DEC-21
Tin (Sn)-Dissolved			100.4		%		80-120	06-DEC-21
Titanium (Ti)-Dissolved			89.1		%		80-120	06-DEC-21
Uranium (U)-Dissolved			99.6		%		80-120	06-DEC-21
Vanadium (V)-Dissolved			97.6		%		80-120	06-DEC-21
Zinc (Zn)-Dissolved			95.5		%		80-120	06-DEC-21
Zirconium (Zr)-Dissolved			98.5		%		80-120	06-DEC-21
<b>WG3670416-1 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-DEC-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-DEC-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-DEC-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-DEC-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-DEC-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-DEC-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-DEC-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-DEC-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-DEC-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-DEC-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-DEC-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-DEC-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	06-DEC-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-DEC-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-DEC-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-DEC-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-DEC-21



## Quality Control Report

Workorder: L2667104

Report Date: 07-DEC-21

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5667037</b>							
<b>WG3670416-1 MB</b>								
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-DEC-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-DEC-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	06-DEC-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-DEC-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-DEC-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-DEC-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-DEC-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-DEC-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	06-DEC-21
<b>WG3670416-4 MS</b>		<b>L2667104-2</b>						
Aluminum (Al)-Dissolved			92.0		%		70-130	06-DEC-21
Antimony (Sb)-Dissolved			96.1		%		70-130	06-DEC-21
Arsenic (As)-Dissolved			89.1		%		70-130	06-DEC-21
Barium (Ba)-Dissolved			92.4		%		70-130	06-DEC-21
Bismuth (Bi)-Dissolved			88.8		%		70-130	06-DEC-21
Boron (B)-Dissolved			97.0		%		70-130	06-DEC-21
Cadmium (Cd)-Dissolved			96.0		%		70-130	06-DEC-21
Calcium (Ca)-Dissolved			93.3		%		70-130	06-DEC-21
Chromium (Cr)-Dissolved			91.7		%		70-130	06-DEC-21
Cobalt (Co)-Dissolved			92.3		%		70-130	06-DEC-21
Copper (Cu)-Dissolved			92.4		%		70-130	06-DEC-21
Iron (Fe)-Dissolved			89.7		%		70-130	06-DEC-21
Lead (Pb)-Dissolved			93.0		%		70-130	06-DEC-21
Lithium (Li)-Dissolved			94.0		%		70-130	06-DEC-21
Magnesium (Mg)-Dissolved			88.1		%		70-130	06-DEC-21
Manganese (Mn)-Dissolved			92.8		%		70-130	06-DEC-21
Molybdenum (Mo)-Dissolved			97.1		%		70-130	06-DEC-21
Nickel (Ni)-Dissolved			89.1		%		70-130	06-DEC-21
Phosphorus (P)-Dissolved			91.0		%		70-130	06-DEC-21
Potassium (K)-Dissolved			93.3		%		70-130	06-DEC-21
Selenium (Se)-Dissolved			93.5		%		70-130	06-DEC-21
Silicon (Si)-Dissolved			85.5		%		70-130	06-DEC-21
Silver (Ag)-Dissolved			92.5		%		70-130	06-DEC-21



## Quality Control Report

Workorder: L2667104

Report Date: 07-DEC-21

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5667037</b>							
<b>WG3670416-4</b>	<b>MS</b>	<b>L2667104-2</b>						
Sodium (Na)-Dissolved			90.3		%		70-130	06-DEC-21
Strontium (Sr)-Dissolved			92.0		%		70-130	06-DEC-21
Thallium (Tl)-Dissolved			94.6		%		70-130	06-DEC-21
Tin (Sn)-Dissolved			93.3		%		70-130	06-DEC-21
Titanium (Ti)-Dissolved			87.4		%		70-130	06-DEC-21
Uranium (U)-Dissolved			92.9		%		70-130	06-DEC-21
Vanadium (V)-Dissolved			90.6		%		70-130	06-DEC-21
Zinc (Zn)-Dissolved			87.1		%		70-130	06-DEC-21
Zirconium (Zr)-Dissolved			92.9		%		70-130	06-DEC-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5660021</b>							
<b>WG3667742-31</b>	<b>DUP</b>	<b>L2667104-2</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	30-NOV-21
<b>WG3667742-30</b>	<b>LCS</b>							
Ammonia as N			104.5		%		85-115	30-NOV-21
<b>WG3667742-29</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	30-NOV-21
<b>WG3667742-32</b>	<b>MS</b>	<b>L2667104-2</b>						
Ammonia as N			116.5		%		75-125	30-NOV-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5659465</b>							
<b>WG3667473-3</b>	<b>DUP</b>	<b>L2667104-2</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	28-NOV-21
<b>WG3667473-2</b>	<b>LCS</b>							
Nitrite (as N)			100.4		%		90-110	28-NOV-21
<b>WG3667473-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	28-NOV-21
<b>WG3667473-4</b>	<b>MS</b>	<b>L2667104-3</b>						
Nitrite (as N)			110.8		%		75-125	28-NOV-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5659465</b>							
<b>WG3667473-3</b>	<b>DUP</b>	<b>L2667104-2</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	28-NOV-21
<b>WG3667473-2</b>	<b>LCS</b>							
Nitrate (as N)			103.0		%		90-110	28-NOV-21
<b>WG3667473-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2667104

Report Date: 07-DEC-21

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
Batch R5659465								
WG3667473-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	28-NOV-21
WG3667473-4	MS	L2667104-3						
Nitrate (as N)			114.2		%		75-125	28-NOV-21
<b>OH-CL</b>								
Batch R5659400								
WG3667434-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	29-NOV-21
<b>P-T-L-COL-CL</b>								
Batch R5661748								
WG3669041-7	DUP	L2667104-2						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	02-DEC-21
WG3669041-2	LCS							
Phosphorus (P)-Total			94.6		%		80-120	02-DEC-21
WG3669041-6	LCS							
Phosphorus (P)-Total			88.6		%		80-120	02-DEC-21
WG3669041-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-DEC-21
WG3669041-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-DEC-21
WG3669041-8	MS	L2667104-3						
Phosphorus (P)-Total			70.6		%		70-130	02-DEC-21
<b>PH-CL</b>								
Batch R5659400								
WG3667434-8	LCS							
pH			6.98		pH		6.9-7.1	29-NOV-21
<b>PO4-DO-L-COL-CL</b>								
Batch R5659644								
WG3666779-3	DUP	L2667104-5						
Orthophosphate-Dissolved (as P)		0.0019	0.0022		mg/L	13	20	29-NOV-21
WG3666779-2	LCS							
Orthophosphate-Dissolved (as P)			97.0		%		80-120	29-NOV-21
WG3666779-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-NOV-21
WG3666779-4	MS	L2667104-4						
Orthophosphate-Dissolved (as P)			101.8		%		70-130	29-NOV-21



## Quality Control Report

Workorder: L2667104

Report Date: 07-DEC-21

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
<b>Batch R5659465</b>								
<b>WG3667473-3</b>	<b>DUP</b>	<b>L2667104-2</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	28-NOV-21
<b>WG3667473-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.2		%		90-110	28-NOV-21
<b>WG3667473-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	28-NOV-21
<b>WG3667473-4</b>	<b>MS</b>	<b>L2667104-3</b>						
Sulfate (SO4)			111.8		%		75-125	28-NOV-21
<b>SOLIDS-TDS-CL</b>								
<b>Batch R5660174</b>								
<b>WG3667199-5</b>	<b>LCS</b>							
Total Dissolved Solids			97.3		%		85-115	30-NOV-21
<b>WG3667199-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	30-NOV-21
<b>TKN-L-F-CL</b>								
<b>Batch R5660656</b>								
<b>WG3668290-2</b>	<b>DUP</b>	<b>L2667104-1</b>						
Total Kjeldahl Nitrogen		0.134	0.102	J	mg/L	0.032	0.1	02-DEC-21
<b>WG3668290-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.0		%		75-125	01-DEC-21
<b>WG3668290-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-DEC-21
<b>WG3668290-1</b>	<b>MS</b>	<b>L2667104-2</b>						
Total Kjeldahl Nitrogen			96.0		%		70-130	01-DEC-21
<b>TSS-L-CL</b>								
<b>Batch R5660068</b>								
<b>WG3667195-2</b>	<b>LCS</b>							
Total Suspended Solids			101.3		%		85-115	30-NOV-21
<b>WG3667195-4</b>	<b>LCS</b>							
Total Suspended Solids			100.9		%		85-115	30-NOV-21
<b>WG3667195-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	30-NOV-21
<b>WG3667195-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	30-NOV-21
<b>TURBIDITY-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2667104

Report Date: 07-DEC-21

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5658521</b>							
<b>WG3666468-3</b>	<b>DUP</b>	<b>L2667104-2</b>						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	28-NOV-21
<b>WG3666468-2</b>	<b>LCS</b>							
Turbidity			101.0		%		85-115	28-NOV-21
<b>WG3666468-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	28-NOV-21



# Quality Control Report

Workorder: L2667104

Report Date: 07-DEC-21

Page 11 of 12

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2667104

Report Date: 07-DEC-21

Page 12 of 12

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	26-NOV-21 12:00	29-NOV-21 12:00	0.25	72	hours	EHTR-FM
	2	26-NOV-21 12:00	29-NOV-21 12:00	0.25	72	hours	EHTR-FM
	3	26-NOV-21 12:00	29-NOV-21 12:00	0.25	72	hours	EHTR-FM
	4	26-NOV-21 10:10	29-NOV-21 12:00	0.25	74	hours	EHTR-FM
	5	26-NOV-21 10:00	29-NOV-21 12:00	0.25	74	hours	EHTR-FM
pH							
	1	26-NOV-21 12:00	29-NOV-21 13:00	0.25	73	hours	EHTR-FM
	2	26-NOV-21 12:00	29-NOV-21 09:00	0.25	69	hours	EHTR-FM
	3	26-NOV-21 12:00	29-NOV-21 13:00	0.25	73	hours	EHTR-FM
	4	26-NOV-21 10:10	29-NOV-21 13:00	0.25	75	hours	EHTR-FM
	5	26-NOV-21 10:00	29-NOV-21 13:00	0.25	75	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Nitrate in Water by IC (Low Level)							
	3	26-NOV-21 12:00	30-NOV-21 12:00	3	4	days	EHT

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2667104 were received on 27-NOV-21 09:25.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2667104-COFC

<b>Report To</b> Contact and company name below will appear on the final report			<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>															
Company: SNC-Lavalin			Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply															
Contact: Tyler Gale <b>Kim Harrer</b>			Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			4 day [P4-20%] <input type="checkbox"/>				3 day [P3-25%] <input type="checkbox"/>				2 day [P2-50%] <input type="checkbox"/>				1 Business day [E1 - 100%] <input type="checkbox"/>			
Phone: Tel.: 250-464- <del>8878</del> <b>9108</b>			<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			EMERGENCY				Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] <input type="checkbox"/>											
Company address below will appear on the final report			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Date and Time Required for all E&P TATs:															
Street: 4500 Mennie Rd			Emails: SNC - Tyler Gale, Jen.vonGradulewski			For tests that can not be performed according to the service level selected, you will be contacted.															
City/Province: Cranbrook, BC			Teck: <b>Stefan Humphries, Vicky Lipinski, Heather Stevenson</b>			<b>Analysis Request</b>															
Postal Code: V1C 4J6			Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below															
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			SAMPLES ON HOLD															
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			Emails: Tyler.Gale@snclavalin.com			Sample is hazardous (please provide further detail)															
Company:			payables@snclavalin.com			NUMBER OF CONTAINERS															
Contact:			Project Information																		
ALS Account # / Quote #: MOR125 / Q78198			Oil and Gas Required Fields (client use)																		
Job #: 681200/67407Z			AFE/Cost Center: PO#																		
PO / AFE: <del>681009</del> <b>683032</b>			Major/Minor Code: Routing Code:																		
LSD:			Requisitioner:																		
ALS Lab Work Order # (lab use only):			ALS Contact: Inayat Dhaliwal 403-407-1784																		
			Sampler: <b>EGW JVG, JL</b>																		
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met. + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (NZN3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS			
	GH_MW_MC10A_WG_2021_11-26_NP	GH_MW_MC10-A	26-Nov-21	12:00	WG	R	R	R	R	R	R	R	R	R	R			5			
	GH_MW_MC10B_WG_2021_11-26_NP	GH_MW_MC10-B	26-Nov-21	12:00	WG	R	R	R	R	R	R	R	R	R	R			5			
	GH_MW_MC10C_WG_2021_11-26_NP	GH_MW_MC10-C	26-Nov-21	12:00	WG	R	R	R	R	R	R	R	R	R	R			5			
	GH_MW-EF1A-WG-2021-11-26-NP	GH_MW-EF1A	26-Nov-21	10:10	WG	R	R	R	R	R	R	R	R	R	R			5			
	GH_MW-EF1B-WG-2021-11-26-NP	GH_MW-EF1B	26-Nov-21	10:00	WG	R	R	R	R	R	R	R	R	R	R			5			
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>			Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>															
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES			Quote: <b>Q75429</b>			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>															
Are samples for human consumption/use? <input type="checkbox"/> NO <input type="checkbox"/> YES			Teck Facility Name: (please select the applicable Facility)			Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>															
			GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Cooling Initiated <input type="checkbox"/>															
SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			INITIAL COOLER TEMPERATURES °C: <b>60</b> FINAL COOLER TEMPERATURES °C: <b>60</b>															
Released by: <b>Jen von Grad</b> Date: 2021-11-26 Time: 1700			Received by: _____ Date: _____ Time: _____			FINAL SHIPMENT RECEPTION (lab use only)															
						Received by: <b>[Signature]</b> Date: <b>27/11</b> Time: <b>9:35</b>															



SNC-Lavalin  
ATTN: Bill Wilmot  
4500 Mennie Road  
Cranbrook BC V1C 4J6

Date Received: 11-AUG-21  
Report Date: 01-SEP-21 12:36 (MT)  
Version: FINAL

Client Phone: 250-505-6493

## Certificate of Analysis

Lab Work Order #: L2625225  
Project P.O. #: 681764  
Job Reference: 673926  
C of C Numbers: 681764  
Legal Site Desc: FRO-X BASELINE

Opeyemi Adetola  
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2625225-1 WG 10-AUG-21 15:50 FR_MW- FRRD1_WG_2021 _08_10_NP	L2625225-2 WG 10-AUG-21 10:20 FR_MW-CH1- A_WG_2021_08_1 0_NP	L2625225-3 WG 10-AUG-21 11:50 FR_MW_CH2_WG _2021_08_10_NP	L2625225-4 WG 10-AUG-21 14:30 FR_MW-CASW6- A_WG_2021_08_1 0_NP	L2625225-5 WG 10-AUG-21 13:30 FR_MW-CASW6- B_WG_2021_08_1 0_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	609	262	309	672	984
	Hardness (as CaCO3) (mg/L)	326	134	160	296	420
	pH (pH)	7.84	8.33	8.39	8.19	7.99
	ORP (mV)	446	478	426	432	432
	Total Suspended Solids (mg/L)	14.3	2.8	1.5	6.9	74.9
	Total Dissolved Solids (mg/L)	443	152	183	440	570
	Turbidity (NTU)	27.9	2.19	1.64	48.2	334
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5.8	1.1	1.7	10.8	20.7
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	271	131	156	395	382
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	2.4	6.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	271	134	162	395	382
	Ammonia as N (mg/L)	<0.0050	<0.0050	0.119	2.44	0.337
	Bicarbonate (HCO3) (mg/L)	331	160	191	482	466
	Bromide (Br) (mg/L)	0.063	<0.050	<0.050	<0.050	0.110
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	56.6	0.17	0.11	6.90	117
	Fluoride (F) (mg/L)	0.097	0.133	0.136	0.140	0.259
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	107	91.1	91.4	111	118
	Nitrate and Nitrite (as N) (mg/L)	0.288	0.0508	0.0349	<0.0051	<0.50 <sup>HTD</sup>
	Nitrate (as N) (mg/L)	0.288	0.0508	0.0349	<0.0050	<0.50 <sup>HTD</sup>
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0020
	Total Kjeldahl Nitrogen (mg/L)	<0.20	<0.20	<0.20	2.48	0.57
	Total Nitrogen (mg/L)	0.29	<0.20	<0.20	2.48	0.57
	Orthophosphate-Dissolved (as P) (mg/L)	0.0030	0.0037	0.0017	0.0300	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0240	0.0088	0.0035	0.0370	0.0340
	Sulfate (SO4) (mg/L)	11.2	14.9	17.0	<0.30	7.8 <sup>DLM</sup>
	Anion Sum (meq/L)	7.27	3.00	3.61	8.10	11.1
	Cation Sum (meq/L)	7.80	2.73	3.30	9.02	13.1
Cation - Anion Balance (%)	3.5	-4.7	-4.5	5.4	8.3	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.75	2.10	2.16	2.54	8.14
	Total Organic Carbon (mg/L)	3.11	1.85	1.97	2.75	9.19
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0180	0.0017	<0.0010	<0.050 <sup>DLDS</sup>	<0.020 <sup>DLDS</sup>

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2625225-6	L2625225-7	L2625225-8
		Description	WG	WG	WG
		Sampled Date	10-AUG-21	10-AUG-21	10-AUG-21
		Sampled Time	15:50	15:40	16:00
		Client ID	FR_MW_MC10A_ WG_2021_08_10_ NP	FR_MW_MC10B_ WG_2021_08_10_ NP	FR_MW_MC10C_ WG_2021_08_10_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	607	<2.0	<2.0	
	Hardness (as CaCO3) (mg/L)	324	<0.50	<0.50	
	pH (pH)	7.83	5.63	5.25	
	ORP (mV)	460	464	464	
	Total Suspended Solids (mg/L)	8.8	<1.0	<1.0	
	Total Dissolved Solids (mg/L)	442	<10	<10	
	Turbidity (NTU)	29.1	<0.10	<0.10	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	6.5	1.5	1.3	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	287	<1.0	<1.0	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	287	<1.0	<1.0	
	Ammonia as N (mg/L)	0.0160	<0.0050	<0.0050	
	Bicarbonate (HCO3) (mg/L)	350	<5.0	<5.0	
	Bromide (Br) (mg/L)	0.063	<0.050	<0.050	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	56.4	<0.10	<0.10	
	Fluoride (F) (mg/L)	0.100	<0.020	<0.020	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	102	0.0	0.0	
	Nitrate and Nitrite (as N) (mg/L)	0.279	<0.0051	<0.0051	
	Nitrate (as N) (mg/L)	0.279	<0.0050	<0.0050 <sup>HTD</sup>	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	<0.20	<0.20	<0.20	
	Total Nitrogen (mg/L)	0.28	<0.20	<0.20	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0031	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0234	<0.0020	<0.0020	
	Sulfate (SO4) (mg/L)	11.1	<0.30	<0.30	
	Anion Sum (meq/L)	7.59	<0.10	<0.10	
	Cation Sum (meq/L)	7.72	<0.10	<0.10	
Cation - Anion Balance (%)	0.9	0.0	0.0		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.79	<0.50	<0.50	
	Total Organic Carbon (mg/L)	3.52	<0.50	<0.50	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0192	<0.0010	<0.0010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2625225-1	L2625225-2	L2625225-3	L2625225-4	L2625225-5
					WG	WG	WG	WG	WG
		10-AUG-21	10-AUG-21		10-AUG-21	10-AUG-21	10-AUG-21	10-AUG-21	10-AUG-21
		15:50	10:20		15:50	10:20	11:50	14:30	13:30
		FR_MW-FRRD1_WG_2021_08_10_NP	FR_MW-CH1-A_WG_2021_08_10_NP		FR_MW-FRRD1_WG_2021_08_10_NP	FR_MW-CH1-A_WG_2021_08_10_NP	FR_MW-CH2_WG_2021_08_10_NP	FR_MW-CASW6-A_WG_2021_08_10_NP	FR_MW-CASW6-B_WG_2021_08_10_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00013	<0.00010	<0.00010	0.00013	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00011	<0.00010	0.00023	0.00011	<0.00010	0.00023	0.0205	0.0057
	Barium (Ba)-Dissolved (mg/L)	0.337	0.0600	0.494	0.337	0.0600	0.494	9.02	0.991
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.0025	<0.0010
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.50	<0.20
	Cadmium (Cd)-Dissolved (mg/L)	0.0000186	0.0000056	<0.0000050	0.0000186	0.0000056	<0.0000050	<0.00025	<0.00010
	Calcium (Ca)-Dissolved (mg/L)	93.3	36.4	44.7	93.3	36.4	44.7	84.2	110
	Chromium (Cr)-Dissolved (mg/L)	0.00011	0.00019	0.00011	0.00011	0.00019	0.00011	<0.0050	<0.0020
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0050	0.0151
	Copper (Cu)-Dissolved (mg/L)	0.00036	0.00027	<0.00020	0.00036	0.00027	<0.00020	<0.010	<0.0040
	Iron (Fe)-Dissolved (mg/L)	0.015	<0.010	0.136	0.015	<0.010	0.136	3.86	31.7
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.0025	<0.0010
	Lithium (Li)-Dissolved (mg/L)	0.0051	0.0035	0.0077	0.0051	0.0035	0.0077	0.298	<0.020
	Magnesium (Mg)-Dissolved (mg/L)	22.7	10.4	11.9	22.7	10.4	11.9	20.8	35.2
	Manganese (Mn)-Dissolved (mg/L)	0.0217	<0.00010	0.0130	0.0217	<0.00010	0.0130	0.0908	1.84
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000056	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000431	0.000575	0.000989	0.000431	0.000575	0.000989	0.0050	0.0039
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.025	0.021
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<2.5	<1.0
	Potassium (K)-Dissolved (mg/L)	1.21	0.32	0.87	1.21	0.32	0.87	6.1	2.3
	Selenium (Se)-Dissolved (mg/L)	0.000573	0.000694	0.000544	0.000573	0.000694	0.000544	<0.0025	<0.0010
	Silicon (Si)-Dissolved (mg/L)	5.23	1.90	2.47	5.23	1.90	2.47	5.0	7.1
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.00050	<0.00020
	Sodium (Na)-Dissolved (mg/L)	28.6	1.10	1.23	28.6	1.10	1.23	58.9	65.8
	Strontium (Sr)-Dissolved (mg/L)	0.130	0.0646	0.0732	0.130	0.0646	0.0732	1.65	0.330
	Sulfur (S)-Dissolved (mg/L)	4.13	5.17	5.99	4.13	5.17	5.99	<25	<10
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.00050	<0.00020
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0050	<0.0020
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.015	<0.0060
	Uranium (U)-Dissolved (mg/L)	0.000480	0.000525	0.000883	0.000480	0.000525	0.000883	<0.00050	0.00110
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.025	<0.010
	Zinc (Zn)-Dissolved (mg/L)	0.0017	0.0011	<0.0010	0.0017	0.0011	<0.0010	<0.050	<0.020
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.010	<0.0040

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2625225-6 WG 10-AUG-21 15:50 FR_MW_MC10A_ WG_2021_08_10_ NP	L2625225-7 WG 10-AUG-21 15:40 FR_MW_MC10B_ WG_2021_08_10_ NP	L2625225-8 WG 10-AUG-21 16:00 FR_MW_MC10C_ WG_2021_08_10_ NP	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00013	<0.00010	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.342	<0.00010	<0.00010	
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	0.0000172	<0.0000050	<0.0000050	
	Calcium (Ca)-Dissolved (mg/L)	92.7	<0.050	<0.050	
	Chromium (Cr)-Dissolved (mg/L)	0.00015	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Dissolved (mg/L)	0.00035	<0.00020	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	0.016	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0052	<0.0010	<0.0010	
	Magnesium (Mg)-Dissolved (mg/L)	22.4	<0.0050	<0.0050	
	Manganese (Mn)-Dissolved (mg/L)	0.0221	<0.00010	<0.00010	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.000428	<0.000050	<0.000050	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	
	Potassium (K)-Dissolved (mg/L)	1.21	<0.10	<0.10	
	Selenium (Se)-Dissolved (mg/L)	0.000598	<0.000050	<0.000050	
	Silicon (Si)-Dissolved (mg/L)	5.21	<0.050	<0.050	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	28.0	<0.050	<0.050	
	Strontium (Sr)-Dissolved (mg/L)	0.130	<0.00020	<0.00020	
	Sulfur (S)-Dissolved (mg/L)	3.97	<0.50	<0.50	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	
	Uranium (U)-Dissolved (mg/L)	0.000482	<0.000010	<0.000010	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0016	<0.0010	<0.0010	
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2625225-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2625225-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2625225-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2625225-1, -2, -3, -4, -5, -6, -7, -8

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**P04-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**S04-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-F-ED** Water TKN (as N) by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

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### Chain of Custody Numbers:

681764

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2625225

Report Date: 01-SEP-21

Page 2 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BIC-CL</b>	<b>Water</b>							
Batch	R5556736							
<b>WG3599711-1 MB</b>								
Bicarbonate (HCO3)			<5.0		mg/L		5	17-AUG-21
<b>WG3599711-2 MB</b>								
Bicarbonate (HCO3)			<5.0		mg/L		5	17-AUG-21
<b>BR-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5554082							
<b>WG3598774-2 LCS</b>								
Bromide (Br)			103.4		%		85-115	11-AUG-21
<b>WG3598774-1 MB</b>								
Bromide (Br)			<0.050		mg/L		0.05	11-AUG-21
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5550393							
<b>WG3597375-3 DUP</b>		<b>L2625225-8</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	16-AUG-21
<b>WG3597375-2 LCS</b>								
Dissolved Organic Carbon			88.4		%		80-120	13-AUG-21
<b>WG3597375-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-AUG-21
<b>WG3597375-4 MS</b>		<b>L2625225-8</b>						
Dissolved Organic Carbon			97.6		%		70-130	13-AUG-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5550393							
<b>WG3597375-3 DUP</b>		<b>L2625225-8</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	16-AUG-21
<b>WG3597375-2 LCS</b>								
Total Organic Carbon			89.7		%		80-120	13-AUG-21
<b>WG3597375-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	13-AUG-21
<b>WG3597375-4 MS</b>		<b>L2625225-8</b>						
Total Organic Carbon			110.1		%		70-130	13-AUG-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5554082							
<b>WG3598774-2 LCS</b>								
Chloride (Cl)			100.3		%		85-115	11-AUG-21
<b>WG3598774-1 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	11-AUG-21
<b>CO3-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2625225

Report Date: 01-SEP-21

Page 3 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CO3-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5556736</b>							
<b>WG3599711-8</b>	<b>DUP</b>	<b>L2625225-1</b>						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	17-AUG-21
<b>WG3599711-1</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	17-AUG-21
<b>WG3599711-2</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	17-AUG-21
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5556736</b>							
<b>WG3599711-8</b>	<b>DUP</b>	<b>L2625225-1</b>						
Conductivity (@ 25C)		609	604		uS/cm	0.8	10	17-AUG-21
<b>WG3599711-4</b>	<b>LCS</b>							
Conductivity (@ 25C)			97.5		%		90-110	17-AUG-21
<b>WG3599711-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.2		%		90-110	17-AUG-21
<b>WG3599711-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	17-AUG-21
<b>WG3599711-2</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	17-AUG-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5554082</b>							
<b>WG3598774-2</b>	<b>LCS</b>							
Fluoride (F)			94.7		%		90-110	11-AUG-21
<b>WG3598774-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	11-AUG-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5554905</b>							
<b>WG3598984-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			94.7		%		80-120	17-AUG-21
<b>WG3598984-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-AUG-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5550018</b>							
<b>WG3597182-3</b>	<b>DUP</b>	<b>L2625225-1</b>						
Aluminum (Al)-Dissolved		0.0180	0.0183		mg/L	1.9	20	17-AUG-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-AUG-21
Arsenic (As)-Dissolved		0.00011	0.00013		mg/L	14	20	17-AUG-21
Barium (Ba)-Dissolved		0.337	0.339		mg/L	0.8	20	17-AUG-21



## Quality Control Report

Workorder: L2625225

Report Date: 01-SEP-21

Page 4 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5550018</b>							
<b>WG3597182-3</b>	<b>DUP</b>	<b>L2625225-1</b>						
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	17-AUG-21
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	17-AUG-21
Cadmium (Cd)-Dissolved		0.0000186	0.0000194		mg/L	4.2	20	17-AUG-21
Calcium (Ca)-Dissolved		93.3	93.1		mg/L	0.1	20	17-AUG-21
Chromium (Cr)-Dissolved		0.00011	<0.00010	RPD-NA	mg/L	N/A	20	17-AUG-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-AUG-21
Copper (Cu)-Dissolved		0.00036	0.00037		mg/L	0.5	20	17-AUG-21
Iron (Fe)-Dissolved		0.015	0.016		mg/L	4.8	20	17-AUG-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	17-AUG-21
Lithium (Li)-Dissolved		0.0051	0.0052		mg/L	0.9	20	17-AUG-21
Magnesium (Mg)-Dissolved		22.7	22.6		mg/L	0.7	20	17-AUG-21
Manganese (Mn)-Dissolved		0.0217	0.0216		mg/L	0.7	20	17-AUG-21
Molybdenum (Mo)-Dissolved		0.000431	0.000428		mg/L	0.7	20	17-AUG-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	17-AUG-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	17-AUG-21
Potassium (K)-Dissolved		1.21	1.21		mg/L	0.1	20	17-AUG-21
Selenium (Se)-Dissolved		0.000573	0.000554		mg/L	3.4	20	17-AUG-21
Silicon (Si)-Dissolved		5.23	5.10		mg/L	2.6	20	17-AUG-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	17-AUG-21
Sodium (Na)-Dissolved		28.6	28.2		mg/L	1.4	20	17-AUG-21
Strontium (Sr)-Dissolved		0.130	0.132		mg/L	1.5	20	17-AUG-21
Sulfur (S)-Dissolved		4.13	4.12		mg/L	0.4	20	17-AUG-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	17-AUG-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-AUG-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	17-AUG-21
Uranium (U)-Dissolved		0.000480	0.000473		mg/L	1.5	20	17-AUG-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	17-AUG-21
Zinc (Zn)-Dissolved		0.0017	0.0015		mg/L	7.1	20	17-AUG-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	17-AUG-21
<b>WG3597182-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			108.5		%		80-120	16-AUG-21
Antimony (Sb)-Dissolved			107.4		%		80-120	16-AUG-21
Arsenic (As)-Dissolved			104.4		%		80-120	16-AUG-21
Barium (Ba)-Dissolved			104.8		%		80-120	16-AUG-21



## Quality Control Report

Workorder: L2625225

Report Date: 01-SEP-21

Page 5 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5550018</b>							
<b>WG3597182-2</b>	<b>LCS</b>	<b>TMRM</b>						
Bismuth (Bi)-Dissolved			106.6		%		80-120	16-AUG-21
Boron (B)-Dissolved			102.4		%		80-120	16-AUG-21
Cadmium (Cd)-Dissolved			97.4		%		80-120	16-AUG-21
Calcium (Ca)-Dissolved			105.7		%		80-120	16-AUG-21
Chromium (Cr)-Dissolved			105.6		%		80-120	16-AUG-21
Cobalt (Co)-Dissolved			104.5		%		80-120	16-AUG-21
Copper (Cu)-Dissolved			101.7		%		80-120	16-AUG-21
Iron (Fe)-Dissolved			107.0		%		80-120	16-AUG-21
Lead (Pb)-Dissolved			106.3		%		80-120	16-AUG-21
Lithium (Li)-Dissolved			107.9		%		80-120	16-AUG-21
Magnesium (Mg)-Dissolved			103.6		%		80-120	16-AUG-21
Manganese (Mn)-Dissolved			102.2		%		80-120	16-AUG-21
Molybdenum (Mo)-Dissolved			108.6		%		80-120	16-AUG-21
Nickel (Ni)-Dissolved			101.8		%		80-120	16-AUG-21
Phosphorus (P)-Dissolved			115.9		%		70-130	16-AUG-21
Potassium (K)-Dissolved			108.3		%		80-120	16-AUG-21
Selenium (Se)-Dissolved			98.0		%		80-120	16-AUG-21
Silicon (Si)-Dissolved			113.1		%		60-140	16-AUG-21
Silver (Ag)-Dissolved			103.3		%		80-120	16-AUG-21
Sodium (Na)-Dissolved			105.7		%		80-120	16-AUG-21
Strontium (Sr)-Dissolved			107.4		%		80-120	16-AUG-21
Sulfur (S)-Dissolved			106.0		%		80-120	16-AUG-21
Thallium (Tl)-Dissolved			103.6		%		80-120	16-AUG-21
Tin (Sn)-Dissolved			99.9		%		80-120	16-AUG-21
Titanium (Ti)-Dissolved			106.7		%		80-120	16-AUG-21
Uranium (U)-Dissolved			104.5		%		80-120	16-AUG-21
Vanadium (V)-Dissolved			106.1		%		80-120	16-AUG-21
Zinc (Zn)-Dissolved			100.3		%		80-120	16-AUG-21
Zirconium (Zr)-Dissolved			108.2		%		80-120	16-AUG-21
<b>WG3597182-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			118.1		%		80-120	17-AUG-21
Antimony (Sb)-Dissolved			106.0		%		80-120	17-AUG-21
Arsenic (As)-Dissolved			111.9		%		80-120	17-AUG-21
Barium (Ba)-Dissolved			113.7		%		80-120	17-AUG-21





## Quality Control Report

Workorder: L2625225

Report Date: 01-SEP-21

Page 6 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5550018</b>							
<b>WG3597182-6</b>	<b>LCS</b>	<b>TMRM</b>						
Bismuth (Bi)-Dissolved			107.6		%		80-120	17-AUG-21
Boron (B)-Dissolved			103.9		%		80-120	17-AUG-21
Cadmium (Cd)-Dissolved			106.2		%		80-120	17-AUG-21
Calcium (Ca)-Dissolved			107.6		%		80-120	17-AUG-21
Chromium (Cr)-Dissolved			110.5		%		80-120	17-AUG-21
Cobalt (Co)-Dissolved			113.4		%		80-120	17-AUG-21
Copper (Cu)-Dissolved			110.9		%		80-120	17-AUG-21
Iron (Fe)-Dissolved			118.8		%		80-120	17-AUG-21
Lead (Pb)-Dissolved			108.2		%		80-120	17-AUG-21
Lithium (Li)-Dissolved			108.0		%		80-120	17-AUG-21
Magnesium (Mg)-Dissolved			114.9		%		80-120	17-AUG-21
Manganese (Mn)-Dissolved			108.0		%		80-120	17-AUG-21
Molybdenum (Mo)-Dissolved			111.3		%		80-120	17-AUG-21
Nickel (Ni)-Dissolved			111.8		%		80-120	17-AUG-21
Phosphorus (P)-Dissolved			113.7		%		70-130	17-AUG-21
Potassium (K)-Dissolved			114.6		%		80-120	17-AUG-21
Selenium (Se)-Dissolved			107.5		%		80-120	17-AUG-21
Silicon (Si)-Dissolved			117.0		%		60-140	17-AUG-21
Silver (Ag)-Dissolved			104.3		%		80-120	17-AUG-21
Sodium (Na)-Dissolved			113.4		%		80-120	17-AUG-21
Strontium (Sr)-Dissolved			108.5		%		80-120	17-AUG-21
Sulfur (S)-Dissolved			110.2		%		80-120	17-AUG-21
Thallium (Tl)-Dissolved			107.1		%		80-120	17-AUG-21
Tin (Sn)-Dissolved			109.2		%		80-120	17-AUG-21
Titanium (Ti)-Dissolved			106.2		%		80-120	17-AUG-21
Uranium (U)-Dissolved			104.8		%		80-120	17-AUG-21
Vanadium (V)-Dissolved			113.2		%		80-120	17-AUG-21
Zinc (Zn)-Dissolved			111.2		%		80-120	17-AUG-21
Zirconium (Zr)-Dissolved			106.7		%		80-120	17-AUG-21
<b>WG3597182-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-AUG-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-AUG-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-AUG-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-AUG-21



## Quality Control Report

Workorder: L2625225

Report Date: 01-SEP-21

Page 7 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5550018</b>							
<b>WG3597182-1</b>	<b>MB</b>							
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-AUG-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-AUG-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-AUG-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-AUG-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-AUG-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-AUG-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-AUG-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-AUG-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-AUG-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-AUG-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-AUG-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-AUG-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-AUG-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-AUG-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	16-AUG-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-AUG-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-AUG-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-AUG-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-AUG-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-AUG-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-AUG-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	16-AUG-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-AUG-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-AUG-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-AUG-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-AUG-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-AUG-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-AUG-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	16-AUG-21
<b>WG3597182-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-AUG-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-21



## Quality Control Report

Workorder: L2625225

Report Date: 01-SEP-21

Page 8 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5550018</b>							
<b>WG3597182-5</b>	<b>MB</b>							
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-AUG-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-AUG-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-AUG-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-AUG-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-AUG-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-AUG-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-AUG-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-AUG-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	18-AUG-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-AUG-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-AUG-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-AUG-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-AUG-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-AUG-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	18-AUG-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-AUG-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-AUG-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-AUG-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-AUG-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-AUG-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	18-AUG-21
<b>WG3597182-4</b>	<b>MS</b>	<b>L2625225-8</b>						
Aluminum (Al)-Dissolved			99.2		%		70-130	17-AUG-21
Antimony (Sb)-Dissolved			90.1		%		70-130	17-AUG-21
Arsenic (As)-Dissolved			96.0		%		70-130	17-AUG-21
Barium (Ba)-Dissolved			100.5		%		70-130	17-AUG-21



## Quality Control Report

Workorder: L2625225

Report Date: 01-SEP-21

Page 9 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5550018</b>							
<b>WG3597182-4</b>	<b>MS</b>	<b>L2625225-8</b>						
Bismuth (Bi)-Dissolved			108.3		%		70-130	17-AUG-21
Boron (B)-Dissolved			97.6		%		70-130	17-AUG-21
Cadmium (Cd)-Dissolved			99.3		%		70-130	17-AUG-21
Calcium (Ca)-Dissolved			96.8		%		70-130	17-AUG-21
Chromium (Cr)-Dissolved			97.0		%		70-130	17-AUG-21
Cobalt (Co)-Dissolved			99.1		%		70-130	17-AUG-21
Copper (Cu)-Dissolved			98.9		%		70-130	17-AUG-21
Iron (Fe)-Dissolved			101.0		%		70-130	17-AUG-21
Lead (Pb)-Dissolved			97.6		%		70-130	17-AUG-21
Lithium (Li)-Dissolved			93.5		%		70-130	17-AUG-21
Magnesium (Mg)-Dissolved			96.7		%		70-130	17-AUG-21
Manganese (Mn)-Dissolved			96.2		%		70-130	17-AUG-21
Molybdenum (Mo)-Dissolved			96.4		%		70-130	17-AUG-21
Nickel (Ni)-Dissolved			99.1		%		70-130	17-AUG-21
Phosphorus (P)-Dissolved			99.1		%		70-130	17-AUG-21
Potassium (K)-Dissolved			98.6		%		70-130	17-AUG-21
Selenium (Se)-Dissolved			99.6		%		70-130	17-AUG-21
Silicon (Si)-Dissolved			93.7		%		70-130	17-AUG-21
Silver (Ag)-Dissolved			99.2		%		70-130	17-AUG-21
Sodium (Na)-Dissolved			98.9		%		70-130	17-AUG-21
Strontium (Sr)-Dissolved			101.3		%		70-130	17-AUG-21
Thallium (Tl)-Dissolved			95.3		%		70-130	17-AUG-21
Tin (Sn)-Dissolved			91.4		%		70-130	17-AUG-21
Titanium (Ti)-Dissolved			93.9		%		70-130	17-AUG-21
Uranium (U)-Dissolved			98.0		%		70-130	17-AUG-21
Vanadium (V)-Dissolved			98.3		%		70-130	17-AUG-21
Zinc (Zn)-Dissolved			98.5		%		70-130	17-AUG-21
Zirconium (Zr)-Dissolved			98.7		%		70-130	17-AUG-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5550218</b>							
<b>WG3596729-3</b>	<b>DUP</b>	<b>L2625225-1</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	13-AUG-21
<b>WG3596729-2</b>	<b>LCS</b>							
Ammonia as N			101.6		%		85-115	13-AUG-21
<b>WG3596729-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2625225

Report Date: 01-SEP-21

Page 10 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch R5550218								
WG3596729-1	MB		<0.0050		mg/L		0.005	13-AUG-21
Ammonia as N								
WG3596729-4	MS	L2625225-1	107.9		%		75-125	13-AUG-21
Ammonia as N								
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch R5554082								
WG3598774-2	LCS		103.1		%		90-110	11-AUG-21
Nitrite (as N)								
WG3598774-1	MB		<0.0010		mg/L		0.001	11-AUG-21
Nitrite (as N)								
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch R5554082								
WG3598774-2	LCS		100.8		%		90-110	11-AUG-21
Nitrate (as N)								
WG3598774-1	MB		<0.0050		mg/L		0.005	11-AUG-21
Nitrate (as N)								
<b>OH-CL</b>								
<b>Water</b>								
Batch R5556736								
WG3599711-8	DUP	L2625225-1	<5.0	RPD-NA	mg/L	N/A	25	17-AUG-21
Hydroxide (OH)								
WG3599711-1	MB		<5.0		mg/L		5	17-AUG-21
Hydroxide (OH)								
WG3599711-2	MB		<5.0		mg/L		5	17-AUG-21
Hydroxide (OH)								
<b>ORP-CL</b>								
<b>Water</b>								
Batch R5553221								
WG3598433-1	CRM	CL-ORP	228		mV		210-230	17-AUG-21
ORP								
WG3598433-2	DUP	L2625225-1	448	J	mV	1.8	15	17-AUG-21
ORP								
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch R5551396								
WG3597891-3	DUP	L2625225-2	0.0092		mg/L	4.4	20	14-AUG-21
Phosphorus (P)-Total								
WG3597891-2	LCS		100.2		%		80-120	14-AUG-21
Phosphorus (P)-Total								
WG3597891-1	MB							





## Quality Control Report

Workorder: L2625225

Report Date: 01-SEP-21

Page 12 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-F-ED</b>	<b>Water</b>							
Batch	R5569837							
<b>WG3604635-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			106		%		75-125	26-AUG-21
<b>WG3604635-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	26-AUG-21
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5551037							
<b>WG3597426-2</b>	<b>LCS</b>							
Total Suspended Solids			90.4		%		85-115	15-AUG-21
<b>WG3597426-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	15-AUG-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5549332							
<b>WG3596316-2</b>	<b>LCS</b>							
Turbidity			99.0		%		85-115	12-AUG-21
<b>WG3596316-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	12-AUG-21

# Quality Control Report

Workorder: L2625225

Report Date: 01-SEP-21

Page 13 of 14

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2625225

Report Date: 01-SEP-21

Page 14 of 14

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	10-AUG-21 15:50	17-AUG-21 07:16	0.25	159	hours	EHTR-FM
	2	10-AUG-21 10:20	17-AUG-21 07:16	0.25	165	hours	EHTR-FM
	3	10-AUG-21 11:50	17-AUG-21 07:16	0.25	163	hours	EHTR-FM
	4	10-AUG-21 14:30	17-AUG-21 07:16	0.25	161	hours	EHTR-FM
	5	10-AUG-21 13:30	17-AUG-21 07:16	0.25	162	hours	EHTR-FM
	6	10-AUG-21 15:50	17-AUG-21 07:16	0.25	159	hours	EHTR-FM
	7	10-AUG-21 15:40	17-AUG-21 07:16	0.25	160	hours	EHTR-FM
	8	10-AUG-21 16:00	17-AUG-21 07:16	0.25	159	hours	EHTR-FM
pH							
	1	10-AUG-21 15:50	17-AUG-21 20:00	0.25	172	hours	EHTR-FM
	2	10-AUG-21 10:20	17-AUG-21 20:00	0.25	178	hours	EHTR-FM
	3	10-AUG-21 11:50	17-AUG-21 20:00	0.25	176	hours	EHTR-FM
	4	10-AUG-21 14:30	17-AUG-21 20:00	0.25	174	hours	EHTR-FM
	5	10-AUG-21 13:30	17-AUG-21 20:00	0.25	174	hours	EHTR-FM
	6	10-AUG-21 15:50	17-AUG-21 20:00	0.25	172	hours	EHTR-FM
	7	10-AUG-21 15:40	17-AUG-21 20:00	0.25	172	hours	EHTR-FM
	8	10-AUG-21 16:00	17-AUG-21 20:00	0.25	172	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Nitrate in Water by IC (Low Level)							
	5	10-AUG-21 13:30	19-AUG-21 15:00	3	9	days	EHT

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2625225 were received on 11-AUG-21 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																	
Company:	SNC-Lavalin Inc.	Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																	
Contact:	Bill Wilmot	Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		PRIORITY (Business Days)	4 day [P4-20%] <input type="checkbox"/>		EMERGENCY	1 Business day [E1 - 100%] <input type="checkbox"/>													
Phone:	250-464-5054	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%] <input type="checkbox"/>			Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>													
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		2 day [P2-50%] <input type="checkbox"/>																	
Street:	520 Lake Street	SNC Emails: "Bill.Wilmot", "Alex.Heathcott"		Date and Time Required for all E&P TATs:																	
City/Province:	Nelson, BC	Vicky.Lipinski @sncclavalin.com		For tests that can not be performed according to the service level selected, you will be contacted.																	
Postal Code:	V1L 4C6	Teck Emails: chelsea.jensen@teck.com		<b>Analysis Request</b>																	
Invoice To	Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<b>Invoice Distribution</b>		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																	
	Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO	Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		F	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	
Company:		SNC Emails: Bill.Wilmot & payables @sncclavalin.com		DOC (C-DIS-ORG-LOW-CL)						SAMPLES ON HOLD						NUMBER OF CONTAINERS					
Contact:				TOC (C-TOT-ORG-LOW-CL)						Sample is hazardous (please provide further detail)											
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>		BCMDG D-Met. +Hg (MET-D-BCMDG-CL)																	
ALS Account # / Quote #:	MOR125 / Q78197	AFE/Cost Center: PO#		Total N Calc. (N-T-CALC-CL)																	
Job #:	673926	Major/Minor Code: Routing Code:		Nitrate + Nitrite Calc. (N2N3-CALC-CL)																	
PO / AFE:	681764	Requisitioner:		Teck Routine (TECKCOAL-ROUTINE-CL)																	
LSD:	FRO-X Baseline	Location:		TKN (TKN-L-F-CL)																	
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784		SAMPLER: AMIAL																	
ALS Sample # (lab use only)		Sample Identification &/or Coordinates (This description will appear on the report)		Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type											
FR_MW-FRRD1_WG_2021_08_10_NP		FR_MW-FRRD1		FR_MW-FRRD1		10-AUG-21		15:50		WG								5			
FR_MW-CH1-A_WG_2021_08_10_NP		FR_MW-CH1-A		FR_MW-CH1-A		10-AUG-21		10:20		WG								5			
FR_MW-CH2_WG_2021_08_10_NP		FR_MW-CH2		FR_MW-CH2		10-AUG-21		11:50		WG								5			
FR_MW-CASW6-A_WG_2021_08_10_N		FR_MW-CASW6-A		FR_MW-CASW6-A		10-AUG-21		14:30		WG								5			
FR_MW-CASW6-B_WG_2021_08_10_N		FR_MW-CASW6-B		FR_MW-CASW6-B		10-AUG-21		13:30		WG								5			
FR_MW-MC10A_WG_2021_08_10_NP		FR_MW-MC10A		FR_MW-MC10A		10-AUG-21		15:50		WG								5			
FR_MW-MC10B_WG_2021_08_10_NP		FR_MW-MC10B		FR_MW-MC10B		10-AUG-21		15:40		WG								5			
FR_MW-MC10C_WG_2021_08_10_NP		FR_MW-MC10C		FR_MW-MC10C		10-AUG-21		16:00		WG								5			
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																	
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																	
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																	
		Teck Facility Name: (please select the applicable Facility)		Cooling Initiated <input type="checkbox"/>						INITIAL COOLER TEMPERATURES °C						FINAL COOLER TEMPERATURES °C					
		GHO-GREENHILLS OPERATION		FRO-FORDING RIVER OPERATION		EVO-ELKVIEW OPERATIONS															
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>		<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																	
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:													
	Aug 10, 2021	1700		8/11	830																



SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 14-SEP-21  
Report Date: 04-NOV-21 10:58 (MT)  
Version: FINAL REV. 2

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2639109  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2639109-1 WG 13-SEP-21 12:30 GH_MW-WILLOW- 1D_WG_2021_09_ 13_NP	L2639109-2 WG 13-SEP-21 11:00 GH_MW-WILLOW- 2D_WG_2021_09_ 13_NP	L2639109-3 WG 13-SEP-21 14:15 GH_MW-WILLOW- 3S_WG_2021_09_ 13_NP	L2639109-4 WG 13-SEP-21 15:15 GH_MW-WILLOW- 3D_WG_2021_09_ 13_NP	L2639109-5 WG 13-SEP-21 12:00 GH_MW_MC10- A_WG_2021_09_1 3_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	481	702	438	456	432
	Hardness (as CaCO3) (mg/L)	140	124	250	206	252
	pH (pH)	8.47	8.60	8.34	8.42	8.31
	ORP (mV)	459	447	459	412	462
	Total Suspended Solids (mg/L)	21.0	10.3	<1.0	301	1.4
	Total Dissolved Solids (mg/L)	285	427	268	278	263
	Turbidity (NTU)	28.0	16.1	2.65	58.1	2.51
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.6	3.8	11.0	7.6	10.5
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	238	347	234	240	244
	Alkalinity, Carbonate (as CaCO3) (mg/L)	17.2	30.6	10.8	17.2	6.4
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	255	377	245	257	251
	Ammonia as N (mg/L)	0.0976	0.215	<0.0050	0.231	<0.0050
	Bicarbonate (HCO3) (mg/L)	290	423	285	293	298
	Bromide (Br) (mg/L)	<0.050	0.061	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	10.3	18.4	6.5	10.3	<5.0
	Chloride (Cl) (mg/L)	11.0	15.5	0.28	1.23	0.28
	Fluoride (F) (mg/L)	0.930	1.27	0.127	0.567	0.126
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	97.7	103	101	102	99.1
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	0.0071	0.0602	<0.0051	0.0649
	Nitrate (as N) (mg/L)	<0.0050	0.0056	0.0602	<0.0050	0.0649
	Nitrite (as N) (mg/L)	<0.0010	0.0015	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.153	0.265	0.062	0.295	0.094
	Total Nitrogen (mg/L)	0.153	0.272	0.122	0.295	0.159
	Orthophosphate-Dissolved (as P) (mg/L)	0.0026	0.0139	0.0049	0.0050	0.0052
	Phosphorus (P)-Total (mg/L)	0.0312	0.0286	0.0054	0.0472	0.0070
	Sulfate (SO4) (mg/L)	8.50	0.76	10.7	8.20	10.7
	Anion Sum (meq/L)	5.63	8.06	5.13	5.38	5.25
Cation Sum (meq/L)	5.51	8.34	5.17	5.46	5.21	
Cation - Anion Balance (%)	-1.1	1.7	0.4	0.8	-0.4	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.80	1.33	1.97	1.40	1.59
	Total Organic Carbon (mg/L)	1.37	1.44	2.00	1.68	1.96
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0024	0.0018	0.0033	0.0024	0.0028

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2639109-1 WG 13-SEP-21 12:30 GH_MW-WILLOW- 1D_WG_2021_09_ 13_NP	L2639109-2 WG 13-SEP-21 11:00 GH_MW-WILLOW- 2D_WG_2021_09_ 13_NP	L2639109-3 WG 13-SEP-21 14:15 GH_MW-WILLOW- 3S_WG_2021_09_ 13_NP	L2639109-4 WG 13-SEP-21 15:15 GH_MW-WILLOW- 3D_WG_2021_09_ 13_NP	L2639109-5 WG 13-SEP-21 12:00 GH_MW_MC10- A_WG_2021_09_1 3_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>					
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00033	0.00123	0.00011	0.00184	0.00012
Barium (Ba)-Dissolved (mg/L)	1.82	1.05	0.235	0.696	0.232
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	0.161	0.359	0.010	0.121	0.011
Cadmium (Cd)-Dissolved (mg/L)	<0.000050	0.0000070	0.0000217	<0.000050	0.0000171
Calcium (Ca)-Dissolved (mg/L)	28.6	24.0	63.4	43.4	64.0
Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00015	<0.00010
Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00028	<0.00010
Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	0.00029	<0.00020	0.00028
Iron (Fe)-Dissolved (mg/L)	0.426	0.103	<0.010	0.492	<0.010
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	0.103	0.268	0.0085	0.0643	0.0085
Magnesium (Mg)-Dissolved (mg/L)	16.8	15.6	22.3	23.6	22.3
Manganese (Mn)-Dissolved (mg/L)	0.0502	0.0123	0.00026	0.117	0.00032
Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)-Dissolved (mg/L)	0.00742	0.0135	0.000456	0.00497	0.000442
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved (mg/L)	0.90	1.94	0.86	1.68	0.86
Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	0.000529	<0.000050	0.000536
Silicon (Si)-Dissolved (mg/L)	3.27	4.44	4.37	4.71	4.43
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	61.0	133	3.49	29.4	3.48
Strontium (Sr)-Dissolved (mg/L)	0.639	0.438	0.127	0.747	0.129
Sulfur (S)-Dissolved (mg/L)	3.26	0.54	4.00	3.20	4.14
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Uranium (U)-Dissolved (mg/L)	0.000108	0.000194	0.000346	0.00112	0.000341
Vanadium (V)-Dissolved (mg/L)	<0.00050	0.00072	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.0017	0.0030	0.0018	<0.0010	0.0017
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2639109-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2639109-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2639109-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2639109-1, -2, -3, -4, -5
Duplicate	Total Kjeldahl Nitrogen	TKND	L2639109-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-F-VA**                      Water              TKN in Water by Fluorescence                      APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2639109

Report Date: 04-NOV-21

Page 1 of 11

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5586982</b>							
<b>WG3620465-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.6		%		85-115	18-SEP-21
<b>WG3620465-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	18-SEP-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5586928</b>							
<b>WG3620423-10</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.0		%		85-115	18-SEP-21
<b>WG3620423-9</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-SEP-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5588578</b>							
<b>WG3620908-7</b>	<b>DUP</b>	<b>L2639109-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	20-SEP-21
<b>WG3620908-6</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.4		%		80-120	23-SEP-21
<b>WG3620908-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	20-SEP-21
<b>WG3620908-8</b>	<b>MS</b>	<b>L2639109-2</b>						
Beryllium (Be)-Dissolved			100.2		%		70-130	20-SEP-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5586928</b>							
<b>WG3620423-9</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	18-SEP-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5587541</b>							
<b>WG3620798-2</b>	<b>LCS</b>							
Bromide (Br)			104.5		%		85-115	15-SEP-21
<b>WG3620798-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	15-SEP-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5603302</b>							
<b>WG3626664-3</b>	<b>DUP</b>	<b>L2639109-4</b>						
Dissolved Organic Carbon		1.40	1.38		mg/L	1.6	20	27-SEP-21
<b>WG3626664-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			92.8		%		80-120	27-SEP-21



## Quality Control Report

Workorder: L2639109

Report Date: 04-NOV-21

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5603302							
<b>WG3626664-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-SEP-21
<b>WG3626664-4 MS</b>		<b>L2639109-4</b>						
Dissolved Organic Carbon			105.3		%		70-130	27-SEP-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5603302							
<b>WG3626664-3 DUP</b>		<b>L2639109-4</b>						
Total Organic Carbon		1.68	1.95		mg/L	15	20	27-SEP-21
<b>WG3626664-2 LCS</b>								
Total Organic Carbon			95.0		%		80-120	27-SEP-21
<b>WG3626664-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	27-SEP-21
<b>WG3626664-4 MS</b>		<b>L2639109-4</b>						
Total Organic Carbon			121.4		%		70-130	27-SEP-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5587541							
<b>WG3620798-2 LCS</b>								
Chloride (Cl)			103.3		%		85-115	15-SEP-21
<b>WG3620798-1 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	15-SEP-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5586928							
<b>WG3620423-9 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	18-SEP-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5586928							
<b>WG3620423-9 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	18-SEP-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5587541							
<b>WG3620798-2 LCS</b>								
Fluoride (F)			108.1		%		90-110	15-SEP-21
<b>WG3620798-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	15-SEP-21
<b>HG-D-CVAA-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2639109

Report Date: 04-NOV-21

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5586840</b>							
<b>WG3620318-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			103.0		%		80-120	18-SEP-21
<b>WG3620318-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.00005C		mg/L		0.000005	18-SEP-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5588578</b>							
<b>WG3620908-7</b>	<b>DUP</b>	<b>L2639109-1</b>						
Aluminum (Al)-Dissolved		0.0024	0.0027		mg/L	9.7	20	20-SEP-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-SEP-21
Arsenic (As)-Dissolved		0.00033	0.00031		mg/L	5.3	20	20-SEP-21
Barium (Ba)-Dissolved		1.82	1.83		mg/L	0.5	20	20-SEP-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-SEP-21
Boron (B)-Dissolved		0.161	0.165		mg/L	2.7	20	20-SEP-21
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	20-SEP-21
Calcium (Ca)-Dissolved		28.6	28.3		mg/L	1.2	20	20-SEP-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-SEP-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-SEP-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	20-SEP-21
Iron (Fe)-Dissolved		0.426	0.422		mg/L	0.8	20	20-SEP-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-SEP-21
Lithium (Li)-Dissolved		0.103	0.101		mg/L	1.7	20	20-SEP-21
Magnesium (Mg)-Dissolved		16.8	16.8		mg/L	0.1	20	20-SEP-21
Manganese (Mn)-Dissolved		0.0502	0.0495		mg/L	1.4	20	20-SEP-21
Molybdenum (Mo)-Dissolved		0.00742	0.00728		mg/L	2.0	20	20-SEP-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-SEP-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	20-SEP-21
Potassium (K)-Dissolved		0.90	0.91		mg/L	0.9	20	20-SEP-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-SEP-21
Silicon (Si)-Dissolved		3.27	3.33		mg/L	1.6	20	20-SEP-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	20-SEP-21
Sodium (Na)-Dissolved		61.0	60.9		mg/L	0.2	20	20-SEP-21
Strontium (Sr)-Dissolved		0.639	0.627		mg/L	1.9	20	20-SEP-21
Sulfur (S)-Dissolved		3.26	3.25		mg/L	0.2	20	20-SEP-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	20-SEP-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-SEP-21



## Quality Control Report

Workorder: L2639109

Report Date: 04-NOV-21

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5588578</b>							
<b>WG3620908-7</b>	<b>DUP</b>	<b>L2639109-1</b>						
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	20-SEP-21
Uranium (U)-Dissolved		0.000108	0.000107		mg/L	1.7	20	20-SEP-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-SEP-21
Zinc (Zn)-Dissolved		0.0017	0.0019		mg/L	9.0	20	20-SEP-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	20-SEP-21
<b>WG3620908-6</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.0		%		80-120	23-SEP-21
Antimony (Sb)-Dissolved			95.4		%		80-120	23-SEP-21
Arsenic (As)-Dissolved			96.2		%		80-120	23-SEP-21
Barium (Ba)-Dissolved			98.6		%		80-120	23-SEP-21
Bismuth (Bi)-Dissolved			99.1		%		80-120	23-SEP-21
Boron (B)-Dissolved			88.7		%		80-120	23-SEP-21
Cadmium (Cd)-Dissolved			96.9		%		80-120	23-SEP-21
Calcium (Ca)-Dissolved			95.0		%		80-120	23-SEP-21
Chromium (Cr)-Dissolved			97.1		%		80-120	23-SEP-21
Cobalt (Co)-Dissolved			98.0		%		80-120	23-SEP-21
Copper (Cu)-Dissolved			95.8		%		80-120	23-SEP-21
Iron (Fe)-Dissolved			102.0		%		80-120	23-SEP-21
Lead (Pb)-Dissolved			100.5		%		80-120	23-SEP-21
Lithium (Li)-Dissolved			99.1		%		80-120	23-SEP-21
Magnesium (Mg)-Dissolved			106.4		%		80-120	23-SEP-21
Manganese (Mn)-Dissolved			97.3		%		80-120	23-SEP-21
Molybdenum (Mo)-Dissolved			100.9		%		80-120	23-SEP-21
Nickel (Ni)-Dissolved			96.9		%		80-120	23-SEP-21
Phosphorus (P)-Dissolved			95.8		%		70-130	23-SEP-21
Potassium (K)-Dissolved			98.7		%		80-120	23-SEP-21
Selenium (Se)-Dissolved			91.6		%		80-120	23-SEP-21
Silicon (Si)-Dissolved			96.7		%		60-140	23-SEP-21
Silver (Ag)-Dissolved			86.9		%		80-120	23-SEP-21
Sodium (Na)-Dissolved			102.5		%		80-120	23-SEP-21
Strontium (Sr)-Dissolved			115.4		%		80-120	23-SEP-21
Sulfur (S)-Dissolved			100.7		%		80-120	23-SEP-21
Thallium (Tl)-Dissolved			100.6		%		80-120	23-SEP-21
Tin (Sn)-Dissolved			97.2		%		80-120	23-SEP-21



## Quality Control Report

Workorder: L2639109

Report Date: 04-NOV-21

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5588578</b>							
<b>WG3620908-6</b>	<b>LCS</b>							
Titanium (Ti)-Dissolved			92.4		%		80-120	23-SEP-21
Uranium (U)-Dissolved			81.4		%		80-120	23-SEP-21
Vanadium (V)-Dissolved			97.7		%		80-120	23-SEP-21
Zinc (Zn)-Dissolved			91.6		%		80-120	23-SEP-21
Zirconium (Zr)-Dissolved			90.0		%		80-120	23-SEP-21
<b>WG3620908-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	20-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	20-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	20-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	20-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	20-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	20-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	20-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	20-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	20-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	20-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	20-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	20-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	20-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	20-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	20-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	20-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	20-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	20-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	20-SEP-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	20-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	20-SEP-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	20-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	20-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	20-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	20-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	20-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	20-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	20-SEP-21



## Quality Control Report

Workorder: L2639109

Report Date: 04-NOV-21

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5588578</b>							
<b>WG3620908-5</b>	<b>MB</b>							
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	20-SEP-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	20-SEP-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	20-SEP-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	20-SEP-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	20-SEP-21
<b>WG3620908-8</b>	<b>MS</b>	<b>L2639109-2</b>						
Aluminum (Al)-Dissolved			99.8		%		70-130	20-SEP-21
Antimony (Sb)-Dissolved			108.8		%		70-130	20-SEP-21
Arsenic (As)-Dissolved			97.9		%		70-130	20-SEP-21
Barium (Ba)-Dissolved			N/A	MS-B	%		-	20-SEP-21
Bismuth (Bi)-Dissolved			103.3		%		70-130	20-SEP-21
Boron (B)-Dissolved			101.8		%		70-130	20-SEP-21
Cadmium (Cd)-Dissolved			97.0		%		70-130	20-SEP-21
Calcium (Ca)-Dissolved			99.8		%		70-130	20-SEP-21
Chromium (Cr)-Dissolved			99.0		%		70-130	20-SEP-21
Cobalt (Co)-Dissolved			98.3		%		70-130	20-SEP-21
Copper (Cu)-Dissolved			98.5		%		70-130	20-SEP-21
Iron (Fe)-Dissolved			98.3		%		70-130	20-SEP-21
Lead (Pb)-Dissolved			103.0		%		70-130	20-SEP-21
Lithium (Li)-Dissolved			103.6		%		70-130	20-SEP-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	20-SEP-21
Manganese (Mn)-Dissolved			100.6		%		70-130	20-SEP-21
Molybdenum (Mo)-Dissolved			91.4		%		70-130	20-SEP-21
Nickel (Ni)-Dissolved			99.4		%		70-130	20-SEP-21
Phosphorus (P)-Dissolved			99.4		%		70-130	20-SEP-21
Potassium (K)-Dissolved			105.4		%		70-130	20-SEP-21
Selenium (Se)-Dissolved			101.2		%		70-130	20-SEP-21
Silicon (Si)-Dissolved			91.4		%		70-130	20-SEP-21
Silver (Ag)-Dissolved			88.7		%		70-130	20-SEP-21
Sodium (Na)-Dissolved			N/A	MS-B	%		-	20-SEP-21
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	20-SEP-21
Thallium (Tl)-Dissolved			89.6		%		70-130	20-SEP-21
Tin (Sn)-Dissolved			89.4		%		70-130	20-SEP-21
Titanium (Ti)-Dissolved			99.9		%		70-130	20-SEP-21



## Quality Control Report

Workorder: L2639109

Report Date: 04-NOV-21

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
Batch	R5588578							
<b>WG3620908-8</b>	<b>MS</b>	<b>L2639109-2</b>						
Uranium (U)-Dissolved			84.3		%		70-130	20-SEP-21
Vanadium (V)-Dissolved			99.5		%		70-130	20-SEP-21
Zinc (Zn)-Dissolved			99.7		%		70-130	20-SEP-21
Zirconium (Zr)-Dissolved			103.4		%		70-130	20-SEP-21
<b>NH3-L-F-CL</b>								
Batch	R5599525							
<b>WG3625059-2</b>	<b>LCS</b>							
Ammonia as N			100.1		%		85-115	25-SEP-21
<b>WG3625059-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	25-SEP-21
<b>NO2-L-IC-N-CL</b>								
Batch	R5587541							
<b>WG3620798-2</b>	<b>LCS</b>							
Nitrite (as N)			103.2		%		90-110	15-SEP-21
<b>WG3620798-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	15-SEP-21
<b>NO3-L-IC-N-CL</b>								
Batch	R5587541							
<b>WG3620798-2</b>	<b>LCS</b>							
Nitrate (as N)			103.7		%		90-110	15-SEP-21
<b>WG3620798-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	15-SEP-21
<b>OH-CL</b>								
Batch	R5586928							
<b>WG3620423-9</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	18-SEP-21
<b>ORP-CL</b>								
Batch	R5590324							
<b>WG3621796-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			218		mV		210-230	21-SEP-21
<b>WG3621796-2</b>	<b>DUP</b>	<b>L2639109-1</b>						
ORP		459	466	J	mV	6.9	15	21-SEP-21
<b>P-T-L-COL-CL</b>								
	Water							



## Quality Control Report

Workorder: L2639109

Report Date: 04-NOV-21

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5586242</b>							
<b>WG3619657-3</b>	<b>DUP</b>	<b>L2639109-2</b>						
Phosphorus (P)-Total		0.0286	0.0310		mg/L	7.9	20	17-SEP-21
<b>WG3619657-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			100.3		%		80-120	17-SEP-21
<b>WG3619657-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-SEP-21
<b>WG3619657-4</b>	<b>MS</b>	<b>L2639109-2</b>						
Phosphorus (P)-Total			89.7		%		70-130	17-SEP-21
<b>PH-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5586928</b>							
<b>WG3620423-10</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	18-SEP-21
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584173</b>							
<b>WG3617163-3</b>	<b>DUP</b>	<b>L2639109-4</b>						
Orthophosphate-Dissolved (as P)		0.0050	0.0052		mg/L	4.3	20	14-SEP-21
<b>WG3617163-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.9		%		80-120	14-SEP-21
<b>WG3617163-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-SEP-21
<b>WG3617163-4</b>	<b>MS</b>	<b>L2639109-1</b>						
Orthophosphate-Dissolved (as P)			111.8		%		70-130	14-SEP-21
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5587541</b>							
<b>WG3620798-2</b>	<b>LCS</b>							
Sulfate (SO4)			102.7		%		90-110	15-SEP-21
<b>WG3620798-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	15-SEP-21
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5586252</b>							
<b>WG3618587-3</b>	<b>DUP</b>	<b>L2639109-4</b>						
Total Dissolved Solids		278	284		mg/L	2.0	20	16-SEP-21
<b>WG3618587-2</b>	<b>LCS</b>							
Total Dissolved Solids			100.1		%		85-115	16-SEP-21
<b>WG3618587-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	16-SEP-21
	<b>Water</b>							





## Quality Control Report

Workorder: L2639109

Report Date: 04-NOV-21

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-F-VA</b>	<b>Water</b>							
Batch	R5604859							
<b>WG3621729-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.7		%		75-125	29-SEP-21
<b>WG3621729-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-SEP-21
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5588378							
<b>WG3620399-2</b>	<b>LCS</b>							
Total Suspended Solids			93.3		%		85-115	19-SEP-21
<b>WG3620399-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	19-SEP-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5584150							
<b>WG3617210-2</b>	<b>LCS</b>							
Turbidity			98.3		%		85-115	14-SEP-21
<b>WG3617210-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	14-SEP-21

# Quality Control Report

Workorder: L2639109

Report Date: 04-NOV-21

Page 10 of 11

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2639109

Report Date: 04-NOV-21

Page 11 of 11

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	13-SEP-21 12:30	21-SEP-21 12:20	0.25	192	hours	EHTR-FM
	2	13-SEP-21 11:00	21-SEP-21 12:20	0.25	193	hours	EHTR-FM
	3	13-SEP-21 14:15	21-SEP-21 12:20	0.25	190	hours	EHTR-FM
	4	13-SEP-21 15:15	21-SEP-21 12:20	0.25	189	hours	EHTR-FM
	5	13-SEP-21 12:00	21-SEP-21 12:20	0.25	192	hours	EHTR-FM
pH	1	13-SEP-21 12:30	18-SEP-21 09:00	0.25	116	hours	EHTR-FM
	2	13-SEP-21 11:00	18-SEP-21 09:00	0.25	118	hours	EHTR-FM
	3	13-SEP-21 14:15	18-SEP-21 09:00	0.25	115	hours	EHTR-FM
	4	13-SEP-21 15:15	18-SEP-21 09:00	0.25	114	hours	EHTR-FM
	5	13-SEP-21 12:00	18-SEP-21 09:00	0.25	117	hours	EHTR-FM

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2639109 were received on 14-SEP-21 10:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



**ALS Environmental**

www.alsglobal.com

**Chain of Custody (COC) / Analytical Request Form**

Canada Toll Free: 1 800 668 9878



L2639109-COFC

COC Number:

Page 1 of 1

<b>Report To</b> Contact and company name below will appear on the final report			<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																																																				
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply							Priority (Business Day)				EMERGENCY																																											
Contact: Genevieve Pomerleau		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		4 day [P4-20%] <input type="checkbox"/>							1 Business day [E1 - 100%] <input type="checkbox"/>																																															
Phone: Tel.:250-354-1664 ext. 53216 Cell.: 250-505-2847		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		3 day [P3-25%] <input type="checkbox"/>							Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply) ] <input type="checkbox"/>																																															
Company address below will appear on the final report			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Date and Time Required for all E&P TATs: _____																																																				
Street: 520 Lake Street		Emails: SNC - genevieve.pomerleau' and			For tests that can not be performed according to the service level selected, you will be contacted.																																																					
City/Province: Nelson, BC		vicky.lipinski@snclavalin.com			<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																					
Postal Code: V1L 4C6		Teck - 'crystal.sabel' and sarah.therrien@teck.com																																																								
Invoice To Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Invoice Distribution			<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>F</th><th>P</th><th>F/P</th><th>F</th><th>P</th><th>F/P</th><th>F</th><th>P</th><th>F/P</th><th>F</th><th>P</th><th>F/P</th><th>F</th><th>P</th><th>F/P</th><th>F</th><th>P</th><th>F/P</th><th>F</th><th>P</th><th>F/P</th> </tr> <tr> <td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td> </tr> </table>											F	P	F/P	F	P	F/P	F	P	F/P	F	P	F/P	F	P	F/P	F	P	F/P	F	P	F/P	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
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Company:		Emails: tyler.gale@snclavalin.com																																																								
Contact:		payables@snclavalin.com																																																								
<b>Project Information</b>			<b>Oil and Gas Required Fields (client use)</b>																																																							
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center:	PO#																																																							
Job #: Greenhills Operations		Major/Minor Code:	Routing Code:																																																							
PO / AFE: 658004		Requisitioner:																																																								
LSD:		Location:																																																								
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ALS Sample # (lab use only)	Sample Identification &/or Coordinates	Teck Sample Location (sys_loc_code)	Date	Time	Sample Type																																																					
	(This description will appear on the report)	(For Teck data upload to EQUIS database)	(dd-mm-yy)	(hh:mm)		DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCM-DG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS																																								
	GH_MW-Willow-1D_WG_2021_09_13_NP	GH_MW-Willow-1D	13-Sep-21	12:30	WG	R	R	R	R	R	R	R	R	R	R			5																																								
	GH_MW-Willow-2D_WG_2021_09_13_NP	GH_MW-Willow-2D	13-Sep-21	11:00	WG	R	R	R	R	R	R	R	R	R	R			5																																								
	GH_MW-Willow-3S_WG_2021_09_13_NP	GH_MW-Willow-3S	13-Sep-21	14:15	WG	R	R	R	R	R	R	R	R	R	R			5																																								
	GH_MW-Willow-3D_WG_2021_09_13_NP	GH_MW-Willow-3D	13-Sep-21	15:15	WG	R	R	R	R	R	R	R	R	R	R			5																																								
	GH_MW_MC10-A_WG_2021_09_13_NP	GH_MW_MC10-A	13-Sep-21	12:00	WG	R	R	R	R	R	R	R	R	R	R			5																																								
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																																																					
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO <a href="mailto:teckcoal@equisonline.com">teckcoal@equisonline.com</a>			Frozen <input type="checkbox"/>							SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																																														
Are samples for human consumption/use? <input checked="" type="checkbox"/> NO					Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input type="checkbox"/>							Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																																														
Teck Facility Name: (please select the applicable Facility)					Cooling Initiated <input checked="" type="checkbox"/>																																																					
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>GH0-GREENHILLS OPERATION</td> <td>FRO-FORDING RIVER OPERATION</td> <td>EVO-ELKVIEW OPERATIONS</td> </tr> </table>					GH0-GREENHILLS OPERATION	FRO-FORDING RIVER OPERATION	EVO-ELKVIEW OPERATIONS	INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C																																													
					GH0-GREENHILLS OPERATION	FRO-FORDING RIVER OPERATION	EVO-ELKVIEW OPERATIONS																																																			
<b>SHIPMENT RELEASE (client use)</b>			<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																																																				
Released by: Jen von Gradulewski		Date: 21/09/13	Time: 17:00	Received by: <i>[Signature]</i>		Date: 9/14	Time: 1030	Received by: _____							Date: _____																																											

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION  
 WHITE - LABORATORY COPY YELLOW - CLIENT COPY  
 Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.  
 1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.  
 SEPT 2017 FRONT



SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 15-SEP-21  
Report Date: 05-OCT-21 13:52 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2639693  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2639693-1	L2639693-2	L2639693-3	L2639693-4
		Description	WATER	WATER	WATER	WATER
		Sampled Date	14-SEP-21	14-SEP-21	14-SEP-21	14-SEP-21
		Sampled Time	15:10	15:00	10:45	12:00
		Client ID	GH_MW-MC-1S_WG_2021_09_14_NP	GH_MW-MC-1D_WG_2021_09_14_NP	GH_MW-WOLF-1D_WG_2021_09_14_NP	GH_MW_MC10-A_WG_2021_09_14_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	294	406	409	414	
	Hardness (as CaCO3) (mg/L)	140	114	184	186	
	pH (pH)	8.34	8.47	8.38	8.38	
	ORP (mV)	468	390	383	395	
	Total Suspended Solids (mg/L)	<1.0	<1.0	4.9	5.7	
	Total Dissolved Solids (mg/L)	172	224	232	233	
	Turbidity (NTU)	0.15	1.11	10.6	11.1	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5.1	3.6	9.6	9.0	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	139	183	215	218	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	7.4	14.2	12.8	12.4	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	147	197	228	230	
	Ammonia as N (mg/L)	<0.0050	0.0307	0.0896	0.0835	
	Bicarbonate (HCO3) (mg/L)	170	223	263	266	
	Bromide (Br) (mg/L)	<0.050	0.103	<0.050	<0.050	
	Carbonate (CO3) (mg/L)	<5.0	8.5	7.7	7.4	
	Chloride (Cl) (mg/L)	0.25	20.2	0.75	0.74	
	Fluoride (F) (mg/L)	0.142	0.727	0.233	0.240	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	
	Ion Balance (%)	85.9	89.9	86.6	87.1	
	Nitrate and Nitrite (as N) (mg/L)	0.0804	<0.0051	<0.0051	<0.0051	
	Nitrate (as N) (mg/L)	0.0804	<0.0050	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.075	0.065	0.151	0.152	
	Total Nitrogen (mg/L)	0.155	0.065	0.151	0.152	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0010	<0.0010	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	0.0176	0.0094	
	Sulfate (SO4) (mg/L)	16.7	0.50	10.2	10.1	
	Anion Sum (meq/L)	3.30	4.56	4.80	4.85	
	Cation Sum (meq/L)	2.83	4.10	4.16	4.22	
Cation - Anion Balance (%)	-7.6	-5.3	-7.2	-6.9		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.99	1.05 <sup>DTC</sup>	1.45	1.30	
	Total Organic Carbon (mg/L)	0.86	<0.50 <sup>DTC</sup>	1.20	1.23	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0017	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2639693-1	L2639693-2	L2639693-3	L2639693-4
					L2639693-1 WATER 14-SEP-21 15:10 GH_MW-MC- 1S_WG_2021_09_ 14_NP	L2639693-2 WATER 14-SEP-21 15:00 GH_MW-MC- 1D_WG_2021_09_ 14_NP	L2639693-3 WATER 14-SEP-21 10:45 GH_MW-WOLF- 1D_WG_2021_09_ 14_NP	L2639693-4 WATER 14-SEP-21 12:00 GH_MW_MC10- A_WG_2021_09_1 4_NP
Grouping	Analyte							
<b>WATER</b>								
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00099	0.00093	0.00093			
	Barium (Ba)-Dissolved (mg/L)	0.0559	0.848	0.191	0.192			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010	0.074	0.078	0.081			
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Calcium (Ca)-Dissolved (mg/L)	39.7	24.0	41.4	41.9			
	Chromium (Cr)-Dissolved (mg/L)	0.00018	<0.00010	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	0.00011	0.00012			
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.179	0.670	0.705			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0019	0.0814	0.0295	0.0300			
	Magnesium (Mg)-Dissolved (mg/L)	9.90	13.2	19.6	19.9			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.125	0.196	0.200			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00118	0.00672	0.00285	0.00281			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050			
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050			
	Potassium (K)-Dissolved (mg/L)	0.39	1.25	1.10	1.12			
	Selenium (Se)-Dissolved (mg/L)	0.000749	<0.000050	<0.000050	<0.000050			
	Silicon (Si)-Dissolved (mg/L)	1.99	3.12	4.77	4.80			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	0.688	40.6	9.46	9.73			
	Strontium (Sr)-Dissolved (mg/L)	0.202	0.394	0.876	0.881			
	Sulfur (S)-Dissolved (mg/L)	6.10	<0.50	3.61	3.51			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000036	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.000646	0.000070	0.000257	0.000260			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.0011	0.0012			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			



## Reference Information

with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

## Reference Information

<b>TKN-F-VA</b>	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 1 of 10

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R5586982							
<b>WG3620465-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.6		%		85-115	18-SEP-21
<b>WG3620465-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	18-SEP-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R5586928							
<b>WG3620423-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.9		%		85-115	18-SEP-21
<b>WG3620423-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-SEP-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
Batch	R5591376							
<b>WG3621955-7</b>	<b>DUP</b>	<b>L2639693-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	21-SEP-21
<b>WG3621955-6</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			92.4		%		80-120	21-SEP-21
<b>WG3621955-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	21-SEP-21
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R5586928							
<b>WG3620423-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	18-SEP-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R5589397							
<b>WG3621448-3</b>	<b>DUP</b>	<b>L2639693-1</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-SEP-21
<b>WG3621448-2</b>	<b>LCS</b>							
Bromide (Br)			104.2		%		85-115	16-SEP-21
<b>WG3621448-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	16-SEP-21
<b>WG3621448-4</b>	<b>MS</b>	<b>L2639693-2</b>						
Bromide (Br)			108.7		%		75-125	16-SEP-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5603359							
<b>WG3626685-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			88.6		%		80-120	27-SEP-21
<b>WG3626685-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-SEP-21
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5603359							
<b>WG3626685-6</b>	<b>LCS</b>							
Total Organic Carbon			91.1		%		80-120	27-SEP-21
<b>WG3626685-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	27-SEP-21
<b>CL-L-IC-N-CL</b> <b>Water</b>								
Batch	R5589397							
<b>WG3621448-3</b>	<b>DUP</b>	<b>L2639693-1</b>						
Chloride (Cl)			0.25	0.24	mg/L	3.2	20	16-SEP-21
<b>WG3621448-2</b>	<b>LCS</b>							
Chloride (Cl)			104.4		%		85-115	16-SEP-21
<b>WG3621448-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	16-SEP-21
<b>WG3621448-4</b>	<b>MS</b>	<b>L2639693-2</b>						
Chloride (Cl)			107.5		%		75-125	16-SEP-21
<b>CO3-CL</b> <b>Water</b>								
Batch	R5586928							
<b>WG3620423-1</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	18-SEP-21
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R5586928							
<b>WG3620423-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			97.3		%		90-110	18-SEP-21
<b>WG3620423-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	18-SEP-21
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R5589397							
<b>WG3621448-3</b>	<b>DUP</b>	<b>L2639693-1</b>						
Fluoride (F)			0.142	0.141	mg/L	0.9	20	16-SEP-21
<b>WG3621448-2</b>	<b>LCS</b>							
Fluoride (F)			101.6		%		90-110	16-SEP-21



## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5589397</b>							
<b>WG3621448-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	16-SEP-21
<b>WG3621448-4</b>	<b>MS</b>	<b>L2639693-2</b>						
Fluoride (F)			106.5		%		75-125	16-SEP-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5586840</b>							
<b>WG3620318-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			108.0		%		80-120	18-SEP-21
<b>WG3620318-14</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			104.0		%		80-120	18-SEP-21
<b>WG3620318-13</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-SEP-21
<b>WG3620318-9</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-SEP-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5591376</b>							
<b>WG3621955-7</b>	<b>DUP</b>	<b>L2639693-1</b>						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-SEP-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-SEP-21
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-SEP-21
Barium (Ba)-Dissolved		0.0559	0.0538		mg/L	3.9	20	21-SEP-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	21-SEP-21
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	21-SEP-21
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	21-SEP-21
Calcium (Ca)-Dissolved		39.7	40.5		mg/L	2.0	20	21-SEP-21
Chromium (Cr)-Dissolved		0.00018	0.00016		mg/L	16	20	21-SEP-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-SEP-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	21-SEP-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	21-SEP-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	21-SEP-21
Lithium (Li)-Dissolved		0.0019	0.0022		mg/L	14	20	21-SEP-21
Magnesium (Mg)-Dissolved		9.90	9.65		mg/L	2.6	20	21-SEP-21
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-SEP-21
Molybdenum (Mo)-Dissolved		0.00118	0.00117		mg/L	0.5	20	21-SEP-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	21-SEP-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	21-SEP-21



## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5591376</b>							
<b>WG3621955-7</b>	<b>DUP</b>	<b>L2639693-1</b>						
Potassium (K)-Dissolved		0.39	0.39		mg/L	0.6	20	21-SEP-21
Selenium (Se)-Dissolved		0.000749	0.000668		mg/L	11	20	21-SEP-21
Silicon (Si)-Dissolved		1.99	2.01		mg/L	0.7	20	21-SEP-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	21-SEP-21
Sodium (Na)-Dissolved		0.688	0.686		mg/L	0.3	20	21-SEP-21
Strontium (Sr)-Dissolved		0.202	0.202		mg/L	0.1	20	21-SEP-21
Sulfur (S)-Dissolved		6.10	6.18		mg/L	1.2	20	21-SEP-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	21-SEP-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-SEP-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	21-SEP-21
Uranium (U)-Dissolved		0.000646	0.000639		mg/L	1.1	20	21-SEP-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	21-SEP-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-SEP-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	21-SEP-21
<b>WG3621955-6</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.8		%		80-120	21-SEP-21
Antimony (Sb)-Dissolved			101.0		%		80-120	21-SEP-21
Arsenic (As)-Dissolved			96.9		%		80-120	21-SEP-21
Barium (Ba)-Dissolved			98.7		%		80-120	21-SEP-21
Bismuth (Bi)-Dissolved			98.4		%		80-120	21-SEP-21
Boron (B)-Dissolved			86.3		%		80-120	21-SEP-21
Cadmium (Cd)-Dissolved			95.5		%		80-120	21-SEP-21
Calcium (Ca)-Dissolved			92.4		%		80-120	21-SEP-21
Chromium (Cr)-Dissolved			97.5		%		80-120	21-SEP-21
Cobalt (Co)-Dissolved			100.9		%		80-120	21-SEP-21
Copper (Cu)-Dissolved			95.3		%		80-120	21-SEP-21
Iron (Fe)-Dissolved			96.7		%		80-120	21-SEP-21
Lead (Pb)-Dissolved			98.1		%		80-120	21-SEP-21
Lithium (Li)-Dissolved			100.1		%		80-120	21-SEP-21
Magnesium (Mg)-Dissolved			94.4		%		80-120	21-SEP-21
Manganese (Mn)-Dissolved			101.0		%		80-120	21-SEP-21
Molybdenum (Mo)-Dissolved			99.0		%		80-120	21-SEP-21
Nickel (Ni)-Dissolved			98.1		%		80-120	21-SEP-21
Phosphorus (P)-Dissolved			108.3		%		70-130	21-SEP-21



## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5591376</b>							
<b>WG3621955-6</b>		<b>LCS</b>						
Potassium (K)-Dissolved			96.4		%		80-120	21-SEP-21
Selenium (Se)-Dissolved			94.8		%		80-120	21-SEP-21
Silicon (Si)-Dissolved			93.8		%		60-140	21-SEP-21
Silver (Ag)-Dissolved			102.9		%		80-120	21-SEP-21
Sodium (Na)-Dissolved			97.2		%		80-120	21-SEP-21
Strontium (Sr)-Dissolved			96.4		%		80-120	21-SEP-21
Sulfur (S)-Dissolved			102.2		%		80-120	21-SEP-21
Thallium (Tl)-Dissolved			97.7		%		80-120	21-SEP-21
Tin (Sn)-Dissolved			97.7		%		80-120	21-SEP-21
Titanium (Ti)-Dissolved			91.4		%		80-120	21-SEP-21
Uranium (U)-Dissolved			98.4		%		80-120	21-SEP-21
Vanadium (V)-Dissolved			99.8		%		80-120	21-SEP-21
Zinc (Zn)-Dissolved			97.6		%		80-120	21-SEP-21
Zirconium (Zr)-Dissolved			100.3		%		80-120	21-SEP-21
<b>WG3621955-5</b>		<b>MB</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	21-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	21-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	21-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	21-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	21-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	21-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	21-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	21-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	21-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	21-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	21-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	21-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	21-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	21-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	21-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	21-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	21-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	21-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	21-SEP-21



## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5591376</b>							
<b>WG3621955-5</b>	<b>MB</b>							
Potassium (K)-Dissolved			<0.050		mg/L		0.05	21-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	21-SEP-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	21-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	21-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	21-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	21-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	21-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	21-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	21-SEP-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	21-SEP-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	21-SEP-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	21-SEP-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	21-SEP-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	21-SEP-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5606938</b>							
<b>WG3630212-6</b>	<b>LCS</b>							
Ammonia as N			97.8		%		85-115	02-OCT-21
<b>WG3630212-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	02-OCT-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5589397</b>							
<b>WG3621448-3</b>	<b>DUP</b>	<b>L2639693-1</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	16-SEP-21
<b>WG3621448-2</b>	<b>LCS</b>							
Nitrite (as N)			103.3		%		90-110	16-SEP-21
<b>WG3621448-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	16-SEP-21
<b>WG3621448-4</b>	<b>MS</b>	<b>L2639693-2</b>						
Nitrite (as N)			109.0		%		75-125	16-SEP-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5589397</b>							
<b>WG3621448-3</b>	<b>DUP</b>	<b>L2639693-1</b>						
Nitrate (as N)		0.0804	0.0787		mg/L	2.1	20	16-SEP-21
<b>WG3621448-2</b>	<b>LCS</b>							





## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5589397							
<b>WG3621448-2</b>	<b>LCS</b>							
Nitrate (as N)			105.1		%		90-110	16-SEP-21
<b>WG3621448-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	16-SEP-21
<b>WG3621448-4</b>	<b>MS</b>	<b>L2639693-2</b>						
Nitrate (as N)			106.4		%		75-125	16-SEP-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5586928							
<b>WG3620423-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	18-SEP-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5590324							
<b>WG3621796-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			218		mV		210-230	21-SEP-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5586824							
<b>WG3620302-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			95.4		%		80-120	18-SEP-21
<b>WG3620302-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	18-SEP-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5586928							
<b>WG3620423-2</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	18-SEP-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5584929							
<b>WG3617765-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			97.5		%		80-120	15-SEP-21
<b>WG3617765-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	15-SEP-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5589397</b>							
<b>WG3621448-3</b>	<b>DUP</b>	<b>L2639693-1</b>						
Sulfate (SO4)		16.7	16.7		mg/L	0.1	20	16-SEP-21
<b>WG3621448-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.2		%		90-110	16-SEP-21
<b>WG3621448-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	16-SEP-21
<b>WG3621448-4</b>	<b>MS</b>	<b>L2639693-2</b>						
Sulfate (SO4)			119.2		%		75-125	16-SEP-21
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5590496</b>							
<b>WG3620607-3</b>	<b>DUP</b>	<b>L2639693-1</b>						
Total Dissolved Solids		172	171		mg/L	0.6	20	20-SEP-21
<b>WG3620607-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.6		%		85-115	20-SEP-21
<b>WG3620607-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	20-SEP-21
<b>TKN-F-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5605322</b>							
<b>WG3621774-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			102.9		%		75-125	29-SEP-21
<b>WG3621774-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-SEP-21
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5590176</b>							
<b>WG3620611-2</b>	<b>LCS</b>							
Total Suspended Solids			99.8		%		85-115	20-SEP-21
<b>WG3620611-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	20-SEP-21
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5586193</b>							
<b>WG3619567-2</b>	<b>LCS</b>							
Turbidity			98.2		%		85-115	17-SEP-21
<b>WG3619567-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	17-SEP-21

# Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 9 of 10

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2639693

Report Date: 05-OCT-21

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	14-SEP-21 15:10	21-SEP-21 12:20	0.25	165	hours	EHTR-FM
	2	14-SEP-21 15:00	21-SEP-21 12:20	0.25	165	hours	EHTR-FM
	3	14-SEP-21 10:45	21-SEP-21 12:20	0.25	170	hours	EHTR-FM
	4	14-SEP-21 12:00	21-SEP-21 12:20	0.25	168	hours	EHTR-FM
pH	1	14-SEP-21 15:10	18-SEP-21 09:00	0.25	90	hours	EHTR-FM
	2	14-SEP-21 15:00	18-SEP-21 09:00	0.25	90	hours	EHTR-FM
	3	14-SEP-21 10:45	18-SEP-21 09:00	0.25	94	hours	EHTR-FM
	4	14-SEP-21 12:00	18-SEP-21 09:00	0.25	93	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2639693 were received on 15-SEP-21 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																
Company:	SNC-Lavalin	Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																
Contact:	Genevieve Pomerleau	Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>PRIORITY (Business days)</b>		<b>EMERGENCY</b>														
Phone:	Tel.: 250-354-1664 ext. 53216 Cell.: 250-505-2847	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>														
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200%] (Laboratory opening fees may apply) <input type="checkbox"/>														
Street:	520 Lake Street	Emails: SNC - genevieve.pomerleau' and vicky.lipinski@snc-lavalin.com		Date and Time Required for all E&P TATs:																
City/Province:	Nelson, BC	Teck - 'crystal.sabel' and sarah.therrien@teck.com		For tests that can not be performed according to the service level selected, you will be contacted.																
Postal Code:	V1L 4C6			<b>Analysis Request</b>																
<b>Invoice To</b>		<b>Invoice Distribution</b>		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		F/P	P	F/P														
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: <del>lytlegale@snc-lavalin.com</del> payables@snc-lavalin.com																		
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																		
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#																		
Job #: Greenhills Operations		Major/Minor Code: Routing Code:																		
PO / AFE: 658004		Requisitioner:																		
LSD:		Location:																		
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784		Sampler: JVG, CS																
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD		Sample is hazardous (please provide further detail)		NUMBER OF CONTAINERS
1	GH_MW-MC-1S_WG_2021_09_14_NP	GH_MW-MC-1S	14-Sep-21	15:10	WG	X	X	X	X	X	X	X	X	X	X					5
2	GH_MW-MC-1D_WG_2021_09_14_NP	GH_MW-MC-1D	14-Sep-21	15:00	WG	X	X	X	X	X	X	X	X	X	X					5
	GH_MW-MC-2S_WG_2021_09_14_NP	GH_MW-MC-2S	14-Sep-21		WG															
	GH_MW-MC-2D_WG_2021_09_14_NP	GH_MW-MC-2D	14-Sep-21		WG															
	GH_MW-Willow-1S_WG_2021_09_14_NP	GH_MW-Willow-1S	14-Sep-21		WG															
	GH_MW-Willow-1D_WG_2021_09_14_NP	GH_MW-Willow-1D	14-Sep-21		WG															
	GH_MW-Willow-2S_WG_2021_09_14_NP	GH_MW-Willow-2S	14-Sep-21		WG															
	GH_MW-Willow-2D_WG_2021_09_14_NP	GH_MW-Willow-2D	14-Sep-21		WG															
	GH_MW-Willow-3S_WG_2021_09_14_NP	GH_MW-Willow-3S	14-Sep-21		WG															
	GH_MW-Willow-3D_WG_2021_09_14_NP	GH_MW-Willow-3D	14-Sep-21		WG															
	GH_MW-Wolf-1S_WG_2021_09_14_NP	GH_MW-Wolf-1S	14-Sep-21		WG															
3	GH_MW-Wolf-1D_WG_2021_09_14_NP	GH_MW-Wolf-1D	14-Sep-21	10:45	WG	X	X	X	X	X	X	X	X	X	X					5
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>														
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>														
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)				Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>														
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS				Cooling Initiated <input type="checkbox"/>														
						INITIAL COOLER TEMPERATURES °C														
						FINAL COOLER TEMPERATURES °C														
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>														
Released by: Genevieve Pomerleau	Date: 2/09/14	Time: 1700	Received by: GT	Date: Sept 15	Time: 9															



L2639693-COFC

COC Number:

Page **2** of **2**

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																																																			
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																																																			
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Phone: Tel.: 250-354-1664 ext. 53216 Cell.: 250-505-2847		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>																																																	
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>																																																	
Street: 520 Lake Street		Emails: SNC - 'genevieve.pomerleau' and		Date and Time Required for all E&P TATs:																																																			
City/Province: Nelson, BC		vicky.lipinski@snclavalin.com		For tests that can not be performed according to the service level selected, you will be contacted.																																																			
Postal Code: V1L 4C6		Teck - 'sarah.therrien', 'crystal.sabel' @teck.com		<b>Analysis Request</b>																																																			
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																			
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX		F/P P F/P P																																																			
Company:		Emails: tyler.gale@snclavalin.com		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>DOC (C-DIS-ORG-LOW-CL)</td> <td>TOC (C-TOT-ORG-LOW-CL)</td> <td>BCMDG D-Met.+Hg (MET-D-BCMDG-CL)</td> <td>Total N Calc. (N-T-CALC-CL)</td> <td>Nitrate + Nitrite Calc. (N2N3-CALC-CL)</td> <td>Teck Routine (TECKCOAL-ROUTINE-CL)</td> <td>TKN (TKN-L-F-CL)</td> <td>Bicarbonate (BIC-CL)</td> <td>Carbonate (CO3-CL)</td> <td>Hydroxide (OH-CL)</td> <td>SAMPLES ON HOLD</td> <td rowspan="4">Sample is hazardous (please provide further detail)</td> <td rowspan="4">NUMBER OF CONTAINERS</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>						DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS																																	
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Contact:		payables@snclavalin.com																																																					
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																																																					
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#																																																					
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ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	NUMBER OF CONTAINERS																																						
4	GH_MW_MC10-A_WG_2021_09_14_NP	GH_MW_MC10-A	14-Sep-21	12:00	WG	X	X	X	X	X	X	X	X	X	X		1																																						
	GH_MW_MC11-A_WG_2021_09_14_NP	GH_MW_MC11-A	14-Sep-21		WG																																																		
	GH_MW_MC10-B_WG_2021_09_14_NP	GH_MW_MC10-B	14-Sep-21		WG																																																		
	GH_MW_MC10-C_WG_2021_09_14_NP	GH_MW_MC10-C	14-Sep-21		WG																																																		
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>				<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																																																	
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																																																	
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)				Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																																																	
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS				Cooling Initiated <input type="checkbox"/>																																																	
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<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																																																	
Released by: <i>Den Vongrad</i> Date: <i>2/09/14</i> Time: <i>17:00</i>		Received by: _____ Date: _____ Time: _____				Received by: <i>GT</i> Date: <i>Sept 21/5</i> Time: <i>9</i>																																																	

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 17-SEP-21  
Report Date: 05-OCT-21 13:53 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2641139  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2641139-1	L2641139-2	L2641139-3
		Description	WG	WG	WG
		Sampled Date	15-SEP-21	15-SEP-21	15-SEP-21
		Sampled Time	10:30	11:00	08:15
		Client ID	GH_MW-MC- 2S_WG_2021_09_ 15_NP	GH_MW-MC- 2D_WG_2021_09_ 15_NP	GH_MW-WOLF- 2D_WG_2021_09_ 15_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	585	1960	505	
	Hardness (as CaCO3) (mg/L)	278	20.8	250	
	pH (pH)	8.01	8.98	8.08	
	ORP (mV)	470	385	420	
	Total Suspended Solids (mg/L)	<1.0	4.5	132	
	Total Dissolved Solids (mg/L)	373	1200	353	
	Turbidity (NTU)	0.57	28.5	119	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5.2	<1.0	4.5	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	267	471	282	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	85.6	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	267	557	282	
	Ammonia as N (mg/L)	0.0055	0.56	0.0151	
	Bicarbonate (HCO3) (mg/L)	326	575	344	
	Bromide (Br) (mg/L)	<0.050	0.88	<0.050	
	Carbonate (CO3) (mg/L)	<5.0	51.4	<5.0	
	Chloride (Cl) (mg/L)	2.04	270	0.40	
	Fluoride (F) (mg/L)	0.121	2.76	0.214	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	90.9	89.1	88.4	
	Nitrate and Nitrite (as N) (mg/L)	0.176	<0.025	0.0074	
	Nitrate (as N) (mg/L)	0.176	<0.025 <sup>DLDS</sup>	0.0074	
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.578	<0.050	
	Total Nitrogen (mg/L)	0.176	0.578	<0.050	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0045	0.0964	0.0047	
	Phosphorus (P)-Total (mg/L)	0.0044	0.325 <sup>DLHC</sup>	0.0116	
	Sulfate (SO4) (mg/L)	73.1	3.8	24.8	
	Anion Sum (meq/L)	6.94	19.0	6.18	
	Cation Sum (meq/L)	6.30	16.9	5.47	
Cation - Anion Balance (%)	-4.8	-5.8	-6.1		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.09	2.44	1.28	
	Total Organic Carbon (mg/L)	2.16	3.13	1.22	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0040	0.0190	0.0027	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2641139-1	L2641139-2	L2641139-3
		Description	WG	WG	WG
		Sampled Date	15-SEP-21	15-SEP-21	15-SEP-21
		Sampled Time	10:30	11:00	08:15
		Client ID	GH_MW-MC- 2S_WG_2021_09_ 15_NP	GH_MW-MC- 2D_WG_2021_09_ 15_NP	GH_MW-WOLF- 2D_WG_2021_09_ 15_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)		<0.00010	0.00015	0.00011
	Arsenic (As)-Dissolved (mg/L)		0.00016	0.00199	0.00078
	Barium (Ba)-Dissolved (mg/L)		0.107	0.131	0.0664
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.025	0.539	0.047
	Cadmium (Cd)-Dissolved (mg/L)		0.0000379	<0.0000050	0.0000175
	Calcium (Ca)-Dissolved (mg/L)		70.9	3.65	63.9
	Chromium (Cr)-Dissolved (mg/L)		0.00013	0.00014	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		<0.00010	<0.00010	0.00021
	Copper (Cu)-Dissolved (mg/L)		0.00049	<0.00020	0.00033
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0231	1.18	0.0161
	Magnesium (Mg)-Dissolved (mg/L)		24.4	2.83	21.9
	Manganese (Mn)-Dissolved (mg/L)		0.00965	0.0455	0.0677
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00136	0.000734	0.00307
	Nickel (Ni)-Dissolved (mg/L)		0.00063	<0.00050	0.00090
	Phosphorus (P)-Dissolved (mg/L)		<0.050	0.298	<0.050
	Potassium (K)-Dissolved (mg/L)		1.17	1.77	1.74
	Selenium (Se)-Dissolved (mg/L)		0.00196	0.00428	0.000162
	Silicon (Si)-Dissolved (mg/L)		3.84	3.26	4.76
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		16.8	378	9.90
	Strontium (Sr)-Dissolved (mg/L)		0.240	0.219	0.407
	Sulfur (S)-Dissolved (mg/L)		22.8	304	8.76
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	0.000022
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.00104	0.000768	0.00196
	Vanadium (V)-Dissolved (mg/L)		<0.00050	0.00069	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	<0.0010	0.0023
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	0.00052	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2641139-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2641139-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2641139-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 1 of 13

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5597544</b>							
<b>WG3624463-4</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.1		%		85-115	22-SEP-21
<b>WG3624463-2</b>	<b>MB</b>							
Acidity (as CaCO3)			1.0		mg/L		2	22-SEP-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5597616</b>							
<b>WG3624493-4</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.8		%		85-115	22-SEP-21
<b>WG3624493-2</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-SEP-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-11</b>	<b>DUP</b>	<b>L2641139-3</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	28-SEP-21
<b>WG3626412-10</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.1		%		80-120	28-SEP-21
<b>WG3626412-6</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.2		%		80-120	28-SEP-21
<b>WG3626412-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-SEP-21
<b>WG3626412-9</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-SEP-21
<b>WG3626412-12</b>	<b>MS</b>	<b>L2641139-3</b>						
Beryllium (Be)-Dissolved			80.7		%		70-130	28-SEP-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5597616</b>							
<b>WG3624493-2</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	22-SEP-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5590836</b>							
<b>WG3621773-10</b>	<b>LCS</b>							
Bromide (Br)			102.2		%		85-115	17-SEP-21
<b>WG3621773-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	17-SEP-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5609019							
<b>WG3631672-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.4		%		80-120	04-OCT-21
<b>WG3631672-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-OCT-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5609019							
<b>WG3631672-2</b>	<b>LCS</b>							
Total Organic Carbon			101.0		%		80-120	04-OCT-21
<b>WG3631672-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	04-OCT-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5590836							
<b>WG3621773-10</b>	<b>LCS</b>							
Chloride (Cl)			105.6		%		85-115	17-SEP-21
<b>WG3621773-9</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	17-SEP-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5597616							
<b>WG3624493-2</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	22-SEP-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5597616							
<b>WG3624493-4</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.2		%		90-110	22-SEP-21
<b>WG3624493-2</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	22-SEP-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5590836							
<b>WG3621773-10</b>	<b>LCS</b>							
Fluoride (F)			98.2		%		90-110	17-SEP-21
<b>WG3621773-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	17-SEP-21
<b>HG-D-CVAA-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5591157</b>							
<b>WG3621936-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			82.8		%		80-120	22-SEP-21
<b>WG3621936-9</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000050		mg/L		0.000005	22-SEP-21
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-11</b>	<b>DUP</b>	<b>L2641139-3</b>						
Aluminum (Al)-Dissolved		0.0027	0.0032		mg/L	14	20	28-SEP-21
Antimony (Sb)-Dissolved		0.00011	0.00011		mg/L	7.7	20	28-SEP-21
Arsenic (As)-Dissolved		0.00078	0.00074		mg/L	5.4	20	28-SEP-21
Barium (Ba)-Dissolved		0.0664	0.0648		mg/L	2.4	20	28-SEP-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-SEP-21
Boron (B)-Dissolved		0.047	0.043		mg/L	8.8	20	28-SEP-21
Cadmium (Cd)-Dissolved		0.0000175	0.0000152		mg/L	14	20	28-SEP-21
Calcium (Ca)-Dissolved		63.9	64.8		mg/L	1.5	20	28-SEP-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-SEP-21
Cobalt (Co)-Dissolved		0.00021	0.00022		mg/L	6.1	20	28-SEP-21
Copper (Cu)-Dissolved		0.00033	0.00031		mg/L	7.3	20	28-SEP-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	28-SEP-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-SEP-21
Lithium (Li)-Dissolved		0.0161	0.0164		mg/L	2.0	20	28-SEP-21
Magnesium (Mg)-Dissolved		21.9	22.1		mg/L	0.8	20	28-SEP-21
Manganese (Mn)-Dissolved		0.0677	0.0669		mg/L	1.2	20	28-SEP-21
Molybdenum (Mo)-Dissolved		0.00307	0.00311		mg/L	1.6	20	28-SEP-21
Nickel (Ni)-Dissolved		0.00090	0.00086		mg/L	5.0	20	28-SEP-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	28-SEP-21
Potassium (K)-Dissolved		1.74	1.73		mg/L	0.7	20	28-SEP-21
Selenium (Se)-Dissolved		0.000162	0.000157		mg/L	3.0	20	28-SEP-21
Silicon (Si)-Dissolved		4.76	4.77		mg/L	0.3	20	28-SEP-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	28-SEP-21
Sodium (Na)-Dissolved		9.90	10.2		mg/L	2.8	20	28-SEP-21
Strontium (Sr)-Dissolved		0.407	0.406		mg/L	0.3	20	28-SEP-21
Sulfur (S)-Dissolved		8.76	7.78		mg/L	12	20	28-SEP-21
Thallium (Tl)-Dissolved		0.000022	0.000026		mg/L	16	20	28-SEP-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-SEP-21



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-11</b>	<b>DUP</b>	<b>L2641139-3</b>						
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	28-SEP-21
Uranium (U)-Dissolved		0.00196	0.00204		mg/L	3.8	20	28-SEP-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	28-SEP-21
Zinc (Zn)-Dissolved		0.0023	0.0024		mg/L	3.8	20	28-SEP-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	28-SEP-21
<b>WG3626412-10</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.0		%		80-120	28-SEP-21
Antimony (Sb)-Dissolved			104.3		%		80-120	28-SEP-21
Arsenic (As)-Dissolved			98.9		%		80-120	28-SEP-21
Barium (Ba)-Dissolved			98.0		%		80-120	28-SEP-21
Bismuth (Bi)-Dissolved			101.3		%		80-120	28-SEP-21
Boron (B)-Dissolved			90.6		%		80-120	28-SEP-21
Cadmium (Cd)-Dissolved			101.5		%		80-120	28-SEP-21
Calcium (Ca)-Dissolved			94.9		%		80-120	28-SEP-21
Chromium (Cr)-Dissolved			99.8		%		80-120	28-SEP-21
Cobalt (Co)-Dissolved			98.5		%		80-120	28-SEP-21
Copper (Cu)-Dissolved			94.9		%		80-120	28-SEP-21
Iron (Fe)-Dissolved			101.0		%		80-120	28-SEP-21
Lead (Pb)-Dissolved			101.7		%		80-120	28-SEP-21
Lithium (Li)-Dissolved			102.1		%		80-120	28-SEP-21
Magnesium (Mg)-Dissolved			98.1		%		80-120	28-SEP-21
Manganese (Mn)-Dissolved			98.6		%		80-120	28-SEP-21
Molybdenum (Mo)-Dissolved			103.6		%		80-120	28-SEP-21
Nickel (Ni)-Dissolved			96.9		%		80-120	28-SEP-21
Phosphorus (P)-Dissolved			93.8		%		70-130	28-SEP-21
Potassium (K)-Dissolved			98.7		%		80-120	28-SEP-21
Selenium (Se)-Dissolved			96.5		%		80-120	28-SEP-21
Silicon (Si)-Dissolved			98.0		%		60-140	28-SEP-21
Silver (Ag)-Dissolved			105.7		%		80-120	28-SEP-21
Sodium (Na)-Dissolved			98.0		%		80-120	28-SEP-21
Strontium (Sr)-Dissolved			99.0		%		80-120	28-SEP-21
Sulfur (S)-Dissolved			99.5		%		80-120	28-SEP-21
Thallium (Tl)-Dissolved			103.2		%		80-120	28-SEP-21
Tin (Sn)-Dissolved			95.3		%		80-120	28-SEP-21





## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-10 LCS</b>								
Titanium (Ti)-Dissolved			94.6		%		80-120	28-SEP-21
Uranium (U)-Dissolved			102.7		%		80-120	28-SEP-21
Vanadium (V)-Dissolved			100.8		%		80-120	28-SEP-21
Zinc (Zn)-Dissolved			90.7		%		80-120	28-SEP-21
Zirconium (Zr)-Dissolved			103.0		%		80-120	28-SEP-21
<b>WG3626412-6 LCS</b>								
Aluminum (Al)-Dissolved			96.6		%		80-120	28-SEP-21
Antimony (Sb)-Dissolved			97.4		%		80-120	28-SEP-21
Arsenic (As)-Dissolved			94.7		%		80-120	28-SEP-21
Barium (Ba)-Dissolved			95.6		%		80-120	28-SEP-21
Bismuth (Bi)-Dissolved			95.3		%		80-120	28-SEP-21
Boron (B)-Dissolved			96.0		%		80-120	28-SEP-21
Cadmium (Cd)-Dissolved			96.9		%		80-120	28-SEP-21
Calcium (Ca)-Dissolved			99.9		%		80-120	28-SEP-21
Chromium (Cr)-Dissolved			94.4		%		80-120	28-SEP-21
Cobalt (Co)-Dissolved			95.8		%		80-120	28-SEP-21
Copper (Cu)-Dissolved			94.0		%		80-120	28-SEP-21
Iron (Fe)-Dissolved			93.1		%		80-120	28-SEP-21
Lead (Pb)-Dissolved			100.6		%		80-120	28-SEP-21
Lithium (Li)-Dissolved			100.6		%		80-120	28-SEP-21
Magnesium (Mg)-Dissolved			98.1		%		80-120	28-SEP-21
Manganese (Mn)-Dissolved			94.5		%		80-120	28-SEP-21
Molybdenum (Mo)-Dissolved			97.6		%		80-120	28-SEP-21
Nickel (Ni)-Dissolved			93.3		%		80-120	28-SEP-21
Phosphorus (P)-Dissolved			97.6		%		70-130	28-SEP-21
Potassium (K)-Dissolved			97.1		%		80-120	28-SEP-21
Selenium (Se)-Dissolved			91.0		%		80-120	28-SEP-21
Silicon (Si)-Dissolved			95.4		%		60-140	28-SEP-21
Silver (Ag)-Dissolved			98.2		%		80-120	28-SEP-21
Sodium (Na)-Dissolved			95.9		%		80-120	28-SEP-21
Strontium (Sr)-Dissolved			98.1		%		80-120	28-SEP-21
Sulfur (S)-Dissolved			93.1		%		80-120	28-SEP-21
Thallium (Tl)-Dissolved			95.0		%		80-120	28-SEP-21
Tin (Sn)-Dissolved			96.9		%		80-120	28-SEP-21



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-6</b>	<b>LCS</b>							
Titanium (Ti)-Dissolved			92.2		%		80-120	28-SEP-21
Uranium (U)-Dissolved			101.6		%		80-120	28-SEP-21
Vanadium (V)-Dissolved			95.9		%		80-120	28-SEP-21
Zinc (Zn)-Dissolved			91.4		%		80-120	28-SEP-21
Zirconium (Zr)-Dissolved			101.9		%		80-120	28-SEP-21
<b>WG3626412-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	28-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-5</b>	<b>MB</b>							
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-SEP-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-SEP-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
<b>WG3626412-9</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	28-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-9</b>	<b>MB</b>							
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-SEP-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-SEP-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
<b>WG3626412-12</b>	<b>MS</b>	<b>L2641139-3</b>						
Aluminum (Al)-Dissolved			85.2		%		70-130	28-SEP-21
Antimony (Sb)-Dissolved			87.7		%		70-130	28-SEP-21
Arsenic (As)-Dissolved			85.8		%		70-130	28-SEP-21
Barium (Ba)-Dissolved			79.4		%		70-130	28-SEP-21
Bismuth (Bi)-Dissolved			85.6		%		70-130	28-SEP-21
Boron (B)-Dissolved			77.4		%		70-130	28-SEP-21
Cadmium (Cd)-Dissolved			84.7		%		70-130	28-SEP-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	28-SEP-21
Chromium (Cr)-Dissolved			85.0		%		70-130	28-SEP-21
Cobalt (Co)-Dissolved			84.9		%		70-130	28-SEP-21
Copper (Cu)-Dissolved			85.2		%		70-130	28-SEP-21
Iron (Fe)-Dissolved			84.2		%		70-130	28-SEP-21
Lead (Pb)-Dissolved			86.8		%		70-130	28-SEP-21
Lithium (Li)-Dissolved			83.0		%		70-130	28-SEP-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	28-SEP-21
Manganese (Mn)-Dissolved			83.0		%		70-130	28-SEP-21
Molybdenum (Mo)-Dissolved			87.5		%		70-130	28-SEP-21
Nickel (Ni)-Dissolved			84.4		%		70-130	28-SEP-21
Phosphorus (P)-Dissolved			81.6		%		70-130	28-SEP-21
Potassium (K)-Dissolved			87.0		%		70-130	28-SEP-21
Selenium (Se)-Dissolved			85.6		%		70-130	28-SEP-21
Silicon (Si)-Dissolved			80.9		%		70-130	28-SEP-21
Silver (Ag)-Dissolved			89.7		%		70-130	28-SEP-21
Sodium (Na)-Dissolved			79.3		%		70-130	28-SEP-21
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	28-SEP-21
Thallium (Tl)-Dissolved			87.9		%		70-130	28-SEP-21
Tin (Sn)-Dissolved			84.0		%		70-130	28-SEP-21
Titanium (Ti)-Dissolved			82.1		%		70-130	28-SEP-21



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-12</b>	<b>MS</b>	<b>L2641139-3</b>						
Uranium (U)-Dissolved			84.8		%		70-130	28-SEP-21
Vanadium (V)-Dissolved			86.5		%		70-130	28-SEP-21
Zinc (Zn)-Dissolved			81.9		%		70-130	28-SEP-21
Zirconium (Zr)-Dissolved			86.9		%		70-130	28-SEP-21
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5607381</b>							
<b>WG3630300-15</b>	<b>DUP</b>	<b>L2641139-3</b>						
Ammonia as N		0.0151	0.0179		mg/L	17	20	04-OCT-21
<b>WG3630300-14</b>	<b>LCS</b>							
Ammonia as N			101.1		%		85-115	04-OCT-21
<b>WG3630300-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	04-OCT-21
<b>WG3630300-16</b>	<b>MS</b>	<b>L2641139-3</b>						
Ammonia as N			113.9		%		75-125	04-OCT-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5590836</b>							
<b>WG3621773-10</b>	<b>LCS</b>							
Nitrite (as N)			105.8		%		90-110	17-SEP-21
<b>WG3621773-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	17-SEP-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5590836</b>							
<b>WG3621773-10</b>	<b>LCS</b>							
Nitrate (as N)			107.0		%		90-110	17-SEP-21
<b>WG3621773-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	17-SEP-21
<b>OH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5597616</b>							
<b>WG3624493-2</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	22-SEP-21
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5593821</b>							
<b>WG3623082-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	22-SEP-21
<b>WG3623082-4</b>	<b>DUP</b>	<b>L2641139-1</b>						



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5593821							
WG3623082-4	DUP	L2641139-1						
ORP		470	475	J	mV	4.7	15	22-SEP-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5595612							
WG3623716-14	LCS							
Phosphorus (P)-Total			96.1		%		80-120	23-SEP-21
WG3623716-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-SEP-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5597616							
WG3624493-4	LCS							
pH			7.02		pH		6.9-7.1	22-SEP-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5587924							
WG3620920-6	LCS							
Orthophosphate-Dissolved (as P)			103.7		%		80-120	18-SEP-21
WG3620920-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	18-SEP-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5590836							
WG3621773-10	LCS							
Sulfate (SO4)			107.2		%		90-110	17-SEP-21
WG3621773-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	17-SEP-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5593676							
WG3621633-2	LCS							
Total Dissolved Solids			100.9		%		85-115	21-SEP-21
WG3621633-1	MB							
Total Dissolved Solids			<10		mg/L		10	21-SEP-21
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5602660							
WG3624475-5	LCS							
Total Kjeldahl Nitrogen			99.3		%		75-125	24-SEP-21
WG3624475-6	LCS							



## Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5602660</b>							
<b>WG3624475-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			85.4		%		75-125	24-SEP-21
<b>WG3624475-7</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			87.4		%		75-125	24-SEP-21
<b>WG3624475-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.1		%		75-125	24-SEP-21
<b>WG3624475-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-SEP-21
<b>WG3624475-2</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-SEP-21
<b>WG3624475-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-SEP-21
<b>WG3624475-4</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-SEP-21
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5590176</b>							
<b>WG3620611-2</b>	<b>LCS</b>							
Total Suspended Solids			99.8		%		85-115	20-SEP-21
<b>WG3620611-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	20-SEP-21
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5586922</b>							
<b>WG3620403-2</b>	<b>LCS</b>							
Turbidity			97.5		%		85-115	19-SEP-21
<b>WG3620403-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	19-SEP-21

# Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 12 of 13

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2641139

Report Date: 05-OCT-21

Page 13 of 13

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	15-SEP-21 10:30	22-SEP-21 17:26	0.25	175	hours	EHTR-FM
	2	15-SEP-21 11:00	22-SEP-21 17:26	0.25	174	hours	EHTR-FM
	3	15-SEP-21 08:15	22-SEP-21 17:26	0.25	177	hours	EHTR-FM
Turbidity	1	15-SEP-21 10:30	19-SEP-21 12:00	3	4	days	EHT
	2	15-SEP-21 11:00	19-SEP-21 12:00	3	4	days	EHT
	3	15-SEP-21 08:15	19-SEP-21 12:00	3	4	days	EHTL
pH	1	15-SEP-21 10:30	22-SEP-21 00:00	0.25	157	hours	EHTR-FM
	2	15-SEP-21 11:00	22-SEP-21 00:00	0.25	157	hours	EHTR-FM
	3	15-SEP-21 08:15	22-SEP-21 00:00	0.25	160	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2641139 were received on 17-SEP-21 10:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2641139-COFC

COC Number:

Page 1 of 2

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<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																
Contact: Genevieve Pomerleau		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			PRIORITY (Business Days)		EMERGENCY														
Phone: Tel.:250-354-1664 ext. 53216 Cell.: 250-505-2847		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			4 day [P4-20%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>														
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200%] (Laboratory opening fees may apply) <input type="checkbox"/>														
Street: 520 Lake Street		Emails: SNC - genevieve.pomerleau' and vicky.lipinski@snc.lavalin.com			Date and Time Required for all E&P TATs:																
City/Province: Nelson, BC		Teck - 'crystal.sabel' and sarah.therrian@teck.com			For tests that can not be performed according to the service level selected, you will be contacted.																
Postal Code: V1L 4C6		<b>Invoice Distribution</b>			<b>Analysis Request</b>																
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: <del>lyngale@snc.lavalin.com</del> payables@snc.lavalin.com			F/P	P	F/P														
Company:		Oil and Gas Required Fields (client use)			DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Mer +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKGOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS				
Contact:		AFE/Cost Center: PO#																			
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																			
ALS Account # / Quote #: MOR125 / Q72340		Major/Minor Code: Routing Code:																			
Job #: Greenhills Operations		Requisitioner: Location:																			
PO / AFE: 658004		ALS Lab Work Order # (lab use only): L2641139			ALS Contact: Jnavat Dhaliwal 403-907-4784		Sampler: JNE,CS														
LSD:																					
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Mer +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKGOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS			
	<del>GH_MW-MC-1S_WG_2021_09_15_NP</del>	<del>GH_MW-MC-1S</del>	<del>15-Sep-21</del>		<del>WG</del>																
	<del>GH_MW-MC-1B_WG_2021_09_15_NP</del>	<del>GH_MW-MC-1B</del>	<del>15-Sep-21</del>		<del>WG</del>																
	GH_MW-MC-2S_WG_2021_09_15_NP	GH_MW-MC-2S	15-Sep-21	10:30	WG	X	X	X	X	X	X	X	X	X	X					5	
	GH_MW-MC-2D_WG_2021_09_15_NP	GH_MW-MC-2D	15-Sep-21	11:00	WG	X	X	X	X	X	X	X	X	X	X					5	
	<del>GH_MW-Willow-1S_WG_2021_09_15_NP</del>	<del>GH_MW-Willow-1S</del>	<del>15-Sep-21</del>		<del>WG</del>																
	<del>GH_MW-Willow-1D_WG_2021_09_15_NP</del>	<del>GH_MW-Willow-1D</del>	<del>15-Sep-21</del>		<del>WG</del>																
	<del>GH_MW-Willow-2S_WG_2021_09_15_NP</del>	<del>GH_MW-Willow-2S</del>	<del>15-Sep-21</del>		<del>WG</del>																
	<del>GH_MW-Willow-2D_WG_2021_09_15_NP</del>	<del>GH_MW-Willow-2D</del>	<del>15-Sep-21</del>		<del>WG</del>																
	<del>GH_MW-Willow-3S_WG_2021_09_15_NP</del>	<del>GH_MW-Willow-3S</del>	<del>15-Sep-21</del>		<del>WG</del>																
	<del>GH_MW-Willow-3D_WG_2021_09_15_NP</del>	<del>GH_MW-Willow-3D</del>	<del>15-Sep-21</del>		<del>WG</del>																
	<del>GH_MW-Wolf-1S_WG_2021_09_15_NP</del>	<del>GH_MW-Wolf-1S</del>	<del>15-Sep-21</del>		<del>WG</del>																
	<del>GH_MW-Wolf-1D_WG_2021_09_15_NP</del>	<del>GH_MW-Wolf-1D</del>	<del>15-Sep-21</del>		<del>WG</del>																
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)			Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Cooling Initiated <input type="checkbox"/>																
					INITIAL COOLER TEMPERATURES °C																
					FINAL COOLER TEMPERATURES °C																
					7																
<b>SHIPMENT RELEASE (client use)</b>					<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>					<b>FINAL SHIPMENT RECEPTION (lab use only)</b>											
Released by: <i>Sambhavad</i>		Date: <i>2/20/15</i>		Time: <i>1700</i>		Received by: <i>[Signature]</i>		Date: <i>9/17</i>		Time: <i>[Signature]</i>		Received by:		Date:		Time:					



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2641139-COFC

COC Number:

Page 2 of 2

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<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																
Contact: Genevieve Pomerleau		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			4 day [P4-20%] <input type="checkbox"/>					1 Business day [E1 - 100%] <input type="checkbox"/>											
Phone: Tel: 250-354-1664 ext. 53216 Cell.: 250-505-2847		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%] <input type="checkbox"/>					Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>											
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			2 day [P2-50%] <input type="checkbox"/>																
Street: 520 Lake Street		Emails: SNC - genevieve.pomerleau, and			Date and Time Required for all E&P TATs:																
City/Province: Nelson, BC		vicky.lipinski@snclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																
Postal Code: V1L 4C6		Teck - 'sarah.therrien', 'crystal.sabel'@teck.com			<b>Analysis Request</b>																
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P P F/P P																
Company:		Emails: v.pomerleau@snclavalin.com			DOC (C-DIS-ORG-LOW-CL)																
Contact:		payables@snclavalin.com			TOC (C-TOT-ORG-LOW-CL)																
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>			BCMDG D-Met. +Hg (MET-D-BCMDG-CL)																
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#			Total N Calc. (N-T-CALC-CL)																
Job #: Greenhills Operations		Major/Minor Code: Routing Code:			Nitrate + Nitrite Calc. (N2N3-CALC-CL)																
PO / AFE: 658004		Requisitioner:			Teck Routine (TECKCOAL-ROUTINE-CL)																
LSD:		Location:			TKN (TKN-L-F-CL)																
ALS Lab Work Order # (lab use only):		ALS Contact: Mayat Dhaliwal 493-407-1784			Bicarbonate (BIC-CL)																
		Sampler: JVG,CS			Carbonate (CO3-CL)																
					Hydroxide (OH-CL)																
					SAMPLES ON HOLD																
					Sample is hazardous (please provide further detail)																
					NUMBER OF CONTAINERS																
<b>ALS Sample # (lab use only)</b>		<b>Sample Identification &amp;/or Coordinates (This description will appear on the report)</b>		<b>Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)</b>		<b>Date (dd-mmm-yy)</b>		<b>Time (hh:mm)</b>		<b>Sample Type</b>											
		<del>GH_MW-Wolf-2G_WG_2021_09_15_NP</del>		<del>GH_MW-Wolf-2S</del>		<del>13-Sep-21</del>				WG											
		<del>GH_MW-Wolf-2D_WG_2021_09_15_NP</del>		<del>GH_MW-Wolf-2D</del>		<del>15-Sep-21</del>		815		WG		X X X X X X X X X X X X									
		<del>GH_MW-LC1-A-WG_2021_09_15_NP</del>		<del>GH_MW-LC1-A</del>		<del>15-Sep-21</del>				VVS											
		<del>GH_MW-LC1-B-WG_2021_09_15_NP</del>		<del>GH_MW-LC1-B</del>		<del>15-Sep-21</del>				WG											
		<del>GH_MW-LC2-A-WG_2021_09_15_NP</del>		<del>GH_MW-LC2-A</del>		<del>15-Sep-21</del>				WG											
		<del>GH_MW-LC2-B-WG_2021_09_15_NP</del>		<del>GH_MW-LC2-B</del>		<del>15-Sep-21</del>				WG											
		<del>GH_MW-WC1-A-WG_2021_09_15_NP</del>		<del>GH_MW-WC1-A</del>		<del>15-Sep-21</del>				VVS											
		<del>GH_MW-WC1-B-WG_2021_09_15_NP</del>		<del>GH_MW-WC1-B</del>		<del>15-Sep-21</del>				WG											
		<del>GH_MW-WC1-C-WG_2021_09_15_NP</del>		<del>GH_MW-WC1-C</del>		<del>15-Sep-21</del>				VVS											
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)			Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Cooling Initiated <input type="checkbox"/>																
					INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C																
					E																
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																
Released by: <u>Ben Vongrad</u> Date: <u>21/09/15</u> Time: <u>1700</u>		Received by: <u>AB</u> Date: <u>9/17</u> Time: <u>1000</u>			Received by: _____ Date: _____ Time: _____																

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION. Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy. 1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



SNC-Lavalin  
ATTN: VICKY LIPINSKI  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 17-SEP-21  
Report Date: 05-OCT-21 13:55 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2641141  
Project P.O. #: 658220  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2641141-1 WG 15-SEP-21 13:45 GH_MW_BG1A_W G_2021_09_15_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	595			
	Hardness (as CaCO3) (mg/L)	286			
	pH (pH)	8.00			
	ORP (mV)	397			
	Total Suspended Solids (mg/L)	21.1			
	Total Dissolved Solids (mg/L)	342			
	Turbidity (NTU)	16.6			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	7.7			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	326			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	326			
	Ammonia as N (mg/L)	0.0831			
	Bicarbonate (HCO3) (mg/L)	398			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	1.59			
	Fluoride (F) (mg/L)	0.167			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	92.3			
	Nitrate and Nitrite (as N) (mg/L)	<0.0051			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.146			
	Total Nitrogen (mg/L)	0.146			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0251			
	Sulfate (SO4) (mg/L)	23.3			
	Anion Sum (meq/L)	7.06			
	Cation Sum (meq/L)	6.52			
	Cation - Anion Balance (%)	-4.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.91			
	Total Organic Carbon (mg/L)	2.59			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0012			

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2641141-1 WG 15-SEP-21 13:45 GH_MW_BG1A_W G_2021_09_15_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00087			
	Barium (Ba)-Dissolved (mg/L)	0.198			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.023			
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050			
	Calcium (Ca)-Dissolved (mg/L)	64.4			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	0.00037			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	0.548			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0160			
	Magnesium (Mg)-Dissolved (mg/L)	30.4			
	Manganese (Mn)-Dissolved (mg/L)	0.205			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00565			
	Nickel (Ni)-Dissolved (mg/L)	0.00085			
	Phosphorus (P)-Dissolved (mg/L)	<0.050			
	Potassium (K)-Dissolved (mg/L)	2.54			
	Selenium (Se)-Dissolved (mg/L)	0.000328			
	Silicon (Si)-Dissolved (mg/L)	3.71			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	16.1			
	Strontium (Sr)-Dissolved (mg/L)	0.0911			
	Sulfur (S)-Dissolved (mg/L)	8.61			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.00197			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030			

## Reference Information

**QC Samples with Qualifiers & Comments:**

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
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**Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.</p>			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
<p>Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.</p>			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)  
 Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated  
 Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric



## Reference Information

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

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**Chain of Custody Numbers:**

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2641141

Report Date: 05-OCT-21

Page 1 of 9

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: VICKY LIPINSKI

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5597544</b>							
<b>WG3624463-6</b>	<b>DUP</b>	<b>L2641141-1</b>						
Acidity (as CaCO3)		7.7	7.6		mg/L	1.6	20	22-SEP-21
<b>WG3624463-4</b>	<b>LCS</b>		105.1		%		85-115	22-SEP-21
Acidity (as CaCO3)								
<b>WG3624463-2</b>	<b>MB</b>		1.0		mg/L		2	22-SEP-21
Acidity (as CaCO3)								
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5597616</b>							
<b>WG3624493-6</b>	<b>DUP</b>	<b>L2641141-1</b>						
Alkalinity, Total (as CaCO3)		326	337		mg/L	3.3	20	22-SEP-21
<b>WG3624493-4</b>	<b>LCS</b>		101.8		%		85-115	22-SEP-21
Alkalinity, Total (as CaCO3)								
<b>WG3624493-2</b>	<b>MB</b>		<1.0		mg/L		1	22-SEP-21
Alkalinity, Total (as CaCO3)								
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-6</b>	<b>LCS</b>		96.2		%		80-120	28-SEP-21
Beryllium (Be)-Dissolved								
<b>WG3626412-5</b>	<b>MB</b>		<0.000020		mg/L		0.00002	28-SEP-21
Beryllium (Be)-Dissolved								
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5597616</b>							
<b>WG3624493-6</b>	<b>DUP</b>	<b>L2641141-1</b>						
Bicarbonate (HCO3)		398	411		mg/L	3.3	20	22-SEP-21
<b>WG3624493-2</b>	<b>MB</b>		<5.0		mg/L		5	22-SEP-21
Bicarbonate (HCO3)								
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5590836</b>							
<b>WG3621773-10</b>	<b>LCS</b>		102.2		%		85-115	17-SEP-21
Bromide (Br)								
<b>WG3621773-9</b>	<b>MB</b>		<0.050		mg/L		0.05	17-SEP-21
Bromide (Br)								
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5609019</b>							
<b>WG3631672-2</b>	<b>LCS</b>		97.4		%		80-120	04-OCT-21
Dissolved Organic Carbon								
<b>WG3631672-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2641141

Report Date: 05-OCT-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5609019							
<b>WG3631672-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-OCT-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5609019							
<b>WG3631672-2 LCS</b>								
Total Organic Carbon			101.0		%		80-120	04-OCT-21
<b>WG3631672-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	04-OCT-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5590836							
<b>WG3621773-10 LCS</b>								
Chloride (Cl)			105.6		%		85-115	17-SEP-21
<b>WG3621773-9 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	17-SEP-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5597616							
<b>WG3624493-6 DUP</b>		<b>L2641141-1</b>						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	22-SEP-21
<b>WG3624493-2 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	22-SEP-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5597616							
<b>WG3624493-6 DUP</b>		<b>L2641141-1</b>						
Conductivity (@ 25C)		595	594		uS/cm	0.2	10	22-SEP-21
<b>WG3624493-4 LCS</b>								
Conductivity (@ 25C)			98.2		%		90-110	22-SEP-21
<b>WG3624493-2 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	22-SEP-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5590836							
<b>WG3621773-10 LCS</b>								
Fluoride (F)			98.2		%		90-110	17-SEP-21
<b>WG3621773-9 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	17-SEP-21
<b>HG-D-CVAA-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2641141

Report Date: 05-OCT-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5591157</b>							
<b>WG3621936-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			82.8		%		80-120	22-SEP-21
<b>WG3621936-9</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	22-SEP-21
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-6</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			96.6		%		80-120	28-SEP-21
Antimony (Sb)-Dissolved			97.4		%		80-120	28-SEP-21
Arsenic (As)-Dissolved			94.7		%		80-120	28-SEP-21
Barium (Ba)-Dissolved			95.6		%		80-120	28-SEP-21
Bismuth (Bi)-Dissolved			95.3		%		80-120	28-SEP-21
Boron (B)-Dissolved			96.0		%		80-120	28-SEP-21
Cadmium (Cd)-Dissolved			96.9		%		80-120	28-SEP-21
Calcium (Ca)-Dissolved			99.9		%		80-120	28-SEP-21
Chromium (Cr)-Dissolved			94.4		%		80-120	28-SEP-21
Cobalt (Co)-Dissolved			95.8		%		80-120	28-SEP-21
Copper (Cu)-Dissolved			94.0		%		80-120	28-SEP-21
Iron (Fe)-Dissolved			93.1		%		80-120	28-SEP-21
Lead (Pb)-Dissolved			100.6		%		80-120	28-SEP-21
Lithium (Li)-Dissolved			100.6		%		80-120	28-SEP-21
Magnesium (Mg)-Dissolved			98.1		%		80-120	28-SEP-21
Manganese (Mn)-Dissolved			94.5		%		80-120	28-SEP-21
Molybdenum (Mo)-Dissolved			97.6		%		80-120	28-SEP-21
Nickel (Ni)-Dissolved			93.3		%		80-120	28-SEP-21
Phosphorus (P)-Dissolved			97.6		%		70-130	28-SEP-21
Potassium (K)-Dissolved			97.1		%		80-120	28-SEP-21
Selenium (Se)-Dissolved			91.0		%		80-120	28-SEP-21
Silicon (Si)-Dissolved			95.4		%		60-140	28-SEP-21
Silver (Ag)-Dissolved			98.2		%		80-120	28-SEP-21
Sodium (Na)-Dissolved			95.9		%		80-120	28-SEP-21
Strontium (Sr)-Dissolved			98.1		%		80-120	28-SEP-21
Sulfur (S)-Dissolved			93.1		%		80-120	28-SEP-21
Thallium (Tl)-Dissolved			95.0		%		80-120	28-SEP-21
Tin (Sn)-Dissolved			96.9		%		80-120	28-SEP-21



## Quality Control Report

Workorder: L2641141

Report Date: 05-OCT-21

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-6</b>	<b>LCS</b>							
Titanium (Ti)-Dissolved			92.2		%		80-120	28-SEP-21
Uranium (U)-Dissolved			101.6		%		80-120	28-SEP-21
Vanadium (V)-Dissolved			95.9		%		80-120	28-SEP-21
Zinc (Zn)-Dissolved			91.4		%		80-120	28-SEP-21
Zirconium (Zr)-Dissolved			101.9		%		80-120	28-SEP-21
<b>WG3626412-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	28-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-21



## Quality Control Report

Workorder: L2641141

Report Date: 05-OCT-21

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604083</b>							
<b>WG3626412-5</b>	<b>MB</b>							
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-SEP-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-SEP-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-SEP-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5606938</b>							
<b>WG3630212-3</b>	<b>DUP</b>	<b>L2641141-1</b>						
Ammonia as N		0.0831	0.0893		mg/L	7.2	20	02-OCT-21
<b>WG3630212-2</b>	<b>LCS</b>							
Ammonia as N			94.7		%		85-115	02-OCT-21
<b>WG3630212-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	02-OCT-21
<b>WG3630212-4</b>	<b>MS</b>	<b>L2641141-1</b>						
Ammonia as N			110.0		%		75-125	02-OCT-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5590836</b>							
<b>WG3621773-10</b>	<b>LCS</b>							
Nitrite (as N)			105.8		%		90-110	17-SEP-21
<b>WG3621773-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	17-SEP-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5590836</b>							
<b>WG3621773-10</b>	<b>LCS</b>							
Nitrate (as N)			107.0		%		90-110	17-SEP-21
<b>WG3621773-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	17-SEP-21
<b>OH-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5597616</b>							
<b>WG3624493-6</b>	<b>DUP</b>	<b>L2641141-1</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	22-SEP-21
<b>WG3624493-2</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	22-SEP-21
<b>ORP-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2641141

Report Date: 05-OCT-21

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch R5593821								
WG3623082-3 CRM		CL-ORP						
ORP			220		mV		210-230	22-SEP-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch R5595612								
WG3623716-14 LCS								
Phosphorus (P)-Total			96.1		%		80-120	23-SEP-21
WG3623716-13 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-SEP-21
<b>PH-CL</b>	<b>Water</b>							
Batch R5597616								
WG3624493-6 DUP		L2641141-1						
pH		8.00	8.02	J	pH	0.02	0.2	22-SEP-21
WG3624493-4 LCS								
pH			7.02		pH		6.9-7.1	22-SEP-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch R5587924								
WG3620920-6 LCS								
Orthophosphate-Dissolved (as P)			103.7		%		80-120	18-SEP-21
WG3620920-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	18-SEP-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch R5590836								
WG3621773-10 LCS								
Sulfate (SO4)			107.2		%		90-110	17-SEP-21
WG3621773-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	17-SEP-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch R5590496								
WG3620607-2 LCS								
Total Dissolved Solids			99.6		%		85-115	20-SEP-21
WG3620607-1 MB								
Total Dissolved Solids			<10		mg/L		10	20-SEP-21
<b>TKN-L-F-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2641141

Report Date: 05-OCT-21

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5602660</b>							
<b>WG3624475-5</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.3		%		75-125	24-SEP-21
<b>WG3624475-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			85.4		%		75-125	24-SEP-21
<b>WG3624475-7</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			87.4		%		75-125	24-SEP-21
<b>WG3624475-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.1		%		75-125	24-SEP-21
<b>WG3624475-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-SEP-21
<b>WG3624475-2</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-SEP-21
<b>WG3624475-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-SEP-21
<b>WG3624475-4</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-SEP-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5590176</b>							
<b>WG3620611-2</b>	<b>LCS</b>							
Total Suspended Solids			99.8		%		85-115	20-SEP-21
<b>WG3620611-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	20-SEP-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5586922</b>							
<b>WG3620403-6</b>	<b>DUP</b>	<b>L2641141-1</b>						
Turbidity		16.6	16.4		NTU	1.2	15	19-SEP-21
<b>WG3620403-5</b>	<b>LCS</b>							
Turbidity			97.5		%		85-115	19-SEP-21
<b>WG3620403-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	19-SEP-21



# Quality Control Report

Workorder: L2641141

Report Date: 05-OCT-21

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2641141

Report Date: 05-OCT-21

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	15-SEP-21 13:45	22-SEP-21 17:26	0.25	172	hours	EHTR-FM
Turbidity	1	15-SEP-21 13:45	19-SEP-21 12:20	3	4	days	EHT
pH	1	15-SEP-21 13:45	22-SEP-21 00:00	0.25	154	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

Notes\*:  
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2641141 were received on 17-SEP-21 10:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2641141-COFC

COC Number:

Page 1 of 1

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report Company: SNC-Lavalin Contact: Genevieve Pomerleau Phone: 250.354.1664 ext. 53216 Cell: 250.505.2847 Street: 520 Lake Street City/Province: Nelson, BC Postal Code: V1L 4C6		<b>Report Format / Distribution</b> Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL) Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Emails: SNC - 'genevieve.pomerleau' and 'vicky.lipinski@snc-lavalin.com' Teck - 'sarah.therrien', 'crystal.sabel' @teck.com		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b> Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply PRIORITY (Business Days): 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/> EMERGENCY: 1 Business day [E1 - 100%] Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/> Date and Time Required for all E&P TATs:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO Company: Contact:		<b>Invoice Distribution</b> Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX Emails: tyler.gate@snc-lavalin.com payables@snc-lavalin.com		<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below <table border="1"> <thead> <tr> <th>DOC</th><th>C-DIS</th><th>ORG</th><th>LOW</th><th>CL</th><th>F/P</th><th>P</th><th>F/P</th><th>P</th><th>F/P</th><th>P</th><th>F/P</th><th>P</th><th>F/P</th><th>P</th><th>F/P</th><th>P</th><th>F/P</th><th>P</th><th>F/P</th><th>P</th><th>F/P</th><th>P</th> </tr> </thead> <tbody> <tr> 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<b>ALS Account # / Quote #:</b> MOR125 / Q72340 <b>Job #:</b> Greenhills Operations <b>PO / AFE:</b> 560004-222306 650220 <b>ALS Lab Work Order # (lab use only):</b> <b>ALS Contact:</b> Inayat Dhaliwal 403-407-1784 <b>Sampler:</b>		<b>Project Information</b> <b>Oil and Gas Required Fields (client use)</b> AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:		Samples On Hold Sample is hazardous (please provide further detail) NUMBER OF CONTAINERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
<b>ALS Sample # (lab use only)</b> GH_MW_MC10-A_WG_2021_09_NP GH_MW_MC11-A_WG_2021_09_NP GH_MW_MC10-B_WG_2021_09_NP GH_MW_MC10-C_WG_2021_09_NP <del>GH_MW_MC11-A_WG_2021_09_NP</del> GH_MW-BG1A_WG-2021-09_15_NP / GH_MW-BG1A 15-Sept-21 13:45	<b>Sample Identification &amp;/or Coordinates</b> (This description will appear on the report)	<b>Teck Sample Location (sys_loc_code)</b> (For Teck data upload to EQUIS database)	<b>Date</b> (dd-mmm-yy)	<b>Time</b> (hh:mm)	<b>Sample Type</b>	DOC (C-DIS-ORG-LOW-CL) TOC (C-TOT-ORG-LOW-CL) BCMDG D-Met +Hg (MET-D-BCMDG-CL) Total N Calc. (N-T-CALC-CL) Nitrate + Nitrite Calc. (N2N3-CALC-CL) Teck Routine (TECKCOAL-ROUTINE-CL) TKN (TKN-L-F-CL) Bicarbonate (BIC-CL) Carbonate (CO3-CL) Hydroxide (OH-CL)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b> Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		<b>Special Instructions / Specify Criteria to add on report by the drop-down list below (electronic COC only)</b> PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com Teck Facility Name: (please select the applicable Facility) GH0-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b> Frozen <input type="checkbox"/> Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input type="checkbox"/> INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION  
 WHITE - LABORATORY COPY YELLOW - CLIENT COPY  
 Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.  
 1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



SNC-Lavalin  
ATTN: Kim Harrer  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 23-SEP-21  
Report Date: 20-OCT-21 11:50 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2643105  
Project P.O. #: 683032  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers: 67482-2021  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2643105-1 GW 22-SEP-21 09:30 GH_MW- BG1B_WG_2021_0 9_22_NP	L2643105-2 GW 22-SEP-21 10:30 GH_MW- BG1C_WG_2021_ 09_22_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	462	516		
	Hardness (as CaCO3) (mg/L)	305	300		
	pH (pH)	8.13	8.24		
	ORP (mV)	427	433		
	Total Suspended Solids (mg/L)	20.9	10.8		
	Total Dissolved Solids (mg/L)	296	290		
	Turbidity (NTU)	47.1	40.5		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.8	5.4		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	272	305		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	272	305		
	Ammonia as N (mg/L)	0.152	0.152		
	Bicarbonate (HCO3) (mg/L)	331	372		
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	0.50	0.28		
	Fluoride (F) (mg/L)	0.436	0.442		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	118	103		
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	0.0081		
	Nitrate (as N) (mg/L)	<0.0050	0.0081		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.214	0.216		
	Total Nitrogen (mg/L)	0.214	0.224		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010		
	Phosphorus (P)-Total (mg/L)	0.0147	0.0040		
	Sulfate (SO4) (mg/L)	9.11	7.20		
	Anion Sum (meq/L)	5.65	6.27		
	Cation Sum (meq/L)	6.65	6.47		
	Cation - Anion Balance (%)	8.1	1.5		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.60	2.85		
	Total Organic Carbon (mg/L)	3.29	2.63		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0020	<0.0010		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2643105-1 GW 22-SEP-21 09:30 GH_MW- BG1B_WG_2021_0 9_22_NP	L2643105-2 GW 22-SEP-21 10:30 GH_MW- BG1C_WG_2021_ 09_22_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00098	0.00119		
	Barium (Ba)-Dissolved (mg/L)	0.251	0.205		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.013	0.013		
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Calcium (Ca)-Dissolved (mg/L)	76.2	74.9		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (mg/L)	0.00261	0.00189		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	3.38	3.32		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0044	0.0046		
	Magnesium (Mg)-Dissolved (mg/L)	27.8	27.4		
	Manganese (Mn)-Dissolved (mg/L)	0.168	0.151		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00327	0.00328		
	Nickel (Ni)-Dissolved (mg/L)	0.00463	0.00405		
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		
	Potassium (K)-Dissolved (mg/L)	1.27	1.15		
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050		
	Silicon (Si)-Dissolved (mg/L)	3.51	3.41		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	7.63	5.90		
	Strontium (Sr)-Dissolved (mg/L)	0.120	0.206		
	Sulfur (S)-Dissolved (mg/L)	3.66	2.83		
	Thallium (Tl)-Dissolved (mg/L)	0.000034	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030		
	Uranium (U)-Dissolved (mg/L)	0.000392	0.000502		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0012	<0.0010		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2643105-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2643105-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2643105-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2643105-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2643105-1, -2
Matrix Spike	Sulfate (SO4)	MS-B	L2643105-1, -2

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E



## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-F-VA**                      Water              TKN in Water by Fluorescence                      APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

67482-2021

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

- mg/kg - milligrams per kilogram based on dry weight of sample.*
- mg/kg wwt - milligrams per kilogram based on wet weight of sample.*
- mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*
- mg/L - milligrams per litre.*
- < - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*  
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*  
**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**  
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2643105

Report Date: 20-OCT-21

Page 1 of 10

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Kim Harrer

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5604770</b>							
<b>WG3627913-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			109.0		%		85-115	28-SEP-21
<b>WG3627913-2</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	28-SEP-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5607452</b>							
<b>WG3630961-6</b>	<b>DUP</b>	<b>L2643105-2</b>						
Alkalinity, Total (as CaCO3)		305	264		mg/L	14	20	03-OCT-21
<b>WG3630961-4</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	03-OCT-21
<b>WG3630961-2</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-OCT-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5620676</b>							
<b>WG3638721-6</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			100.0		%		80-120	16-OCT-21
<b>WG3638721-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-OCT-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5607452</b>							
<b>WG3630961-6</b>	<b>DUP</b>	<b>L2643105-2</b>						
Bicarbonate (HCO3)		372	322		mg/L	14	20	03-OCT-21
<b>WG3630961-2</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	03-OCT-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5601460</b>							
<b>WG3625864-7</b>	<b>DUP</b>	<b>L2643105-2</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	24-SEP-21
<b>WG3625864-2</b>	<b>LCS</b>							
Bromide (Br)			105.9		%		85-115	24-SEP-21
<b>WG3625864-6</b>	<b>LCS</b>							
Bromide (Br)			108.7		%		85-115	24-SEP-21
<b>WG3625864-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	24-SEP-21
<b>WG3625864-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	24-SEP-21
<b>WG3625864-8</b>	<b>MS</b>	<b>L2643105-2</b>						



## Quality Control Report

Workorder: L2643105

Report Date: 20-OCT-21

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b> <b>Water</b>								
Batch	R5601460							
WG3625864-8	MS	L2643105-2						
Bromide (Br)			113.9		%		75-125	24-SEP-21
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5609916							
WG3631974-3	DUP	L2643105-1						
Dissolved Organic Carbon		2.60	2.81		mg/L	7.8	20	05-OCT-21
WG3631974-2	LCS							
Dissolved Organic Carbon			101.9		%		80-120	05-OCT-21
WG3631974-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-OCT-21
WG3631974-4	MS	L2643105-1						
Dissolved Organic Carbon			102.8		%		70-130	05-OCT-21
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5609916							
WG3631974-3	DUP	L2643105-1						
Total Organic Carbon		3.29	3.29		mg/L	0.1	20	05-OCT-21
WG3631974-2	LCS							
Total Organic Carbon			107.2		%		80-120	05-OCT-21
WG3631974-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	05-OCT-21
WG3631974-4	MS	L2643105-1						
Total Organic Carbon			101.1		%		70-130	05-OCT-21
<b>CL-L-IC-N-CL</b> <b>Water</b>								
Batch	R5601460							
WG3625864-7	DUP	L2643105-2						
Chloride (Cl)		0.28	0.27		mg/L	5.7	20	24-SEP-21
WG3625864-2	LCS							
Chloride (Cl)			101.3		%		85-115	24-SEP-21
WG3625864-6	LCS							
Chloride (Cl)			100.7		%		85-115	24-SEP-21
WG3625864-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	24-SEP-21
WG3625864-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	24-SEP-21
WG3625864-8	MS	L2643105-2						
Chloride (Cl)			103.6		%		75-125	24-SEP-21
<b>CO3-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2643105

Report Date: 20-OCT-21

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CO3-CL</b>								
<b>Batch R5607452</b>								
<b>WG3630961-6</b>	<b>DUP</b>	<b>L2643105-2</b>						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	03-OCT-21
<b>WG3630961-2</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	03-OCT-21
<b>EC-L-PCT-CL</b>								
<b>Batch R5607452</b>								
<b>WG3630961-6</b>	<b>DUP</b>	<b>L2643105-2</b>						
Conductivity (@ 25C)		516	489		uS/cm	5.4	10	03-OCT-21
<b>WG3630961-4</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.4		%		90-110	03-OCT-21
<b>WG3630961-2</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-OCT-21
<b>F-IC-N-CL</b>								
<b>Batch R5601460</b>								
<b>WG3625864-7</b>	<b>DUP</b>	<b>L2643105-2</b>						
Fluoride (F)		0.442	0.441		mg/L	0.4	20	24-SEP-21
<b>WG3625864-2</b>	<b>LCS</b>							
Fluoride (F)			104.6		%		90-110	24-SEP-21
<b>WG3625864-6</b>	<b>LCS</b>							
Fluoride (F)			107.2		%		90-110	24-SEP-21
<b>WG3625864-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	24-SEP-21
<b>WG3625864-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	24-SEP-21
<b>WG3625864-8</b>	<b>MS</b>	<b>L2643105-2</b>						
Fluoride (F)			104.4		%		75-125	24-SEP-21
<b>HG-D-CVAA-CL</b>								
<b>Batch R5603891</b>								
<b>WG3626743-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.6		%		80-120	28-SEP-21
<b>WG3626743-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-SEP-21
<b>MET-D-CCMS-CL</b>								
<b>Batch R5606483</b>								
<b>WG3629150-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			109.8		%		80-120	30-SEP-21
Antimony (Sb)-Dissolved			104.8		%		80-120	30-SEP-21



## Quality Control Report

Workorder: L2643105

Report Date: 20-OCT-21

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5606483</b>							
<b>WG3629150-2</b>		<b>LCS</b>						
Arsenic (As)-Dissolved			104.3		%		80-120	30-SEP-21
Barium (Ba)-Dissolved			105.2		%		80-120	30-SEP-21
Bismuth (Bi)-Dissolved			105.1		%		80-120	30-SEP-21
Boron (B)-Dissolved			102.4		%		80-120	30-SEP-21
Cadmium (Cd)-Dissolved			103.6		%		80-120	30-SEP-21
Calcium (Ca)-Dissolved			101.3		%		80-120	30-SEP-21
Chromium (Cr)-Dissolved			106.4		%		80-120	30-SEP-21
Cobalt (Co)-Dissolved			107.4		%		80-120	30-SEP-21
Copper (Cu)-Dissolved			105.2		%		80-120	30-SEP-21
Iron (Fe)-Dissolved			105.2		%		80-120	30-SEP-21
Lead (Pb)-Dissolved			102.0		%		80-120	30-SEP-21
Lithium (Li)-Dissolved			103.6		%		80-120	30-SEP-21
Magnesium (Mg)-Dissolved			119.3		%		80-120	30-SEP-21
Manganese (Mn)-Dissolved			108.1		%		80-120	30-SEP-21
Molybdenum (Mo)-Dissolved			107.7		%		80-120	30-SEP-21
Nickel (Ni)-Dissolved			103.7		%		80-120	30-SEP-21
Phosphorus (P)-Dissolved			107.1		%		70-130	30-SEP-21
Potassium (K)-Dissolved			112.3		%		80-120	30-SEP-21
Selenium (Se)-Dissolved			98.4		%		80-120	30-SEP-21
Silicon (Si)-Dissolved			107.5		%		60-140	30-SEP-21
Silver (Ag)-Dissolved			100.7		%		80-120	30-SEP-21
Sodium (Na)-Dissolved			112.2		%		80-120	30-SEP-21
Strontium (Sr)-Dissolved			109.4		%		80-120	30-SEP-21
Sulfur (S)-Dissolved			114.3		%		80-120	30-SEP-21
Thallium (Tl)-Dissolved			100.4		%		80-120	30-SEP-21
Tin (Sn)-Dissolved			104.3		%		80-120	30-SEP-21
Titanium (Ti)-Dissolved			107.3		%		80-120	30-SEP-21
Uranium (U)-Dissolved			106.6		%		80-120	30-SEP-21
Vanadium (V)-Dissolved			109.0		%		80-120	30-SEP-21
Zinc (Zn)-Dissolved			101.6		%		80-120	30-SEP-21
Zirconium (Zr)-Dissolved			104.2		%		80-120	30-SEP-21
<b>WG3629150-1</b>		<b>MB</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-SEP-21



## Quality Control Report

Workorder: L2643105

Report Date: 20-OCT-21

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5606483</b>							
<b>WG3629150-1</b>	<b>MB</b>							
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	30-SEP-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-SEP-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	30-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-SEP-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-SEP-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-SEP-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-SEP-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-SEP-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	30-SEP-21

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2643105

Report Date: 20-OCT-21

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5613955</b>							
<b>WG3632754-14</b>	<b>LCS</b>							
Ammonia as N			111.4		%		85-115	06-OCT-21
<b>WG3632754-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	06-OCT-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5601460</b>							
<b>WG3625864-7</b>	<b>DUP</b>	<b>L2643105-2</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-SEP-21
<b>WG3625864-2</b>	<b>LCS</b>							
Nitrite (as N)			100.7		%		90-110	24-SEP-21
<b>WG3625864-6</b>	<b>LCS</b>							
Nitrite (as N)			102.3		%		90-110	24-SEP-21
<b>WG3625864-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	24-SEP-21
<b>WG3625864-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	24-SEP-21
<b>WG3625864-8</b>	<b>MS</b>	<b>L2643105-2</b>						
Nitrite (as N)			103.1		%		75-125	24-SEP-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5601460</b>							
<b>WG3625864-7</b>	<b>DUP</b>	<b>L2643105-2</b>						
Nitrate (as N)		0.0081	0.0063	J	mg/L	0.0018	0.01	24-SEP-21
<b>WG3625864-2</b>	<b>LCS</b>							
Nitrate (as N)			101.3		%		90-110	24-SEP-21
<b>WG3625864-6</b>	<b>LCS</b>							
Nitrate (as N)			101.5		%		90-110	24-SEP-21
<b>WG3625864-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	24-SEP-21
<b>WG3625864-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	24-SEP-21
<b>WG3625864-8</b>	<b>MS</b>	<b>L2643105-2</b>						
Nitrate (as N)			102.8		%		75-125	24-SEP-21
<b>OH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5607452</b>							
<b>WG3630961-6</b>	<b>DUP</b>	<b>L2643105-2</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	03-OCT-21
<b>WG3630961-2</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	03-OCT-21



## Quality Control Report

Workorder: L2643105

Report Date: 20-OCT-21

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5606975							
WG3630371-1	CRM	CL-ORP						
ORP			220		mV		210-230	02-OCT-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5604762							
WG3627775-2	LCS							
Phosphorus (P)-Total			103.5		%		80-120	29-SEP-21
WG3627775-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	29-SEP-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5607452							
WG3630961-6	DUP	L2643105-2						
pH		8.24	8.24	J	pH	0.00	0.2	03-OCT-21
WG3630961-4	LCS							
pH			7.04		pH		6.9-7.1	03-OCT-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5599067							
WG3624764-2	LCS							
Orthophosphate-Dissolved (as P)			98.5		%		80-120	24-SEP-21
WG3624764-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-SEP-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5601460							
WG3625864-7	DUP	L2643105-2						
Sulfate (SO4)		7.20	7.12		mg/L	1.2	20	24-SEP-21
WG3625864-2	LCS							
Sulfate (SO4)			102.3		%		90-110	24-SEP-21
WG3625864-6	LCS							
Sulfate (SO4)			101.6		%		90-110	24-SEP-21
WG3625864-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	24-SEP-21
WG3625864-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	24-SEP-21
WG3625864-8	MS	L2643105-2						
Sulfate (SO4)			103.5		%		75-125	24-SEP-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2643105

Report Date: 20-OCT-21

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R5605578							
<b>WG3626939-2</b>	<b>LCS</b>							
Total Dissolved Solids			96.7		%		85-115	29-SEP-21
<b>WG3626939-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	29-SEP-21
<b>TKN-F-VA</b>		<b>Water</b>						
Batch	R5605322							
<b>WG3627154-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			107.7		%		75-125	29-SEP-21
<b>WG3627154-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-SEP-21
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R5604559							
<b>WG3626005-2</b>	<b>LCS</b>							
Total Suspended Solids			92.2		%		85-115	28-SEP-21
<b>WG3626005-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	28-SEP-21
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R5599325							
<b>WG3624653-2</b>	<b>LCS</b>							
Turbidity			100.6		%		85-115	25-SEP-21
<b>WG3624653-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	25-SEP-21

# Quality Control Report

Workorder: L2643105

Report Date: 20-OCT-21

Page 9 of 10

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2643105

Report Date: 20-OCT-21

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	22-SEP-21 09:30	02-OCT-21 12:00	0.25	242	hours	EHTR-FM
	2	22-SEP-21 10:30	02-OCT-21 12:00	0.25	241	hours	EHTR-FM
pH	1	22-SEP-21 09:30	03-OCT-21 00:00	0.25	254	hours	EHTR-FM
	2	22-SEP-21 10:30	03-OCT-21 00:00	0.25	253	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2643105 were received on 23-SEP-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



**Chain of Custody (COC) / Analytical Request Form**

Canada Toll Free: 1 800 668 9878



L2643105-COFC

COC Number: 674842-2021

-0 -0

Page 1 of 1

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report Company: SNC-Lavalin Contact: Tyler Gale <i>Kim Harrer</i> Phone: Tel.: 250-464-5622 <i>9108</i> Company address below will appear on the final report Street: 4500 Mennie Rd City/Province: Cranbrook, BC Postal Code: VIC 4J6		<b>Report Format / Distribution</b> Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL) Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Emails: <i>SNC - Tyler Gale, Kim Harrer</i> <i>Stefan Humphries, Vicky Lipinski, mia sakelarios</i> Teck: <i>Crystal Sabherwal</i>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b> Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/> EMERGENCY <input type="checkbox"/> <b>1 Business day [E1 - 100%]</b> <b>Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]</b> Date and Time Required for all E&P TATs:	
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<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO Company: Contact:		<b>Teck</b> <i>Crystal Sabherwal</i> Email Distribution Select invoice distribution: <input type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX Emails: Tyler.Gale@snc-lavalin.com payables@snc-lavalin.com		<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below F/P P F/P DOC (C-DIS-ORG-LOW-CL) TOC (C-TOT-ORG-LOW-CL) BC MDG D-Met. + Hg (MET-D-BCMDG-CL) Total N Calc. (N-T-CALC-CL) Nitrate + Nitrite Calc. (N2N3-CALC-CL) Teck Routine (TECKCOAL-ROUTINE-CL) TKN (TKN-L-F-CL) Bicarbonate (BIC-CL) Carbonate (CO3-CL) Hydroxide (OH-CL)	
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<b>Project Information</b> ALS Account # / Quote #: MOR125 / Q78198 Job #: 674842 PO / AFE: 674842 <i>683032</i> LSD:		<b>Oil and Gas Required Fields (client use)</b> AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:		ALS Lab Work Order # (lab use only): ALS Contact: <i>Naval Dhaliwal 403-407-1784</i> Sampler: <i>RAS JVG CS</i>	
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ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC	TOC	BC MDG	Total N	Nitrate + Nitrite	Teck Routine	TKN	Bicarbonate	Carbonate	Hydroxide	SAMPLES ON HOLD	NUMBER OF CONTAINERS
	<del>GH_MW_MC10-A-WG-2021</del>	<del>GH_MW_MC10-A</del>			<del>WG</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>		
	<del>GH_MW_MC10-B-WG-2021</del>	<del>GH_MW_MC10-B</del>			<del>WG</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>		
	<del>GH_MW_MC10-C-WG-2021</del>	<del>GH_MW_MC10-C</del>			<del>WG</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>		
	<i>GH-MW-BG1B-WG-2021-09-22-NP</i>	<i>GH-MW-BG1B</i>	<i>22-Sept-21</i>	<i>9:30</i>	<i>GW</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>		<i>5</i>
	<i>GH-MW-BG1C-WG-2021-09-22-NP</i>	<i>GH-MW-BG1C</i>	<i>22-Sept-21</i>	<i>10:30</i>	<i>GW</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>		<i>5</i>

<b>Drinking Water (DW) Samples (client use)</b> Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES Are samples for human consumption/use?		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only) Teck Facility Name: (please select the applicable Facility) <input type="checkbox"/> GHO-GREENHILLS OPERATION <input type="checkbox"/> FRO-FORDING RIVER OPERATION <input type="checkbox"/> EVO-ELKVIEW OPERATIONS		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b> Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input type="checkbox"/> INITIAL COOLER TEMPERATURES °C: <i>2</i> FINAL COOLER TEMPERATURES °C: <i>2</i>	
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<b>SHIPMENT RELEASE (client use)</b> Released by: <i>Ryan Schopman</i> Date: <i>2021-09-22</i> Time: <i>1700</i>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b> Received by: Date: Time:		<b>FINAL SHIPMENT RECEPTION (lab use only)</b> Received by: <i>[Signature]</i> Date: <i>23/9</i> Time: <i>8:59</i>	
---------------------------------------------------------------------------------------------------------------------	--	------------------------------------------------------------------------------	--	-----------------------------------------------------------------------------------------------------------------------	--



SNC-Lavalin  
ATTN: KIM HARRER  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 02-OCT-21  
Report Date: 06-DEC-21 12:46 (MT)  
Version: FINAL REV. 2

Client Phone: 250-464-9108

## Certificate of Analysis

Lab Work Order #: L2646667  
Project P.O. #: 683032  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2646667-1 GW 01-OCT-21 12:30 RG_MW_GCA_W G_2021_10_01_NP	L2646667-2 GW 01-OCT-21 14:45 RG_MW_AC1A_W G_2021_10_01_NP	L2646667-3 GW 01-OCT-21 15:10 RG_MW_AC1B_W G_2021_10_01_NP	L2646667-4 GW 01-OCT-21 12:00 RG_MW_MC10B_ WG_2021_10_01_ NP	L2646667-5 GW 01-OCT-21 12:00 RG_MW_MC10C_ WG_2021_10_01_ NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1180	314	307	<2.0	<2.0
	Hardness (as CaCO3) (mg/L)	14.0	157	165	<0.50	<0.50
	pH (pH)	8.77	8.09	8.02	4.70	4.71
	ORP (mV)	406	448	463	525	500
	Total Suspended Solids (mg/L)	10.7	7.1	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	1290	245	193	11	22
	Turbidity (NTU)	556	2.78	0.30	<0.10	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	1.2	1.3
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	600	136	163	<1.0	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	57.6	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	657	136	163	<1.0	<1.0
	Ammonia as N (mg/L)	0.493	0.0318	0.0094	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	732	165	198	<5.0	<5.0
	Bromide (Br) (mg/L)	<0.25	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	34.6	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	8.42	0.88	0.70	<0.10	<0.10
	Fluoride (F) (mg/L)	2.90	0.260	0.146	<0.020	<0.020
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	97.3	94.6	93.1	0.0	0.0
	Nitrate and Nitrite (as N) (mg/L)	0.050	0.0689	0.0215	<0.0051	<0.0051
	Nitrate (as N) (mg/L)	0.042	0.0618	0.0215	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	0.0085	0.0071	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.631	0.081	0.078	<0.050	<0.050
	Total Nitrogen (mg/L)	0.682	0.150	0.099	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0362	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0578	0.0096	0.0032	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	69.7	47.5	16.9	<0.30	<0.30
	Anion Sum (meq/L)	15.0	3.74	3.63	<0.10	<0.10
	Cation Sum (meq/L)	14.6	3.54	3.38	<0.10	<0.10
	Cation - Anion Balance (%)	-1.3	-2.8	-3.6	0.0	0.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.21	2.69		<0.50	<0.50
	Total Organic Carbon (mg/L)			0.74	<0.50	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	LAB	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	4.50	0.0204	0.0016	<0.0010	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2646667-1 GW 01-OCT-21 12:30 RG_MW_GCA_W G_2021_10_01_NP	L2646667-2 GW 01-OCT-21 14:45 RG_MW_AC1A_W G_2021_10_01_NP	L2646667-3 GW 01-OCT-21 15:10 RG_MW_AC1B_W G_2021_10_01_NP	L2646667-4 GW 01-OCT-21 12:00 RG_MW_MC10B_ WG_2021_10_01_ NP	L2646667-5 GW 01-OCT-21 12:00 RG_MW_MC10C_ WG_2021_10_01_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	0.00218	0.00114	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00454	0.00157	0.00012	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.100	0.0508	0.0709	<0.00010
	Beryllium (Be)-Dissolved (mg/L)	0.000163	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.783	0.031	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000282	0.0000066	0.0000088	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	3.52	44.7	45.8	<0.050
	Chromium (Cr)-Dissolved (mg/L)	0.00480	<0.00010	0.00017	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00037	0.00016	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00240	0.00029	0.00021	<0.00020
	Iron (Fe)-Dissolved (mg/L)	1.58	0.018	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	0.000375	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.906	0.0077	0.0039	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	1.27	11.0	12.3	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.0111	0.0397	0.00195	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00703	0.0120	0.000772	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00226	0.00063	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	0.110	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	3.07	0.91	0.44	<0.10
	Selenium (Se)-Dissolved (mg/L)	0.00142	0.000553	0.000679	<0.000050
	Silicon (Si)-Dissolved (mg/L)	11.5	5.49	2.23	<0.050
	Silver (Ag)-Dissolved (mg/L)	0.000014	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	313	8.52	1.57	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.213	0.218	0.115	<0.00020
	Sulfur (S)-Dissolved (mg/L)	24.7	16.2	6.35	<0.50
	Thallium (Tl)-Dissolved (mg/L)	0.000068	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	0.00040	0.00024	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.150	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.00205	0.000386	0.000594	<0.000010
	Vanadium (V)-Dissolved (mg/L)	0.00966	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0038	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	0.00594	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
SPL	Sample was Preserved at the laboratory - D-METALS: PRESERVED AT THE LAB

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Ammonia as N	MS-B	L2646667-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			



## Reference Information

<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 1 of 15

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: KIM HARRER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5609256</b>							
<b>WG3631692-6</b>	<b>DUP</b>	<b>L2646667-5</b>						
Acidity (as CaCO3)		1.3	1.7	J	mg/L	0.4	2	04-OCT-21
<b>WG3631692-3</b>	<b>LCS</b>		105.2		%		85-115	04-OCT-21
Acidity (as CaCO3)			102.1		%		85-115	04-OCT-21
<b>WG3631692-4</b>	<b>LCS</b>							
Acidity (as CaCO3)								
<b>WG3631692-1</b>	<b>MB</b>		1.4		mg/L		2	04-OCT-21
Acidity (as CaCO3)								
<b>WG3631692-2</b>	<b>MB</b>		1.2		mg/L		2	04-OCT-21
Acidity (as CaCO3)								
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616760</b>							
<b>WG3636605-4</b>	<b>LCS</b>		103.0		%		85-115	11-OCT-21
Alkalinity, Total (as CaCO3)								
<b>WG3636605-2</b>	<b>MB</b>		<1.0		mg/L		1	11-OCT-21
Alkalinity, Total (as CaCO3)								
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-3</b>	<b>DUP</b>	<b>L2646667-4</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	12-OCT-21
<b>WG3635658-2</b>	<b>LCS</b>		110.5		%		80-120	12-OCT-21
Beryllium (Be)-Dissolved								
<b>WG3635658-6</b>	<b>LCS</b>		113.2		%		80-120	12-OCT-21
Beryllium (Be)-Dissolved								
<b>WG3635658-1</b>	<b>MB</b>		<0.000020		mg/L		0.00002	12-OCT-21
Beryllium (Be)-Dissolved								
<b>WG3635658-5</b>	<b>MB</b>		<0.000020		mg/L		0.00002	12-OCT-21
Beryllium (Be)-Dissolved								
<b>WG3635658-4</b>	<b>MS</b>	<b>L2646667-4</b>	106.4		%		70-130	12-OCT-21
Beryllium (Be)-Dissolved								
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616760</b>							
<b>WG3636605-2</b>	<b>MB</b>		<5.0		mg/L		5	11-OCT-21
Bicarbonate (HCO3)								
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 2 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5614537</b>							
<b>WG3634371-7</b>	<b>DUP</b>	<b>L2646667-4</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	04-OCT-21
<b>WG3634371-2</b>	<b>LCS</b>							
Bromide (Br)			104.7		%		85-115	04-OCT-21
<b>WG3634371-6</b>	<b>LCS</b>							
Bromide (Br)			104.4		%		85-115	04-OCT-21
<b>WG3634371-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	04-OCT-21
<b>WG3634371-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	04-OCT-21
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5617773</b>							
<b>WG3638112-7</b>	<b>DUP</b>	<b>L2646667-4</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	14-OCT-21
<b>WG3638112-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			93.4		%		80-120	14-OCT-21
<b>WG3638112-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-OCT-21
<b>WG3638112-8</b>	<b>MS</b>	<b>L2646667-5</b>						
Dissolved Organic Carbon			77.9		%		70-130	14-OCT-21
<b>Batch</b>	<b>R5619767</b>							
<b>WG3638718-7</b>	<b>DUP</b>	<b>L2646667-1</b>						
Dissolved Organic Carbon		1.21	1.32		mg/L	9.3	20	14-OCT-21
<b>WG3638718-16</b>	<b>LCS</b>							
Dissolved Organic Carbon			87.0		%		80-120	14-OCT-21
<b>WG3638718-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			86.0		%		80-120	14-OCT-21
<b>WG3638718-15</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-OCT-21
<b>WG3638718-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-OCT-21
<b>WG3638718-8</b>	<b>MS</b>	<b>L2646667-2</b>						
Dissolved Organic Carbon			83.2		%		70-130	14-OCT-21
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5617773</b>							
<b>WG3638112-7</b>	<b>DUP</b>	<b>L2646667-4</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	14-OCT-21
<b>WG3638112-6</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 3 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5617773</b>							
<b>WG3638112-6</b>	<b>LCS</b>							
Total Organic Carbon			92.5		%		80-120	14-OCT-21
<b>WG3638112-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	14-OCT-21
<b>WG3638112-8</b>	<b>MS</b>	<b>L2646667-5</b>						
Total Organic Carbon			84.2		%		70-130	14-OCT-21
<b>Batch</b>	<b>R5619767</b>							
<b>WG3638718-16</b>	<b>LCS</b>							
Total Organic Carbon			85.6		%		80-120	14-OCT-21
<b>WG3638718-6</b>	<b>LCS</b>							
Total Organic Carbon			87.0		%		80-120	14-OCT-21
<b>WG3638718-15</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	14-OCT-21
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5614537</b>							
<b>WG3634371-7</b>	<b>DUP</b>	<b>L2646667-4</b>						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	04-OCT-21
<b>WG3634371-2</b>	<b>LCS</b>							
Chloride (Cl)			103.2		%		85-115	04-OCT-21
<b>WG3634371-6</b>	<b>LCS</b>							
Chloride (Cl)			103.0		%		85-115	04-OCT-21
<b>WG3634371-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	04-OCT-21
<b>WG3634371-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	04-OCT-21
<b>CO3-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5616760</b>							
<b>WG3636605-2</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	11-OCT-21
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5616760</b>							
<b>WG3636605-4</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.2		%		90-110	11-OCT-21
<b>WG3636605-2</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-OCT-21
<b>F-IC-N-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 4 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5614537</b>							
<b>WG3634371-7</b>	<b>DUP</b>	<b>L2646667-4</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	04-OCT-21
<b>WG3634371-2</b>	<b>LCS</b>							
Fluoride (F)			101.8		%		90-110	04-OCT-21
<b>WG3634371-6</b>	<b>LCS</b>							
Fluoride (F)			102.0		%		90-110	04-OCT-21
<b>WG3634371-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	04-OCT-21
<b>WG3634371-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	04-OCT-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5609738</b>							
<b>WG3631495-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.4		%		80-120	05-OCT-21
<b>WG3631495-9</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-3</b>	<b>DUP</b>	<b>L2646667-4</b>						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	12-OCT-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-OCT-21
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-OCT-21
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-OCT-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	12-OCT-21
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	12-OCT-21
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	12-OCT-21
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	12-OCT-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-OCT-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-OCT-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	12-OCT-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	12-OCT-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	12-OCT-21
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	12-OCT-21
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	12-OCT-21
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-OCT-21
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	12-OCT-21



## Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 5 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-3</b>	<b>DUP</b>	<b>L2646667-4</b>						
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	12-OCT-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	12-OCT-21
Potassium (K)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	12-OCT-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	12-OCT-21
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	12-OCT-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	12-OCT-21
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	12-OCT-21
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	12-OCT-21
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	12-OCT-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	12-OCT-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-OCT-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	12-OCT-21
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	12-OCT-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	12-OCT-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	12-OCT-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	12-OCT-21
<b>WG3635658-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			107.0		%		80-120	12-OCT-21
Antimony (Sb)-Dissolved			111.0		%		80-120	12-OCT-21
Arsenic (As)-Dissolved			104.3		%		80-120	12-OCT-21
Barium (Ba)-Dissolved			107.2		%		80-120	12-OCT-21
Bismuth (Bi)-Dissolved			110.2		%		80-120	12-OCT-21
Boron (B)-Dissolved			104.0		%		80-120	12-OCT-21
Cadmium (Cd)-Dissolved			105.2		%		80-120	12-OCT-21
Calcium (Ca)-Dissolved			109.7		%		80-120	12-OCT-21
Chromium (Cr)-Dissolved			105.7		%		80-120	12-OCT-21
Cobalt (Co)-Dissolved			105.4		%		80-120	12-OCT-21
Copper (Cu)-Dissolved			102.3		%		80-120	12-OCT-21
Iron (Fe)-Dissolved			108.7		%		80-120	12-OCT-21
Lead (Pb)-Dissolved			110.6		%		80-120	12-OCT-21
Lithium (Li)-Dissolved			112.0		%		80-120	12-OCT-21
Magnesium (Mg)-Dissolved			102.7		%		80-120	12-OCT-21
Manganese (Mn)-Dissolved			103.9		%		80-120	12-OCT-21
Molybdenum (Mo)-Dissolved			112.7		%		80-120	12-OCT-21



## Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 6 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-2</b>	<b>LCS</b>							
Nickel (Ni)-Dissolved			102.2		%		80-120	12-OCT-21
Phosphorus (P)-Dissolved			104.6		%		70-130	12-OCT-21
Potassium (K)-Dissolved			102.7		%		80-120	12-OCT-21
Selenium (Se)-Dissolved			108.3		%		80-120	12-OCT-21
Silicon (Si)-Dissolved			108.7		%		60-140	12-OCT-21
Silver (Ag)-Dissolved			117.6		%		80-120	12-OCT-21
Sodium (Na)-Dissolved			102.9		%		80-120	12-OCT-21
Strontium (Sr)-Dissolved			109.5		%		80-120	12-OCT-21
Sulfur (S)-Dissolved			114.0		%		80-120	12-OCT-21
Thallium (Tl)-Dissolved			107.2		%		80-120	12-OCT-21
Tin (Sn)-Dissolved			106.9		%		80-120	12-OCT-21
Titanium (Ti)-Dissolved			99.9		%		80-120	12-OCT-21
Uranium (U)-Dissolved			116.8		%		80-120	12-OCT-21
Vanadium (V)-Dissolved			106.3		%		80-120	12-OCT-21
Zinc (Zn)-Dissolved			98.0		%		80-120	12-OCT-21
Zirconium (Zr)-Dissolved			116.6		%		80-120	12-OCT-21
<b>WG3635658-6</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			107.4		%		80-120	12-OCT-21
Antimony (Sb)-Dissolved			109.4		%		80-120	12-OCT-21
Arsenic (As)-Dissolved			109.1		%		80-120	12-OCT-21
Barium (Ba)-Dissolved			111.3		%		80-120	12-OCT-21
Bismuth (Bi)-Dissolved			98.3		%		80-120	12-OCT-21
Boron (B)-Dissolved			101.2		%		80-120	12-OCT-21
Cadmium (Cd)-Dissolved			109.7		%		80-120	12-OCT-21
Calcium (Ca)-Dissolved			110.3		%		80-120	12-OCT-21
Chromium (Cr)-Dissolved			104.9		%		80-120	12-OCT-21
Cobalt (Co)-Dissolved			105.1		%		80-120	12-OCT-21
Copper (Cu)-Dissolved			104.1		%		80-120	12-OCT-21
Iron (Fe)-Dissolved			106.9		%		80-120	12-OCT-21
Lead (Pb)-Dissolved			106.8		%		80-120	12-OCT-21
Lithium (Li)-Dissolved			108.5		%		80-120	12-OCT-21
Magnesium (Mg)-Dissolved			101.9		%		80-120	12-OCT-21
Manganese (Mn)-Dissolved			105.0		%		80-120	12-OCT-21
Molybdenum (Mo)-Dissolved			109.5		%		80-120	12-OCT-21





## Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 7 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-6</b>		<b>LCS</b>						
Nickel (Ni)-Dissolved			103.1		%		80-120	12-OCT-21
Phosphorus (P)-Dissolved			106.2		%		70-130	12-OCT-21
Potassium (K)-Dissolved			107.0		%		80-120	12-OCT-21
Selenium (Se)-Dissolved			118.0		%		80-120	12-OCT-21
Silicon (Si)-Dissolved			106.9		%		60-140	12-OCT-21
Silver (Ag)-Dissolved			113.7		%		80-120	12-OCT-21
Sodium (Na)-Dissolved			105.6		%		80-120	12-OCT-21
Strontium (Sr)-Dissolved			104.3		%		80-120	12-OCT-21
Sulfur (S)-Dissolved			104.0		%		80-120	12-OCT-21
Thallium (Tl)-Dissolved			105.3		%		80-120	12-OCT-21
Tin (Sn)-Dissolved			103.5		%		80-120	12-OCT-21
Titanium (Ti)-Dissolved			103.5		%		80-120	12-OCT-21
Uranium (U)-Dissolved			114.4		%		80-120	12-OCT-21
Vanadium (V)-Dissolved			107.9		%		80-120	12-OCT-21
Zinc (Zn)-Dissolved			104.1		%		80-120	12-OCT-21
Zirconium (Zr)-Dissolved			111.9		%		80-120	12-OCT-21
<b>WG3635658-1</b>		<b>MB</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-OCT-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-OCT-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-OCT-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-OCT-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-OCT-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-OCT-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-OCT-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21



## Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 8 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-1</b>	<b>MB</b>							
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-OCT-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-OCT-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	12-OCT-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-OCT-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-OCT-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-OCT-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	12-OCT-21
<b>WG3635658-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-OCT-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-OCT-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-OCT-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-OCT-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-OCT-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-OCT-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-OCT-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21



## Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 9 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-5</b>	<b>MB</b>							
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-OCT-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-OCT-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	12-OCT-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-OCT-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-OCT-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-OCT-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	12-OCT-21
<b>WG3635658-4</b>	<b>MS</b>	<b>L2646667-4</b>						
Aluminum (Al)-Dissolved			110.6		%		70-130	12-OCT-21
Antimony (Sb)-Dissolved			106.6		%		70-130	12-OCT-21
Arsenic (As)-Dissolved			107.2		%		70-130	12-OCT-21
Barium (Ba)-Dissolved			109.4		%		70-130	12-OCT-21
Bismuth (Bi)-Dissolved			111.3		%		70-130	12-OCT-21
Boron (B)-Dissolved			104.1		%		70-130	12-OCT-21
Cadmium (Cd)-Dissolved			110.1		%		70-130	12-OCT-21
Calcium (Ca)-Dissolved			106.9		%		70-130	12-OCT-21
Chromium (Cr)-Dissolved			106.8		%		70-130	12-OCT-21
Cobalt (Co)-Dissolved			107.2		%		70-130	12-OCT-21
Copper (Cu)-Dissolved			108.3		%		70-130	12-OCT-21
Iron (Fe)-Dissolved			107.9		%		70-130	12-OCT-21
Lead (Pb)-Dissolved			112.3		%		70-130	12-OCT-21
Lithium (Li)-Dissolved			109.4		%		70-130	12-OCT-21
Magnesium (Mg)-Dissolved			106.4		%		70-130	12-OCT-21
Manganese (Mn)-Dissolved			107.2		%		70-130	12-OCT-21
Molybdenum (Mo)-Dissolved			103.7		%		70-130	12-OCT-21



## Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 10 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-4</b>	<b>MS</b>	<b>L2646667-4</b>						
Nickel (Ni)-Dissolved			106.9		%		70-130	12-OCT-21
Phosphorus (P)-Dissolved			103.9		%		70-130	12-OCT-21
Potassium (K)-Dissolved			108.8		%		70-130	12-OCT-21
Selenium (Se)-Dissolved			113.1		%		70-130	12-OCT-21
Silicon (Si)-Dissolved			99.8		%		70-130	12-OCT-21
Silver (Ag)-Dissolved			116.3		%		70-130	12-OCT-21
Sodium (Na)-Dissolved			107.2		%		70-130	12-OCT-21
Strontium (Sr)-Dissolved			111.5		%		70-130	12-OCT-21
Thallium (Tl)-Dissolved			109.2		%		70-130	12-OCT-21
Tin (Sn)-Dissolved			103.6		%		70-130	12-OCT-21
Titanium (Ti)-Dissolved			101.7		%		70-130	12-OCT-21
Uranium (U)-Dissolved			111.7		%		70-130	12-OCT-21
Vanadium (V)-Dissolved			108.5		%		70-130	12-OCT-21
Zinc (Zn)-Dissolved			104.9		%		70-130	12-OCT-21
Zirconium (Zr)-Dissolved			103.4		%		70-130	12-OCT-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5620876</b>							
<b>WG3639116-16</b>	<b>DUP</b>	<b>L2646667-1</b>						
Ammonia as N		0.493	0.486		mg/L	1.4	20	16-OCT-21
<b>WG3639116-14</b>	<b>LCS</b>							
Ammonia as N			111.9		%		85-115	16-OCT-21
<b>WG3639116-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	16-OCT-21
<b>WG3639116-15</b>	<b>MS</b>	<b>L2646667-1</b>						
Ammonia as N			N/A	MS-B	%		-	16-OCT-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5614537</b>							
<b>WG3634371-7</b>	<b>DUP</b>	<b>L2646667-4</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-OCT-21
<b>WG3634371-2</b>	<b>LCS</b>							
Nitrite (as N)			101.2		%		90-110	04-OCT-21
<b>WG3634371-6</b>	<b>LCS</b>							
Nitrite (as N)			100.7		%		90-110	04-OCT-21
<b>WG3634371-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	04-OCT-21
<b>WG3634371-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 11 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b> <b>Water</b>								
Batch	R5614537							
WG3634371-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	04-OCT-21
<b>NO3-L-IC-N-CL</b> <b>Water</b>								
Batch	R5614537							
WG3634371-7	DUP	L2646667-4						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	04-OCT-21
WG3634371-2	LCS							
Nitrate (as N)			103.8		%		90-110	04-OCT-21
WG3634371-6	LCS							
Nitrate (as N)			103.4		%		90-110	04-OCT-21
WG3634371-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	04-OCT-21
WG3634371-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	04-OCT-21
<b>OH-CL</b> <b>Water</b>								
Batch	R5616760							
WG3636605-2	MB							
Hydroxide (OH)			<5.0		mg/L		5	11-OCT-21
<b>ORP-CL</b> <b>Water</b>								
Batch	R5615974							
WG3636004-4	CRM	CL-ORP						
ORP			220		mV		210-230	12-OCT-21
<b>P-T-L-COL-CL</b> <b>Water</b>								
Batch	R5614573							
WG3634419-6	LCS							
Phosphorus (P)-Total			102.7		%		80-120	08-OCT-21
WG3634419-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-OCT-21
<b>PH-CL</b> <b>Water</b>								
Batch	R5616760							
WG3636605-4	LCS							
pH			7.03		pH		6.9-7.1	11-OCT-21
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 12 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5607583</b>							
<b>WG3630932-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			101.0		%		80-120	04-OCT-21
<b>WG3630932-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			92.7		%		80-120	04-OCT-21
<b>WG3630932-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-OCT-21
<b>WG3630932-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-OCT-21
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5614537</b>							
<b>WG3634371-7</b>	<b>DUP</b>	<b>L2646667-4</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	04-OCT-21
<b>WG3634371-2</b>	<b>LCS</b>							
Sulfate (SO4)			104.6		%		90-110	04-OCT-21
<b>WG3634371-6</b>	<b>LCS</b>							
Sulfate (SO4)			107.4		%		90-110	04-OCT-21
<b>WG3634371-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	04-OCT-21
<b>WG3634371-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	04-OCT-21
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5614736</b>							
<b>WG3633133-2</b>	<b>LCS</b>							
Total Dissolved Solids			98.7		%		85-115	07-OCT-21
<b>WG3633133-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	07-OCT-21
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5616643</b>							
<b>WG3636658-3</b>	<b>DUP</b>	<b>L2646667-4</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	21-OCT-21
<b>WG3636658-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			84.0		%		75-125	12-OCT-21
<b>WG3636658-11</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			77.0		%		75-125	12-OCT-21
<b>WG3636658-12</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			81.0		%		75-125	12-OCT-21
<b>WG3636658-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-OCT-21



## Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 13 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616643</b>							
<b>WG3636658-8</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-OCT-21
<b>WG3636658-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-OCT-21
<b>WG3636658-4</b>	<b>MS</b>	<b>L2646667-5</b>						
Total Kjeldahl Nitrogen			80.0		%		70-130	12-OCT-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5614675</b>							
<b>WG3633132-2</b>	<b>LCS</b>							
Total Suspended Solids			90.2		%		85-115	07-OCT-21
<b>WG3633132-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	07-OCT-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5607292</b>							
<b>WG3630786-3</b>	<b>DUP</b>	<b>L2646667-1</b>						
Turbidity		556	573		NTU	3.0	15	04-OCT-21
<b>WG3630786-2</b>	<b>LCS</b>							
Turbidity			92.7		%		85-115	04-OCT-21
<b>WG3630786-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	04-OCT-21

# Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 14 of 15

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2646667

Report Date: 06-DEC-21

Page 15 of 15

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	01-OCT-21 12:30	12-OCT-21 13:15	0.25	265	hours	EHTR-FM
	2	01-OCT-21 14:45	12-OCT-21 13:15	0.25	263	hours	EHTR-FM
	3	01-OCT-21 15:10	12-OCT-21 13:15	0.25	262	hours	EHTR-FM
	4	01-OCT-21 12:00	12-OCT-21 13:15	0.25	265	hours	EHTR-FM
	5	01-OCT-21 12:00	12-OCT-21 13:15	0.25	265	hours	EHTR-FM
pH							
	1	01-OCT-21 12:30	11-OCT-21 00:00	0.25	228	hours	EHTR-FM
	2	01-OCT-21 14:45	11-OCT-21 00:00	0.25	225	hours	EHTR-FM
	3	01-OCT-21 15:10	11-OCT-21 00:00	0.25	225	hours	EHTR-FM
	4	01-OCT-21 12:00	11-OCT-21 00:00	0.25	228	hours	EHTR-FM
	5	01-OCT-21 12:00	11-OCT-21 00:00	0.25	228	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2646667 were received on 02-OCT-21 10:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2646667-COFC

<b>Report To</b> Contact and company name below will appear on the final report			<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																																																																																																																																																																																																																			
Company: SNC-Lavalin ~Nelson			Select Report Format: <input type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																																																																																																																																																																																																																			
Contact: Kim Harrer			Quality Control (QC) Report with Report <input checked="" type="checkbox"/> <input type="checkbox"/> NO			Priority (Business Days): 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/>						Emergency: 1 Business day [E1 - 100%] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>																																																																																																																																																																																																													
Phone: Tel.:250-464-9108			<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			Date and Time Required for all E&P TATs:																																																																																																																																																																																																																			
Company address below will appear on the final report			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			For tests that can not be performed according to the service level selected, you will be contacted.																																																																																																																																																																																																																			
Street: 520 Lake Street			Emails: SNC - 'Kim.Harrer', 'Alex.Heathcott'			<b>Analysis Request</b>																																																																																																																																																																																																																			
City/Province: Nelson, BC			Vicky.Lipinski@snc.lavalin.com			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																																																																																																																																																																																			
Postal Code: V1L 4C6			Teck: Cam.Jaeger@teck.com teck.lab.results@teck.com			SAMPLES ON HOLD																																																																																																																																																																																																																			
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Invoice Distribution			Sample is hazardous (please provide further details)																																																																																																																																																																																																																			
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL - <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			NUMBER OF CONTAINERS																																																																																																																																																																																																																			
Company:			Emails: Kim.Harrer@snc.lavalin.com			<table border="1"> <thead> <tr> <th>DOC (C-DIS-ORG-LOW-CL)</th> <th>TOC (C-TOT-ORG-LOW-CL)</th> <th>BC MDG D-Met + Hg (MET-D-BCMDGG-CL)</th> <th>Total N Calc. (N-T-CALC-CL)</th> <th>Nitrate + Nitrite Calc. (N2N3-CALC-CL)</th> <th>Teck Routine (TECKCOAL-ROUTINE-CL)</th> <th>TKN (TKN-L-F-CL)</th> <th>Bicarbonate (BIC-CL)</th> <th>Carbonate (CO3-CL)</th> <th>Hydroxide (OH-CL)</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table>												DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met + Hg (MET-D-BCMDGG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)											R	R	R	R	R	R	R	R	R	R											R	R	R	R	R	R	R	R	R	R											R	R	R	R	R	R	R	R	R	R											R	R	R	R	R	R	R	R	R	R											R	R	R	R	R	R	R	R	R	R																																																																																										
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Project Information			Oil and Gas Required Fields (client use)																																																																																																																																																																																																																						
ALS Account # / Quote #: MOR125 / Q78198			AFE/Cost Center: PO#																																																																																																																																																																																																																						
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ALS Lab Work Order # (lab use only):			ALS Contact: Patrick																																																																																																																																																																																																																						
			Sampler: SE/JM																																																																																																																																																																																																																						
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type																																																																																																																																																																																																																				
	RG.MW-GCA-WR-2021-10-01-NP	RG.MW-GCA	01-Oct-21	1230	GW																																																																																																																																																																																																																				
	RG.MW-ACIA-WR-2021-10-01-NP	RG.MW-ACIA	01-Oct-21	1445	GW																																																																																																																																																																																																																				
	RG.MW-ACIB-WR-2021-10-01-NP	RG.MW-ACIB	01-Oct-21	1510	GW																																																																																																																																																																																																																				
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Drinking Water (DW) Samples (client use)			Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			SAMPLE CONDITION AS RECEIVED (lab use only)																																																																																																																																																																																																																			
Are samples taken from a Regulated DW System? <input type="checkbox"/> NO			PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																																																																																																																																																																																																																			
Are samples for human consumption/ use? <input type="checkbox"/> NO			No preservative in D-metals - Hg not preserved.			Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																																																																																																																																																																																																																			
			Teck Facility Name: (please select the applicable Facility)			Cooling Initiated <input type="checkbox"/>																																																																																																																																																																																																																			
			REP: Regional Effects Program FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C																																																																																																																																																																																																																			
SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)																																																																																																																																																																																																																			
Released by: Shawn Edwitt			Received by:			Received by:																																																																																																																																																																																																																			
Date: 1 Oct 2021			Date:			Date: 02/10																																																																																																																																																																																																																			
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SNC-Lavalin  
ATTN: Bill Wilmot  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 27-OCT-21  
Report Date: 16-NOV-21 16:19 (MT)  
Version: FINAL

Client Phone: 250-464-5054

## Certificate of Analysis

Lab Work Order #: L2656536  
Project P.O. #: 681764  
Job Reference: 673926  
C of C Numbers: 681764  
Legal Site Desc: FRO-X Baseline

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

16-NOV-21 16:19 (MT)

Version: FINAL

Sample ID Description Sampled Date Sampled Time Client ID	L2656536-1 WG 26-OCT-21 10:50 FR_MW-CH1- A_WG_2021_10_2 6_NP	L2656536-2 WG 26-OCT-21 13:00 FR_MW- CH2_WG_2021_10 _26_NP	L2656536-3 WG 26-OCT-21 14:30 FR_MW-CASW6- A_WG_2021_10_2 6_NP	L2656536-4 WG 26-OCT-21 14:30 FR_MW-CASW6- B_WG_2021_10_2 6_NP	L2656536-5 WG 26-OCT-21 10:50 FR_MW_MC10A_ WG_2021_10_26_ NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	295	342	778	1410	294
	Hardness (as CaCO3) (mg/L)	155	176	288	527	154
	pH (pH)	8.22	8.14	8.17	7.63	8.17
	ORP (mV)	459	441	447	460	464
	Total Suspended Solids (mg/L)	<1.0	3.0	11.8	137	<2.0
	Total Dissolved Solids (mg/L)	184	203	444	798	177
	Turbidity (NTU)	0.18	3.93	50.0	280	0.13
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.0	4.5	11.5	39.1	2.9
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	141	174	459	426	146
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	141	174	459	426	146
	Ammonia as N (mg/L)	<0.0050	0.448	2.50	0.21	<0.0050
	Bicarbonate (HCO3) (mg/L)	172	213	560	520	178
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.25 <sup>DLDS</sup>	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	0.17	0.14	6.69	213	0.18
	Fluoride (F) (mg/L)	0.145	0.127	0.140	0.17	0.149
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	96.5	93.0	92.0	123 <sup>BL:INT</sup>	93.5
	Nitrate and Nitrite (as N) (mg/L)	0.0629	0.0469	<0.0051	0.044	0.0608
	Nitrate (as N) (mg/L)	0.0629	0.0469	<0.0050	0.044	0.0608
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.059	0.537	2.90	0.556	<0.050
	Total Nitrogen (mg/L)	0.122	0.584	2.90	0.600	0.061
	Orthophosphate-Dissolved (as P) (mg/L)	0.0028	0.0016	0.0024 <sup>HTD</sup>	<0.0010	0.0029
	Phosphorus (P)-Total (mg/L)	0.0023 <sup>RRV</sup>	0.0099	0.0255	0.132 <sup>DLHC</sup>	0.0028
	Sulfate (SO4) (mg/L)	20.4	20.3	<0.30	<1.5 <sup>DLDS</sup>	20.3
	Anion Sum (meq/L)	3.26	3.92	9.36	14.5	3.36
	Cation Sum (meq/L)	3.15	3.64	8.61	17.8	3.14
	Cation - Anion Balance (%)	-1.8	-3.6	-4.2	10.2	-3.4
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.58	1.51	2.04	8.15	<0.50
	Total Organic Carbon (mg/L)	0.73	1.31	2.00	8.88	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0010	0.0033	0.0011	0.0042	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2656536-6 WG 26-OCT-21 15:30 FR_MW_MC10B_ WG_2021_10_26_ NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50			
	pH (pH)	5.12			
	ORP (mV)	441			
	Total Suspended Solids (mg/L)	<2.0			
	Total Dissolved Solids (mg/L)	<10			
	Turbidity (NTU)	<0.10			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.5			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0			
	Ammonia as N (mg/L)	0.0101 <sup>RRV</sup>			
	Bicarbonate (HCO3) (mg/L)	<5.0			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	<0.10			
	Fluoride (F) (mg/L)	<0.020			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	0.0			
	Nitrate and Nitrite (as N) (mg/L)	<0.0051			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Total Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0120 <sup>RRV</sup>			
	Sulfate (SO4) (mg/L)	<0.30			
	Anion Sum (meq/L)	<0.10			
	Cation Sum (meq/L)	<0.10			
	Cation - Anion Balance (%)	0.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

16-NOV-21 16:19 (MT)

Version: FINAL

Sample ID Description Sampled Date Sampled Time Client ID	L2656536-1 WG 26-OCT-21 10:50 FR_MW-CH1- A_WG_2021_10_2 6_NP	L2656536-2 WG 26-OCT-21 13:00 FR_MW- CH2_WG_2021_10 _26_NP	L2656536-3 WG 26-OCT-21 14:30 FR_MW-CASW6- A_WG_2021_10_2 6_NP	L2656536-4 WG 26-OCT-21 14:30 FR_MW-CASW6- B_WG_2021_10_2 6_NP	L2656536-5 WG 26-OCT-21 10:50 FR_MW_MC10A_ WG_2021_10_26_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00021	0.0245	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0781	0.795	11.5	0.0781
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	0.095	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000063	<0.0000050	<0.0000050	0.0000062
	Calcium (Ca)-Dissolved (mg/L)	42.1	49.3	80.2	135
	Chromium (Cr)-Dissolved (mg/L)	0.00017	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	0.00126	0.0184
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.207	4.18	53.1
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0039	0.0163	0.313	0.0044
	Magnesium (Mg)-Dissolved (mg/L)	12.0	13.0	21.4	46.5
	Manganese (Mn)-Dissolved (mg/L)	0.00163	0.0134	0.106	2.15
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000598	0.000791	0.00493	0.00391
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.0100	0.0278
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	0.154
	Potassium (K)-Dissolved (mg/L)	0.37	1.54	5.93	2.20
	Selenium (Se)-Dissolved (mg/L)	0.000811	0.000656	<0.000050	0.000096
	Silicon (Si)-Dissolved (mg/L)	1.97	2.25	4.84	6.13
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.17	1.52	56.8	99.2
	Strontium (Sr)-Dissolved (mg/L)	0.0746	0.0757	1.66	0.352
	Sulfur (S)-Dissolved (mg/L)	7.43	7.76	<0.50	<0.50
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000014	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000560	0.000635	0.000051	0.000131
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0016	0.0047	0.0013
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2656536-6			
		WG			
		26-OCT-21			
		15:30			
		FR_MW_MC10B_			
		WG_2021_10_26_			
		NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.00024			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050			
	Calcium (Ca)-Dissolved (mg/L)	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	<0.0050			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Phosphorus (P)-Dissolved (mg/L)	<0.050			
	Potassium (K)-Dissolved (mg/L)	<0.10			
	Selenium (Se)-Dissolved (mg/L)	<0.000050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			
	Sulfur (S)-Dissolved (mg/L)	<0.50			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L2656536-1, -2, -3, -4, -5, -6

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)



## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

**Chain of Custody Numbers:**

681764

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2656536

Report Date: 16-NOV-21

Page 1 of 10

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Bill Wilmot

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5634654</b>							
<b>WG3650913-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			96.0		%		85-115	01-NOV-21
<b>WG3650913-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	01-NOV-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5634385</b>							
<b>WG3650511-9</b>	<b>DUP</b>	<b>L2656536-3</b>						
Alkalinity, Total (as CaCO3)		459	459		mg/L	0.1	20	30-OCT-21
<b>WG3650511-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	30-OCT-21
<b>WG3650511-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.4		%		85-115	30-OCT-21
<b>WG3650511-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-OCT-21
<b>WG3650511-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-OCT-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5634599</b>							
<b>WG3649815-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.3		%		80-120	03-NOV-21
<b>WG3649815-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-NOV-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5634385</b>							
<b>WG3650511-9</b>	<b>DUP</b>	<b>L2656536-3</b>						
Bicarbonate (HCO3)		560	560		mg/L	0.1	20	30-OCT-21
<b>WG3650511-10</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	30-OCT-21
<b>WG3650511-7</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	30-OCT-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5636409</b>							
<b>WG3652993-10</b>	<b>LCS</b>							
Bromide (Br)			99.6		%		85-115	28-OCT-21
<b>WG3652993-14</b>	<b>LCS</b>							
Bromide (Br)			101.8		%		85-115	28-OCT-21
<b>WG3652993-13</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2656536

Report Date: 16-NOV-21

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
Batch R5636409								
WG3652993-13	MB							
Bromide (Br)			<0.050		mg/L		0.05	28-OCT-21
WG3652993-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	28-OCT-21
<b>C-DIS-ORG-LOW-CL</b>								
Batch R5642096								
WG3656579-7	DUP	L2656536-4						
Dissolved Organic Carbon		8.15	8.42		mg/L	3.3	20	09-NOV-21
WG3656579-6	LCS							
Dissolved Organic Carbon			115.1		%		80-120	09-NOV-21
WG3656579-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-NOV-21
WG3656579-8	MS	L2656536-4						
Dissolved Organic Carbon			116.8		%		70-130	09-NOV-21
<b>C-TOT-ORG-LOW-CL</b>								
Batch R5642096								
WG3656579-7	DUP	L2656536-4						
Total Organic Carbon		8.88	8.70		mg/L	2.1	20	09-NOV-21
WG3656579-6	LCS							
Total Organic Carbon			119.2		%		80-120	09-NOV-21
WG3656579-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	09-NOV-21
WG3656579-8	MS	L2656536-4						
Total Organic Carbon			120.7		%		70-130	09-NOV-21
<b>CL-L-IC-N-CL</b>								
Batch R5636409								
WG3652993-10	LCS							
Chloride (Cl)			103.0		%		85-115	28-OCT-21
WG3652993-14	LCS							
Chloride (Cl)			103.4		%		85-115	28-OCT-21
WG3652993-13	MB							
Chloride (Cl)			<0.10		mg/L		0.1	28-OCT-21
WG3652993-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	28-OCT-21
<b>CO3-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2656536

Report Date: 16-NOV-21

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CO3-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5634385</b>							
<b>WG3650511-9</b>	<b>DUP</b>	<b>L2656536-3</b>						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	30-OCT-21
<b>WG3650511-10</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	30-OCT-21
<b>WG3650511-7</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	30-OCT-21
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5634385</b>							
<b>WG3650511-9</b>	<b>DUP</b>	<b>L2656536-3</b>						
Conductivity (@ 25C)		778	780		uS/cm	0.3	10	30-OCT-21
<b>WG3650511-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.7		%		90-110	30-OCT-21
<b>WG3650511-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			97.5		%		90-110	30-OCT-21
<b>WG3650511-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-OCT-21
<b>WG3650511-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-OCT-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5636409</b>							
<b>WG3652993-10</b>	<b>LCS</b>							
Fluoride (F)			98.2		%		90-110	28-OCT-21
<b>WG3652993-14</b>	<b>LCS</b>							
Fluoride (F)			97.3		%		90-110	28-OCT-21
<b>WG3652993-13</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	28-OCT-21
<b>WG3652993-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	28-OCT-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5633250</b>							
<b>WG3649209-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			109.0		%		80-120	30-OCT-21
<b>WG3649209-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.0		%		80-120	30-OCT-21
<b>WG3649209-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-OCT-21
<b>WG3649209-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-OCT-21



## Quality Control Report

Workorder: L2656536

Report Date: 16-NOV-21

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5634599</b>							
<b>WG3649815-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			109.3		%		80-120	03-NOV-21
Antimony (Sb)-Dissolved			109.9		%		80-120	03-NOV-21
Arsenic (As)-Dissolved			107.5		%		80-120	03-NOV-21
Barium (Ba)-Dissolved			108.0		%		80-120	03-NOV-21
Bismuth (Bi)-Dissolved			102.8		%		80-120	03-NOV-21
Boron (B)-Dissolved			100.5		%		80-120	03-NOV-21
Cadmium (Cd)-Dissolved			103.5		%		80-120	03-NOV-21
Calcium (Ca)-Dissolved			103.2		%		80-120	03-NOV-21
Chromium (Cr)-Dissolved			106.2		%		80-120	03-NOV-21
Cobalt (Co)-Dissolved			107.9		%		80-120	03-NOV-21
Copper (Cu)-Dissolved			105.7		%		80-120	03-NOV-21
Iron (Fe)-Dissolved			108.1		%		80-120	03-NOV-21
Lead (Pb)-Dissolved			105.5		%		80-120	03-NOV-21
Lithium (Li)-Dissolved			103.7		%		80-120	03-NOV-21
Magnesium (Mg)-Dissolved			113.7		%		80-120	03-NOV-21
Manganese (Mn)-Dissolved			107.6		%		80-120	03-NOV-21
Molybdenum (Mo)-Dissolved			103.2		%		80-120	03-NOV-21
Nickel (Ni)-Dissolved			106.4		%		80-120	03-NOV-21
Phosphorus (P)-Dissolved			112.4		%		70-130	03-NOV-21
Potassium (K)-Dissolved			109.4		%		80-120	03-NOV-21
Selenium (Se)-Dissolved			103.2		%		80-120	03-NOV-21
Silicon (Si)-Dissolved			106.3		%		60-140	03-NOV-21
Silver (Ag)-Dissolved			101.6		%		80-120	03-NOV-21
Sodium (Na)-Dissolved			106.7		%		80-120	03-NOV-21
Strontium (Sr)-Dissolved			104.6		%		80-120	03-NOV-21
Sulfur (S)-Dissolved			108.7		%		80-120	03-NOV-21
Thallium (Tl)-Dissolved			104.1		%		80-120	03-NOV-21
Tin (Sn)-Dissolved			106.2		%		80-120	03-NOV-21
Titanium (Ti)-Dissolved			106.6		%		80-120	03-NOV-21
Uranium (U)-Dissolved			97.4		%		80-120	03-NOV-21
Vanadium (V)-Dissolved			108.3		%		80-120	03-NOV-21
Zinc (Zn)-Dissolved			104.4		%		80-120	03-NOV-21
Zirconium (Zr)-Dissolved			101.7		%		80-120	03-NOV-21
<b>WG3649815-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2656536

Report Date: 16-NOV-21

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5634599</b>							
<b>WG3649815-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-NOV-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-NOV-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-NOV-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-NOV-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-NOV-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-NOV-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-NOV-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-NOV-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-NOV-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	03-NOV-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-NOV-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-NOV-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-NOV-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-NOV-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-NOV-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	03-NOV-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-NOV-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-NOV-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-NOV-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-NOV-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-NOV-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	03-NOV-21

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2656536

Report Date: 16-NOV-21

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5646358</b>							
<b>WG3658038-10</b>	<b>LCS</b>							
Ammonia as N			99.1		%		85-115	11-NOV-21
<b>WG3658038-2</b>	<b>LCS</b>							
Ammonia as N			99.1		%		85-115	11-NOV-21
<b>WG3658038-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	11-NOV-21
<b>WG3658038-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	11-NOV-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5636409</b>							
<b>WG3652993-10</b>	<b>LCS</b>							
Nitrite (as N)			99.3		%		90-110	28-OCT-21
<b>WG3652993-14</b>	<b>LCS</b>							
Nitrite (as N)			100.7		%		90-110	28-OCT-21
<b>WG3652993-13</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	28-OCT-21
<b>WG3652993-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	28-OCT-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5636409</b>							
<b>WG3652993-10</b>	<b>LCS</b>							
Nitrate (as N)			103.8		%		90-110	28-OCT-21
<b>WG3652993-14</b>	<b>LCS</b>							
Nitrate (as N)			103.4		%		90-110	28-OCT-21
<b>WG3652993-13</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	28-OCT-21
<b>WG3652993-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	28-OCT-21
<b>OH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5634385</b>							
<b>WG3650511-9</b>	<b>DUP</b>	<b>L2656536-3</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	30-OCT-21
<b>WG3650511-10</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	30-OCT-21
<b>WG3650511-7</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	30-OCT-21
<b>ORP-CL</b>								
<b>Water</b>								





## Quality Control Report

Workorder: L2656536

Report Date: 16-NOV-21

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5634547							
WG3650616-1	CRM	CL-ORP						
ORP			221		mV		210-230	02-NOV-21
WG3650616-2	DUP	L2656536-1						
ORP		459	459	J	mV	0.1	15	02-NOV-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5636152							
WG3652629-10	LCS							
Phosphorus (P)-Total			116.9		%		80-120	04-NOV-21
WG3652629-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-NOV-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5634385							
WG3650511-9	DUP	L2656536-3						
pH		8.17	8.20	J	pH	0.03	0.2	30-OCT-21
WG3650511-11	LCS							
pH			7.00		pH		6.9-7.1	30-OCT-21
WG3650511-8	LCS							
pH			7.01		pH		6.9-7.1	30-OCT-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5632613							
WG3648097-6	LCS							
Orthophosphate-Dissolved (as P)			107.5		%		80-120	28-OCT-21
WG3648097-2	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-OCT-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5636409							
WG3652993-10	LCS							
Sulfate (SO4)			100.9		%		90-110	28-OCT-21
WG3652993-14	LCS							
Sulfate (SO4)			101.3		%		90-110	28-OCT-21
WG3652993-13	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	28-OCT-21
WG3652993-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	28-OCT-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2656536

Report Date: 16-NOV-21

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R5633886							
<b>WG3648529-5</b>	<b>LCS</b>							
Total Dissolved Solids			96.8		%		85-115	30-OCT-21
<b>WG3648529-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	30-OCT-21
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R5637857							
<b>WG3654448-3</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			107.0		%		75-125	05-NOV-21
<b>WG3654448-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			113.0		%		75-125	05-NOV-21
<b>WG3654448-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-21
<b>WG3654448-2</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-21
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R5634692							
<b>WG3650107-2</b>	<b>LCS</b>							
Total Suspended Solids			103.4		%		85-115	02-NOV-21
<b>WG3650107-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	02-NOV-21
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R5632199							
<b>WG3648061-5</b>	<b>LCS</b>							
Turbidity			99.95		%		85-115	28-OCT-21
<b>WG3648061-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	28-OCT-21

# Quality Control Report

Workorder: L2656536

Report Date: 16-NOV-21

Page 9 of 10

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2656536

Report Date: 16-NOV-21

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	26-OCT-21 10:50	02-NOV-21 12:35	0.25	170	hours	EHTR-FM
	2	26-OCT-21 13:00	02-NOV-21 12:35	0.25	168	hours	EHTR-FM
	3	26-OCT-21 14:30	02-NOV-21 12:35	0.25	166	hours	EHTR-FM
	4	26-OCT-21 14:30	02-NOV-21 12:35	0.25	166	hours	EHTR-FM
	5	26-OCT-21 10:50	02-NOV-21 12:35	0.25	170	hours	EHTR-FM
	6	26-OCT-21 15:30	02-NOV-21 12:35	0.25	165	hours	EHTR-FM
pH							
	1	26-OCT-21 10:50	30-OCT-21 00:00	0.25	85	hours	EHTR-FM
	2	26-OCT-21 13:00	30-OCT-21 00:00	0.25	83	hours	EHTR-FM
	3	26-OCT-21 14:30	30-OCT-21 00:00	0.25	82	hours	EHTR-FM
	4	26-OCT-21 14:30	30-OCT-21 00:00	0.25	82	hours	EHTR-FM
	5	26-OCT-21 10:50	30-OCT-21 00:00	0.25	85	hours	EHTR-FM
	6	26-OCT-21 15:30	30-OCT-21 00:00	0.25	80	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2656536 were received on 27-OCT-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Report To Contact and company name below will appear on the final report		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)															
Company: SNC-Lavalin Inc.		Select Report Format: <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)		Regular [R] <input type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply															
Contact: Bill Wilmot		Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		PRIORITY (Business Days)				EMERGENCY											
Phone: 250-464-5054		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%] <input type="checkbox"/>				1 Business day [E1 - 100%] <input type="checkbox"/>											
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>				Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>											
Street: 520 Lake Street		SNC Emails: "Bill.Wilmot", "Alex.Heathcott"		2 day [P2-50%] <input type="checkbox"/>															
City/Province: Nelson, BC		Vicky.Lipinski @snclavalin.com						Date and Time Required for all E&P TATs:											
Postal Code: V1L 4C6		Teck Emails: chelsea.jensen@teck.com						For tests that can not be performed according to the service level selected, you will be contacted.											
Invoice To: Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		Analysis Request															
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below															
Company:		SNC Emails: Bill.Wilmot & payables @snclavalin.com		F/P P F/P															
Contact:				DOC (C-DIS-ORG-LOW-CL)															
Project Information		Oil and Gas Required Fields (client use)		TOC (C-TOT-ORG-LOW-CL)															
ALS Account # / Quote #: MOR125 / Q78197		AFE/Cost Center: PO#		BCMDG D-Met +Hg (MET-D-BCMDG-CL)															
Job #: 673926		Major/Minor Code: Routing Code:		Total N Calc. (N-T-CALC-CL)															
PO / AFE: 681764		Requisitioner:		Nitrate + Nitrite Calc. (N2N3-CALC-CL)															
LSD: FRO-X Baseline		Location:		Teck Routine (TECKCOAL-ROUTINE-CL)															
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784		TKN (TKN-L-F-CL)															
		Sampler: <u>Tahina Chaudhury</u>		Bicarbonate (BIC-CL)															
				Carbonate (CO3-CL)															
				Hydroxide (OH-CL)															
				SAMPLES ON HOLD															
				Sample is hazardous (please provide further details)															
				NUMBER OF CONTAINERS															
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC	TOC	BCMDG	Total N	Nitrate + Nitrite	Teck Routine	TKN	Bicarbonate	Carbonate	Hydroxide	SAMPLES ON HOLD	Sample is hazardous	NUMBER OF CONTAINERS	
1	FR_MW-FRRD1_WG_2021_NP	FR_MW-FRRD1	26		WG														5
2	FR_MW-CH1-A_WG_2021_10_26_NP	FR_MW-CH1-A	26 OCT-21	10:50	WG	X	X	X	X	X	X	X	X	X	X				5
3	FR_MW-CH2_WG_2021_10_26_NP	FR_MW-CH2		13:00	WG	X	X	X	X	X	X	X	X	X	X				5
4	FR_MW-CASW6-A_WG_2021_10_26_N	FR_MW-CASW6-A		14:30	WG	X	X	X	X	X	X	X	X	X	X				5
5	FR_MW-CASW6-B_WG_2021_10_26_N	FR_MW-CASW6-B		14:30	WG	X	X	X	X	X	X	X	X	X	X				5
6	FR_MW_MC10A_WG_2021_10_26_NP	FR_MW_MC10A		10:50	WG	X	X	X	X	X	X	X	X	X	X				5
	FR_MW_MC10B_WG_2021_10_26_NP	FR_MW_MC10B		15:30	WG	X	X	X	X	X	X	X	X	X	X				5
	FR_MW_MC10C_WG_2021_NP	FR_MW_MC10C			WG														5
Drinking Water (DW) Samples <sup>1</sup> (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)															
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO				Frozen <input checked="" type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>															
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO				Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>															
				Cooling Initiated <input type="checkbox"/>															
				INITIAL COOLER TEMPERATURES °C															
				FINAL COOLER TEMPERATURES °C															
SHIPMENT RELEASE (client use)		Teck Facility Name: (please select the applicable Facility)		GHO-GREENHILLS OPERATION															
				FRO-FORDING RIVER OPERATION															
				EVO-ELKVIEW OPERATIONS															
Released by: <u>Tahina Chaudhury</u>		Date: <u>26-OCT-2021</u>		INITIAL SHIPMENT RECEPTION (lab use only)															
Time: <u>17:00</u>		Received by: <u>[Signature]</u>		Date: <u>10/27/21</u>															
				Time: <u>[Signature]</u>															
				FINAL SHIPMENT RECEPTION (lab use only)															
				Date: <u>[Signature]</u>															
				Time: <u>[Signature]</u>															

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



SNC-Lavalin  
ATTN: Bill Wilmot  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 28-OCT-21  
Report Date: 16-NOV-21 14:08 (MT)  
Version: FINAL

Client Phone: 250-464-5054

## Certificate of Analysis

Lab Work Order #: L2656692  
Project P.O. #: 681764  
Job Reference: 673926  
C of C Numbers: 681764  
Legal Site Desc: FRO-X Baseline

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2656692-1	
Description	WG	
Sampled Date	27-OCT-21	
Sampled Time	12:00	
Client ID	FR_MW_MC10C_ WG_2021_10_27_ NP	
Grouping	Analyte	
<b>WATER</b>		
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	<2.0
	Hardness (as CaCO3) (mg/L)	<0.50
	pH (pH)	4.93
	ORP (mV)	505
	Total Suspended Solids (mg/L)	<1.0
	Total Dissolved Solids (mg/L)	<10
	Turbidity (NTU)	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.7
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0
	Ammonia as N (mg/L)	<0.0050
	Bicarbonate (HCO3) (mg/L)	<5.0
	Bromide (Br) (mg/L)	<0.050
	Carbonate (CO3) (mg/L)	<5.0
	Chloride (Cl) (mg/L)	<0.10
	Fluoride (F) (mg/L)	<0.020
	Hydroxide (OH) (mg/L)	<5.0
	Ion Balance (%)	0.0
	Nitrate and Nitrite (as N) (mg/L)	<0.0051
	Nitrate (as N) (mg/L)	<0.0050
	Nitrite (as N) (mg/L)	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050
	Total Nitrogen (mg/L)	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020
	Sulfate (SO4) (mg/L)	<0.30
	Anion Sum (meq/L)	<0.10
	Cation Sum (meq/L)	<0.10
	Cation - Anion Balance (%)	0.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50
	Total Organic Carbon (mg/L)	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD
	Dissolved Metals Filtration Location	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2656692-1			
		WG			
		27-OCT-21			
		12:00			
		FR_MW_MC10C_			
		WG_2021_10_27_			
		NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	<0.00010			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050			
	Calcium (Ca)-Dissolved (mg/L)	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	<0.0050			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000317 <sup>RRV</sup>			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Phosphorus (P)-Dissolved (mg/L)	<0.050			
	Potassium (K)-Dissolved (mg/L)	<0.10			
	Selenium (Se)-Dissolved (mg/L)	<0.000050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			
	Sulfur (S)-Dissolved (mg/L)	<0.50			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L2656692-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

## Reference Information

<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			

## Reference Information

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

681764

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2656692

Report Date: 16-NOV-21

Page 1 of 9

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Bill Wilmot

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
Batch	R5634654							
WG3650913-2	LCS							
Acidity (as CaCO3)			96.0		%		85-115	01-NOV-21
WG3650913-1	MB							
Acidity (as CaCO3)			1.8		mg/L		2	01-NOV-21
<b>ALK-MAN-CL</b>		<b>Water</b>						
Batch	R5634482							
WG3650681-2	LCS							
Alkalinity, Total (as CaCO3)			93.3		%		85-115	01-NOV-21
WG3650681-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-NOV-21
<b>BE-D-L-CCMS-CL</b>		<b>Water</b>						
Batch	R5634686							
WG3650662-2	LCS							
Beryllium (Be)-Dissolved			98.0		%		80-120	02-NOV-21
WG3650662-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-NOV-21
<b>BIC-CL</b>		<b>Water</b>						
Batch	R5634482							
WG3650681-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	01-NOV-21
<b>BR-L-IC-N-CL</b>		<b>Water</b>						
Batch	R5636409							
WG3652993-14	LCS							
Bromide (Br)			101.8		%		85-115	28-OCT-21
WG3652993-13	MB							
Bromide (Br)			<0.050		mg/L		0.05	28-OCT-21
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						
Batch	R5640103							
WG3655872-2	LCS							
Dissolved Organic Carbon			114.0		%		80-120	09-NOV-21
WG3655872-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-NOV-21
<b>C-TOT-ORG-LOW-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2656692

Report Date: 16-NOV-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5640103							
<b>WG3655872-2 LCS</b>								
Total Organic Carbon			112.0		%		80-120	09-NOV-21
<b>WG3655872-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	09-NOV-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5636409							
<b>WG3652993-14 LCS</b>								
Chloride (Cl)			103.4		%		85-115	28-OCT-21
<b>WG3652993-13 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	28-OCT-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5634482							
<b>WG3650681-1 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	01-NOV-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5634482							
<b>WG3650681-2 LCS</b>								
Conductivity (@ 25C)			99.7		%		90-110	01-NOV-21
<b>WG3650681-1 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	01-NOV-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5636409							
<b>WG3652993-14 LCS</b>								
Fluoride (F)			97.3		%		90-110	28-OCT-21
<b>WG3652993-13 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	28-OCT-21
<b>HG-D-CVAA-CL</b>	<b>Water</b>							
Batch	R5633250							
<b>WG3649209-6 LCS</b>								
Mercury (Hg)-Dissolved			100.0		%		80-120	30-OCT-21
<b>WG3649209-5 MB</b>								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-OCT-21
<b>MET-D-CCMS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2656692

Report Date: 16-NOV-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5634686</b>							
<b>WG3650662-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.7		%		80-120	02-NOV-21
Antimony (Sb)-Dissolved			103.4		%		80-120	02-NOV-21
Arsenic (As)-Dissolved			98.7		%		80-120	02-NOV-21
Barium (Ba)-Dissolved			98.3		%		80-120	02-NOV-21
Bismuth (Bi)-Dissolved			98.4		%		80-120	02-NOV-21
Boron (B)-Dissolved			96.3		%		80-120	02-NOV-21
Cadmium (Cd)-Dissolved			96.1		%		80-120	02-NOV-21
Calcium (Ca)-Dissolved			96.1		%		80-120	02-NOV-21
Chromium (Cr)-Dissolved			96.0		%		80-120	02-NOV-21
Cobalt (Co)-Dissolved			98.2		%		80-120	02-NOV-21
Copper (Cu)-Dissolved			92.5		%		80-120	02-NOV-21
Iron (Fe)-Dissolved			98.2		%		80-120	02-NOV-21
Lead (Pb)-Dissolved			97.2		%		80-120	02-NOV-21
Lithium (Li)-Dissolved			106.9		%		80-120	02-NOV-21
Magnesium (Mg)-Dissolved			97.1		%		80-120	02-NOV-21
Manganese (Mn)-Dissolved			97.7		%		80-120	02-NOV-21
Molybdenum (Mo)-Dissolved			100.9		%		80-120	02-NOV-21
Nickel (Ni)-Dissolved			97.3		%		80-120	02-NOV-21
Phosphorus (P)-Dissolved			94.5		%		70-130	02-NOV-21
Potassium (K)-Dissolved			96.4		%		80-120	02-NOV-21
Selenium (Se)-Dissolved			94.3		%		80-120	02-NOV-21
Silicon (Si)-Dissolved			98.5		%		60-140	02-NOV-21
Silver (Ag)-Dissolved			104.0		%		80-120	02-NOV-21
Sodium (Na)-Dissolved			97.8		%		80-120	02-NOV-21
Strontium (Sr)-Dissolved			98.1		%		80-120	02-NOV-21
Sulfur (S)-Dissolved			103.7		%		80-120	02-NOV-21
Thallium (Tl)-Dissolved			94.0		%		80-120	02-NOV-21
Tin (Sn)-Dissolved			96.8		%		80-120	02-NOV-21
Titanium (Ti)-Dissolved			87.0		%		80-120	02-NOV-21
Uranium (U)-Dissolved			100.2		%		80-120	02-NOV-21
Vanadium (V)-Dissolved			95.7		%		80-120	02-NOV-21
Zinc (Zn)-Dissolved			95.6		%		80-120	02-NOV-21
Zirconium (Zr)-Dissolved			99.3		%		80-120	02-NOV-21
<b>WG3650662-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2656692

Report Date: 16-NOV-21

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5634686</b>							
<b>WG3650662-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-NOV-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-NOV-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-NOV-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-NOV-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-NOV-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-NOV-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-NOV-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-NOV-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-NOV-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-NOV-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-NOV-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-NOV-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	02-NOV-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-NOV-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-NOV-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-NOV-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-NOV-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-NOV-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-NOV-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	02-NOV-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-NOV-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-NOV-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-NOV-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-NOV-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-NOV-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	02-NOV-21

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2656692

Report Date: 16-NOV-21

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch	R5646358							
WG3658038-10	LCS							
Ammonia as N			99.1		%		85-115	11-NOV-21
WG3658038-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	11-NOV-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R5636409							
WG3652993-14	LCS							
Nitrite (as N)			100.7		%		90-110	28-OCT-21
WG3652993-13	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	28-OCT-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R5636409							
WG3652993-14	LCS							
Nitrate (as N)			103.4		%		90-110	28-OCT-21
WG3652993-13	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	28-OCT-21
<b>OH-CL</b>								
<b>Water</b>								
Batch	R5634482							
WG3650681-1	MB							
Hydroxide (OH)			<5.0		mg/L		5	01-NOV-21
<b>ORP-CL</b>								
<b>Water</b>								
Batch	R5634547							
WG3650616-1	CRM	CL-ORP						
ORP			221		mV		210-230	02-NOV-21
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch	R5636152							
WG3652629-14	LCS							
Phosphorus (P)-Total			97.0		%		80-120	04-NOV-21
WG3652629-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-NOV-21
<b>PH-CL</b>								
<b>Water</b>								
Batch	R5634482							
WG3650681-2	LCS							
pH			7.01		pH		6.9-7.1	01-NOV-21





## Quality Control Report

Workorder: L2656692

Report Date: 16-NOV-21

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>		<b>Water</b>						
Batch	R5632613							
<b>WG3648097-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			107.5		%		80-120	28-OCT-21
<b>WG3648097-2</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-OCT-21
<b>SO4-IC-N-CL</b>		<b>Water</b>						
Batch	R5636409							
<b>WG3652993-14</b>	<b>LCS</b>							
Sulfate (SO4)			101.3		%		90-110	28-OCT-21
<b>WG3652993-13</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	28-OCT-21
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R5635455							
<b>WG3650102-2</b>	<b>LCS</b>							
Total Dissolved Solids			96.4		%		85-115	02-NOV-21
<b>WG3650102-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	02-NOV-21
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R5637857							
<b>WG3654448-3</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			107.0		%		75-125	05-NOV-21
<b>WG3654448-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			113.0		%		75-125	05-NOV-21
<b>WG3654448-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-21
<b>WG3654448-2</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-21
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R5634692							
<b>WG3650107-2</b>	<b>LCS</b>							
Total Suspended Solids			103.4		%		85-115	02-NOV-21
<b>WG3650107-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	02-NOV-21
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R5632733							
<b>WG3648699-2</b>	<b>LCS</b>							
Turbidity			91.0		%		85-115	29-OCT-21
<b>WG3648699-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2656692

Report Date: 16-NOV-21

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5632733							
WG3648699-1	MB							
Turbidity			<0.10		NTU		0.1	29-OCT-21

# Quality Control Report

Workorder: L2656692

Report Date: 16-NOV-21

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2656692

Report Date: 16-NOV-21

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	27-OCT-21 12:00	02-NOV-21 12:35	0.25	144	hours	EHTR-FM
pH	1	27-OCT-21 12:00	01-NOV-21 13:00	0.25	121	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2656692 were received on 28-OCT-21 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.





SNC-Lavalin  
ATTN: Bill Wilmot  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 28-OCT-21  
Report Date: 17-NOV-21 10:07 (MT)  
Version: FINAL

Client Phone: 250-464-5054

## Certificate of Analysis

Lab Work Order #: L2656706  
Project P.O. #: 681764  
Job Reference: 673926  
C of C Numbers: 681764  
Legal Site Desc: FRO-X Baseline

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2656706-1 WG 27-OCT-21 09:50 FR_MW- FRRD1_WG_2021 _10_27_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	722			
	Hardness (as CaCO3) (mg/L)	325			
	pH (pH)	7.80			
	ORP (mV)	471			
	Total Suspended Solids (mg/L)	8.0			
	Total Dissolved Solids (mg/L)	430			
	Turbidity (NTU)	11.1			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	12.4			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	336			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	336			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	409			
	Bromide (Br) (mg/L)	0.053			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	43.0			
	Fluoride (F) (mg/L)	0.095			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	92.4			
	Nitrate and Nitrite (as N) (mg/L)	0.206			
	Nitrate (as N) (mg/L)	0.206			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.087			
	Total Nitrogen (mg/L)	0.293			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0031			
	Phosphorus (P)-Total (mg/L)	0.0124			
	Sulfate (SO4) (mg/L)	10.0			
	Anion Sum (meq/L)	8.15			
	Cation Sum (meq/L)	7.52			
	Cation - Anion Balance (%)	-4.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.31			
	Total Organic Carbon (mg/L)	1.49			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	Description	Sampled Date	Sampled Time	Client ID
		L2656706-1	WG	27-OCT-21	09:50	FR_MW- FRRD1_WG_2021 _10_27_NP
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)					<0.00010
	Arsenic (As)-Dissolved (mg/L)					0.00011
	Barium (Ba)-Dissolved (mg/L)					0.322
	Beryllium (Be)-Dissolved (mg/L)					<0.000020
	Bismuth (Bi)-Dissolved (mg/L)					<0.000050
	Boron (B)-Dissolved (mg/L)					<0.010
	Cadmium (Cd)-Dissolved (mg/L)					0.0000216
	Calcium (Ca)-Dissolved (mg/L)					94.0
	Chromium (Cr)-Dissolved (mg/L)					0.00015
	Cobalt (Co)-Dissolved (mg/L)					<0.00010
	Copper (Cu)-Dissolved (mg/L)					0.00029
	Iron (Fe)-Dissolved (mg/L)					<0.010
	Lead (Pb)-Dissolved (mg/L)					<0.000050
	Lithium (Li)-Dissolved (mg/L)					0.0049
	Magnesium (Mg)-Dissolved (mg/L)					22.0
	Manganese (Mn)-Dissolved (mg/L)					0.00905
	Mercury (Hg)-Dissolved (mg/L)					<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)					0.000651
	Nickel (Ni)-Dissolved (mg/L)					<0.00050
	Phosphorus (P)-Dissolved (mg/L)					<0.050
	Potassium (K)-Dissolved (mg/L)					1.22
	Selenium (Se)-Dissolved (mg/L)					0.000230
	Silicon (Si)-Dissolved (mg/L)					5.14
	Silver (Ag)-Dissolved (mg/L)					<0.000010
	Sodium (Na)-Dissolved (mg/L)					22.8
	Strontium (Sr)-Dissolved (mg/L)					0.124
	Sulfur (S)-Dissolved (mg/L)					3.94
	Thallium (Tl)-Dissolved (mg/L)					<0.000010
	Tin (Sn)-Dissolved (mg/L)					<0.00010
	Titanium (Ti)-Dissolved (mg/L)					<0.00030
	Uranium (U)-Dissolved (mg/L)					0.000502
	Vanadium (V)-Dissolved (mg/L)					<0.00050
	Zinc (Zn)-Dissolved (mg/L)					<0.0010
	Zirconium (Zr)-Dissolved (mg/L)					<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2656706-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2656706-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2656706-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2656706-1
Matrix Spike	Sulfate (SO4)	MS-B	L2656706-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

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### Chain of Custody Numbers:

681764

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2656706

Report Date: 17-NOV-21

Page 1 of 11

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Bill Wilmot

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5634654</b>							
<b>WG3650913-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			96.0		%		85-115	01-NOV-21
<b>WG3650913-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	01-NOV-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5634482</b>							
<b>WG3650681-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			93.3		%		85-115	01-NOV-21
<b>WG3650681-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-NOV-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5634686</b>							
<b>WG3650662-15</b>	<b>DUP</b>	<b>L2656706-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	02-NOV-21
<b>WG3650662-14</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			90.1		%		80-120	02-NOV-21
<b>WG3650662-13</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-NOV-21
<b>WG3650662-16</b>	<b>MS</b>	<b>L2656706-1</b>						
Beryllium (Be)-Dissolved			84.9		%		70-130	02-NOV-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5634482</b>							
<b>WG3650681-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	01-NOV-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5636409</b>							
<b>WG3652993-14</b>	<b>LCS</b>							
Bromide (Br)			101.8		%		85-115	28-OCT-21
<b>WG3652993-13</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	28-OCT-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5640103</b>							
<b>WG3655872-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			114.0		%		80-120	09-NOV-21
<b>WG3655872-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-NOV-21



## Quality Control Report

Workorder: L2656706

Report Date: 17-NOV-21

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5640103							
<b>WG3655872-2</b>	<b>LCS</b>							
Total Organic Carbon			112.0		%		80-120	09-NOV-21
<b>WG3655872-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	09-NOV-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5636409							
<b>WG3652993-14</b>	<b>LCS</b>							
Chloride (Cl)			103.4		%		85-115	28-OCT-21
<b>WG3652993-13</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	28-OCT-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5634482							
<b>WG3650681-1</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	01-NOV-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5634482							
<b>WG3650681-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.7		%		90-110	01-NOV-21
<b>WG3650681-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	01-NOV-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5636409							
<b>WG3652993-14</b>	<b>LCS</b>							
Fluoride (F)			97.3		%		90-110	28-OCT-21
<b>WG3652993-13</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	28-OCT-21
<b>HG-D-CVAA-CL</b>	<b>Water</b>							
Batch	R5633250							
<b>WG3649209-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.0		%		80-120	30-OCT-21
<b>WG3649209-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-OCT-21
<b>MET-D-CCMS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2656706

Report Date: 17-NOV-21

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5634686</b>							
<b>WG3650662-15</b>	<b>DUP</b>	<b>L2656706-1</b>						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-NOV-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-NOV-21
Arsenic (As)-Dissolved		0.00011	0.00011		mg/L	3.8	20	02-NOV-21
Barium (Ba)-Dissolved		0.322	0.316		mg/L	2.1	20	02-NOV-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-NOV-21
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-NOV-21
Cadmium (Cd)-Dissolved		0.0000216	0.0000213		mg/L	1.7	20	02-NOV-21
Calcium (Ca)-Dissolved		94.0	98.5		mg/L	4.6	20	02-NOV-21
Chromium (Cr)-Dissolved		0.00015	0.00012		mg/L	17	20	02-NOV-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-NOV-21
Copper (Cu)-Dissolved		0.00029	0.00030		mg/L	2.5	20	02-NOV-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-NOV-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-NOV-21
Lithium (Li)-Dissolved		0.0049	0.0053		mg/L	8.1	20	02-NOV-21
Magnesium (Mg)-Dissolved		22.0	22.4		mg/L	1.8	20	02-NOV-21
Manganese (Mn)-Dissolved		0.00905	0.00895		mg/L	1.1	20	02-NOV-21
Molybdenum (Mo)-Dissolved		0.000651	0.000671		mg/L	3.0	20	02-NOV-21
Nickel (Ni)-Dissolved		<0.00050	0.00052	RPD-NA	mg/L	N/A	20	02-NOV-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-NOV-21
Potassium (K)-Dissolved		1.22	1.20		mg/L	1.4	20	02-NOV-21
Selenium (Se)-Dissolved		0.000230	0.000300	J	mg/L	0.000071	0.0001	02-NOV-21
Silicon (Si)-Dissolved		5.14	5.29		mg/L	2.9	20	02-NOV-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-NOV-21
Sodium (Na)-Dissolved		22.8	23.0		mg/L	0.7	20	02-NOV-21
Strontium (Sr)-Dissolved		0.124	0.131		mg/L	5.5	20	02-NOV-21
Sulfur (S)-Dissolved		3.94	4.17		mg/L	5.6	20	02-NOV-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-NOV-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-NOV-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	02-NOV-21
Uranium (U)-Dissolved		0.000502	0.000520		mg/L	3.5	20	02-NOV-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-NOV-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-NOV-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	02-NOV-21
<b>WG3650662-14</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2656706

Report Date: 17-NOV-21

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5634686</b>							
<b>WG3650662-14 LCS</b>								
Aluminum (Al)-Dissolved			98.0		%		80-120	02-NOV-21
Antimony (Sb)-Dissolved			96.3		%		80-120	02-NOV-21
Arsenic (As)-Dissolved			96.3		%		80-120	02-NOV-21
Barium (Ba)-Dissolved			97.1		%		80-120	02-NOV-21
Bismuth (Bi)-Dissolved			92.3		%		80-120	02-NOV-21
Boron (B)-Dissolved			89.9		%		80-120	02-NOV-21
Cadmium (Cd)-Dissolved			91.0		%		80-120	02-NOV-21
Calcium (Ca)-Dissolved			87.8		%		80-120	02-NOV-21
Chromium (Cr)-Dissolved			93.9		%		80-120	02-NOV-21
Cobalt (Co)-Dissolved			94.7		%		80-120	02-NOV-21
Copper (Cu)-Dissolved			91.0		%		80-120	02-NOV-21
Iron (Fe)-Dissolved			93.6		%		80-120	02-NOV-21
Lead (Pb)-Dissolved			91.1		%		80-120	02-NOV-21
Lithium (Li)-Dissolved			101.7		%		80-120	02-NOV-21
Magnesium (Mg)-Dissolved			90.3		%		80-120	02-NOV-21
Manganese (Mn)-Dissolved			92.5		%		80-120	02-NOV-21
Molybdenum (Mo)-Dissolved			92.6		%		80-120	02-NOV-21
Nickel (Ni)-Dissolved			94.7		%		80-120	02-NOV-21
Phosphorus (P)-Dissolved			99.7		%		70-130	02-NOV-21
Potassium (K)-Dissolved			95.3		%		80-120	02-NOV-21
Selenium (Se)-Dissolved			90.5		%		80-120	02-NOV-21
Silicon (Si)-Dissolved			94.2		%		60-140	02-NOV-21
Silver (Ag)-Dissolved			95.0		%		80-120	02-NOV-21
Sodium (Na)-Dissolved			93.2		%		80-120	02-NOV-21
Strontium (Sr)-Dissolved			90.6		%		80-120	02-NOV-21
Sulfur (S)-Dissolved			99.2		%		80-120	02-NOV-21
Thallium (Tl)-Dissolved			88.2		%		80-120	02-NOV-21
Tin (Sn)-Dissolved			92.9		%		80-120	02-NOV-21
Titanium (Ti)-Dissolved			88.8		%		80-120	02-NOV-21
Uranium (U)-Dissolved			97.6		%		80-120	02-NOV-21
Vanadium (V)-Dissolved			94.3		%		80-120	02-NOV-21
Zinc (Zn)-Dissolved			94.2		%		80-120	02-NOV-21
Zirconium (Zr)-Dissolved			92.7		%		80-120	02-NOV-21
<b>WG3650662-13 MB</b>								



## Quality Control Report

Workorder: L2656706

Report Date: 17-NOV-21

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5634686</b>							
<b>WG3650662-13 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-NOV-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-NOV-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-NOV-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-NOV-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-NOV-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-NOV-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-NOV-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-NOV-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-NOV-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-NOV-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-NOV-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-NOV-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	02-NOV-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-NOV-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-NOV-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-NOV-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-NOV-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-NOV-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-NOV-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	02-NOV-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-NOV-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-NOV-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-NOV-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-NOV-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-NOV-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	02-NOV-21
<b>WG3650662-16 MS</b>		<b>L2656706-1</b>						





## Quality Control Report

Workorder: L2656706

Report Date: 17-NOV-21

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5634686</b>							
<b>WG3650662-16 MS</b>		<b>L2656706-1</b>						
Aluminum (Al)-Dissolved			86.4		%		70-130	02-NOV-21
Antimony (Sb)-Dissolved			95.9		%		70-130	02-NOV-21
Arsenic (As)-Dissolved			87.0		%		70-130	02-NOV-21
Barium (Ba)-Dissolved			N/A	MS-B	%		-	02-NOV-21
Bismuth (Bi)-Dissolved			89.4		%		70-130	02-NOV-21
Boron (B)-Dissolved			88.6		%		70-130	02-NOV-21
Cadmium (Cd)-Dissolved			85.5		%		70-130	02-NOV-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	02-NOV-21
Chromium (Cr)-Dissolved			86.0		%		70-130	02-NOV-21
Cobalt (Co)-Dissolved			88.3		%		70-130	02-NOV-21
Copper (Cu)-Dissolved			86.9		%		70-130	02-NOV-21
Iron (Fe)-Dissolved			88.0		%		70-130	02-NOV-21
Lead (Pb)-Dissolved			89.5		%		70-130	02-NOV-21
Lithium (Li)-Dissolved			88.7		%		70-130	02-NOV-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	02-NOV-21
Manganese (Mn)-Dissolved			88.2		%		70-130	02-NOV-21
Molybdenum (Mo)-Dissolved			91.0		%		70-130	02-NOV-21
Nickel (Ni)-Dissolved			89.2		%		70-130	02-NOV-21
Phosphorus (P)-Dissolved			83.8		%		70-130	02-NOV-21
Potassium (K)-Dissolved			85.6		%		70-130	02-NOV-21
Selenium (Se)-Dissolved			86.9		%		70-130	02-NOV-21
Silicon (Si)-Dissolved			83.8		%		70-130	02-NOV-21
Silver (Ag)-Dissolved			94.0		%		70-130	02-NOV-21
Sodium (Na)-Dissolved			N/A	MS-B	%		-	02-NOV-21
Strontium (Sr)-Dissolved			85.2		%		70-130	02-NOV-21
Thallium (Tl)-Dissolved			86.3		%		70-130	02-NOV-21
Tin (Sn)-Dissolved			90.3		%		70-130	02-NOV-21
Titanium (Ti)-Dissolved			83.4		%		70-130	02-NOV-21
Uranium (U)-Dissolved			89.7		%		70-130	02-NOV-21
Vanadium (V)-Dissolved			84.6		%		70-130	02-NOV-21
Zinc (Zn)-Dissolved			88.3		%		70-130	02-NOV-21
Zirconium (Zr)-Dissolved			88.4		%		70-130	02-NOV-21

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2656706

Report Date: 17-NOV-21

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>	<b>Water</b>							
Batch	R5650579							
<b>WG3658744-3</b>	<b>LCS</b>							
Ammonia as N			100.7		%		85-115	14-NOV-21
<b>WG3658744-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	14-NOV-21
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5636409							
<b>WG3652993-14</b>	<b>LCS</b>							
Nitrite (as N)			100.7		%		90-110	28-OCT-21
<b>WG3652993-13</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	28-OCT-21
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5636409							
<b>WG3652993-14</b>	<b>LCS</b>							
Nitrate (as N)			103.4		%		90-110	28-OCT-21
<b>WG3652993-13</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	28-OCT-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5634482							
<b>WG3650681-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	01-NOV-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5634547							
<b>WG3650616-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	02-NOV-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5636152							
<b>WG3652629-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			97.0		%		80-120	04-NOV-21
<b>WG3652629-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-NOV-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5634482							
<b>WG3650681-2</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	01-NOV-21



## Quality Control Report

Workorder: L2656706

Report Date: 17-NOV-21

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R5632613							
<b>WG3648097-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			107.5		%		80-120	28-OCT-21
<b>WG3648097-2</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-OCT-21
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R5636409							
<b>WG3652993-14</b>	<b>LCS</b>							
Sulfate (SO4)			101.3		%		90-110	28-OCT-21
<b>WG3652993-13</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	28-OCT-21
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R5635455							
<b>WG3650102-2</b>	<b>LCS</b>							
Total Dissolved Solids			96.4		%		85-115	02-NOV-21
<b>WG3650102-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	02-NOV-21
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R5637857							
<b>WG3654448-3</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			107.0		%		75-125	05-NOV-21
<b>WG3654448-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			113.0		%		75-125	05-NOV-21
<b>WG3654448-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-21
<b>WG3654448-2</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-21
<b>TSS-L-CL</b> <b>Water</b>								
Batch	R5634692							
<b>WG3650107-4</b>	<b>LCS</b>							
Total Suspended Solids			96.1		%		85-115	02-NOV-21
<b>WG3650107-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	02-NOV-21
<b>TURBIDITY-CL</b> <b>Water</b>								
Batch	R5632733							
<b>WG3648699-2</b>	<b>LCS</b>							
Turbidity			91.0		%		85-115	29-OCT-21
<b>WG3648699-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2656706

Report Date: 17-NOV-21

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5632733							
WG3648699-1	MB							
Turbidity			<0.10		NTU		0.1	29-OCT-21

# Quality Control Report

Workorder: L2656706

Report Date: 17-NOV-21

Page 10 of 11

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2656706

Report Date: 17-NOV-21

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	27-OCT-21 09:50	02-NOV-21 12:35	0.25	147	hours	EHTR-FM
pH	1	27-OCT-21 09:50	01-NOV-21 13:00	0.25	123	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2656706 were received on 28-OCT-21 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2656706-COFC

681764

Page 1 of 1

Report To		Report Format / Distribution			Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																		
Contact and company name below will appear on the final report		Select Report Format: <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			Regular [R] <input type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																		
Company:	SNC-Lavalin Inc.	Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			PRIORITY (Business days)	4 day [P4-20%] <input type="checkbox"/>					EMERGENCY	1 Business day [E1 - 100%] <input type="checkbox"/>											
Contact:	Bill Wilmot	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked				3 day [P3-25%] <input type="checkbox"/>						Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>											
Phone:	250-464-5054	Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Date and Time Required for all E&P TATs:																		
Company address below will appear on the final report		SNC Emails: "Bill.Wilmot", "Alex.Heathcott"			For tests that can not be performed according to the service level selected, you will be contacted.																		
Street:	520 Lake Street	Vicky.Lipinski@sncclavalin.com			Analysis Request																		
City/Province:	Nelson, BC	Teck Emails: chelsea.jensen@teck.com			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																		
Postal Code:	V1L 4C6	Invoice Distribution			F/P	P	F/P																
Invoice To	Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO	Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																					
Company:	Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO	SNC Emails: Bill.Wilmot & payables@sncclavalin.com																					
Contact:																							
Project Information		Oil and Gas Required Fields (client use)																					
ALS Account # / Quote #:	MOR125 / Q78197	AFE/Cost Center:		PO#																			
Job #:	673926	Major/Minor Code:		Routing Code:																			
PO / AFE:	681764	Requisitioner:																					
LSD:	FRO-X Baseline	Location:																					
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784		Sampler: TAHINA C.																			
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)						SAMPLES ON HOLD	NUMBER OF CONTAINERS	
	FR_MW-FRRD1_WG_2021_10_27-NP	FR_MW-FRRD1	27-OCT-21	9:50	WG	R	R	R	R	R	R	R	R	R	R								5
	FR_MW-CH1-A_WG_2021-NP	FR_MW-CH1-A			WG																		5
	FR_MW-CH2_WG_2021-NP	FR_MW-CH2			WG																		5
	ER_MW-CASW6-A_WG_2021-N	FR_MW-CAGW6-A			WG																		5
	ER_MW-CASW6-B_WG_2021-N	FR_MW-CAGW6-B			WG																		5
	ER_MW-MC30A_WG_2021-NP	FR_MW-MC30A			WG																		5
	ER_MW-MC40B_WG_2021-NP	FR_MW-MC40B			WG																		5
	ER_MW-MC40C_WG_2021-NP	FR_MW-MC40C			WG																		5
Drinking Water (DW) Samples <sup>1</sup> (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			SAMPLE CONDITION AS RECEIVED (lab use only)																		
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility) GHO-GREENHILLS OPERATION    FRO-FORDING RIVER OPERATION    EVO-ELKVIEW OPERATIONS			Frozen <input type="checkbox"/>					SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>													
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO					Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/>					Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>													
					Cooling Initiated <input type="checkbox"/>					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C								
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)																		
Released by: <i>Tahina Dhalwal</i>	Date: 27 OCT 21	Time: 16:00	Received by: <i>[Signature]</i>	Date: 27 OCT 21	Time: 10:25	Received by: <i>[Signature]</i>	Date: 27 OCT 21	Time: 10:25	Received by: <i>[Signature]</i>	Date: 27 OCT 21	Time: 10:25	Received by: <i>[Signature]</i>	Date: 27 OCT 21	Time: 10:25	Received by: <i>[Signature]</i>	Date: 27 OCT 21	Time: 10:25	Received by: <i>[Signature]</i>	Date: 27 OCT 21	Time: 10:25	Received by: <i>[Signature]</i>	Date: 27 OCT 21	Time: 10:25



SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 16-NOV-21  
Report Date: 25-NOV-21 11:01 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2663201  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

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Lovepreet Kaur  
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2663201-1	L2663201-2	L2663201-3
		Description	WG	WG	WG
		Sampled Date	15-NOV-21	15-NOV-21	15-NOV-21
		Sampled Time	13:40	15:00	10:50
		Client ID	GH_MW-WILLOW-3S_WG_2021_11_15_NP	GH_MW-WILLOW-3D_WG_2021_11_15_NP	GH_MW-WOLF-1D_WG_2021_11_15_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	424	459	416	
	Hardness (as CaCO3) (mg/L)	225	188	203	
	pH (pH)	7.71	7.95	7.90	
	ORP (mV)	457	461	428	
	Total Suspended Solids (mg/L)	8.4	60.4	12.0	
	Total Dissolved Solids (mg/L)	247	249	234	
	Turbidity (NTU)	20.5	39.0		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	6.0	3.9	3.8	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	247	273	242	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	247	273	242	
	Ammonia as N (mg/L)	0.0056	0.239	0.0951	
	Bicarbonate (HCO3) (mg/L)	301	333	295	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	0.27	0.99	0.61	
	Fluoride (F) (mg/L)	0.117	0.555	0.242	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	90.2	89.9	90.1	
	Nitrate and Nitrite (as N) (mg/L)	0.103	<0.0051	<0.0051	
	Nitrate (as N) (mg/L)	0.103	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.057	0.260	0.124	
	Total Nitrogen (mg/L)	0.160	0.260	0.124	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0061	0.0048	0.0013	
	Phosphorus (P)-Total (mg/L)	0.0219	0.0670	0.0217	
	Sulfate (SO4) (mg/L)	9.58	7.33	10.4	
	Anion Sum (meq/L)	5.16	5.67	5.07	
	Cation Sum (meq/L)	4.65	5.10	4.57	
Cation - Anion Balance (%)	-5.2	-5.3	-5.2		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.99	1.37	1.27	
	Total Organic Carbon (mg/L)	1.85	1.92	1.42	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0126	0.0021	0.0011	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2663201-1	L2663201-2	L2663201-3
		Description	WG	WG	WG
		Sampled Date	15-NOV-21	15-NOV-21	15-NOV-21
		Sampled Time	13:40	15:00	10:50
		Client ID	GH_MW-WILLOW-3S_WG_2021_11_15_NP	GH_MW-WILLOW-3D_WG_2021_11_15_NP	GH_MW-WOLF-1D_WG_2021_11_15_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)		0.00014	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00013	0.00208	0.00120
	Barium (Ba)-Dissolved (mg/L)		0.199	0.562	0.188
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.011	0.116	0.095
	Cadmium (Cd)-Dissolved (mg/L)		0.0000270	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)		59.1	40.5	48.2
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		<0.00010	0.00033	0.00012
	Copper (Cu)-Dissolved (mg/L)		0.00025	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)		<0.010	0.584	0.705
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0072	0.0646	0.0313
	Magnesium (Mg)-Dissolved (mg/L)		18.7	21.0	20.1
	Manganese (Mn)-Dissolved (mg/L)		0.00117	0.116	0.205
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000558	0.00505	0.00276
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		0.93	1.77	1.21
	Selenium (Se)-Dissolved (mg/L)		0.000532	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)		4.24	4.49	4.87
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		3.10	29.1	10.1
	Strontium (Sr)-Dissolved (mg/L)		0.123	0.759	0.915
	Sulfur (S)-Dissolved (mg/L)		3.57	2.79	3.93
	Thallium (Tl)-Dissolved (mg/L)		0.000011	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.000385	0.00126	0.000326
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2663201-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2663201-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

## Reference Information

<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			

## Reference Information

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2663201

Report Date: 25-NOV-21

Page 1 of 12

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5653689</b>							
<b>WG3660948-3</b>	<b>DUP</b>	<b>L2663201-3</b>						
Acidity (as CaCO3)		3.8	4.7	J	mg/L	0.9	2	17-NOV-21
<b>WG3660948-2</b>	<b>LCS</b>		102.5		%		85-115	17-NOV-21
Acidity (as CaCO3)								
<b>WG3660948-1</b>	<b>MB</b>		1.9		mg/L		2	17-NOV-21
Acidity (as CaCO3)								
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5653667</b>							
<b>WG3660920-2</b>	<b>LCS</b>		109.4		%		85-115	17-NOV-21
Alkalinity, Total (as CaCO3)								
<b>WG3660920-1</b>	<b>MB</b>		<1.0		mg/L		1	17-NOV-21
Alkalinity, Total (as CaCO3)								
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5653911</b>							
<b>WG3661410-3</b>	<b>DUP</b>	<b>L2663201-1</b>	<0.000020	RPD-NA	mg/L	N/A	20	18-NOV-21
Beryllium (Be)-Dissolved								
<b>WG3661410-2</b>	<b>LCS</b>		90.3		%		80-120	18-NOV-21
Beryllium (Be)-Dissolved								
<b>WG3661410-1</b>	<b>MB</b>		<0.000020		mg/L		0.00002	18-NOV-21
Beryllium (Be)-Dissolved								
<b>WG3661410-4</b>	<b>MS</b>	<b>L2663201-1</b>	88.1		%		70-130	18-NOV-21
Beryllium (Be)-Dissolved								
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5653667</b>							
<b>WG3660920-1</b>	<b>MB</b>		<5.0		mg/L		5	17-NOV-21
Bicarbonate (HCO3)								
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5651864</b>							
<b>WG3659923-3</b>	<b>DUP</b>	<b>L2663201-3</b>	<0.050	RPD-NA	mg/L	N/A	20	16-NOV-21
Bromide (Br)								
<b>WG3659923-2</b>	<b>LCS</b>		100.0		%		85-115	16-NOV-21
Bromide (Br)								
<b>WG3659923-1</b>	<b>MB</b>		<0.050		mg/L		0.05	16-NOV-21
Bromide (Br)								
<b>WG3659923-4</b>	<b>MS</b>	<b>L2663201-3</b>	104.5		%		75-125	16-NOV-21
Bromide (Br)								
	<b>Water</b>							



## Quality Control Report

Workorder: L2663201

Report Date: 25-NOV-21

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5655980</b>							
<b>WG3663597-3</b>	<b>DUP</b>	<b>L2663201-1</b>						
Dissolved Organic Carbon		1.99	1.93		mg/L	3.1	20	22-NOV-21
<b>WG3663597-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.8		%		80-120	22-NOV-21
<b>WG3663597-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-NOV-21
<b>WG3663597-4</b>	<b>MS</b>	<b>L2663201-1</b>						
Dissolved Organic Carbon			112.4		%		70-130	22-NOV-21
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5655980</b>							
<b>WG3663597-3</b>	<b>DUP</b>	<b>L2663201-1</b>						
Total Organic Carbon		1.85	1.99		mg/L	7.5	20	22-NOV-21
<b>WG3663597-2</b>	<b>LCS</b>							
Total Organic Carbon			104.0		%		80-120	22-NOV-21
<b>WG3663597-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	22-NOV-21
<b>WG3663597-4</b>	<b>MS</b>	<b>L2663201-1</b>						
Total Organic Carbon			112.8		%		70-130	22-NOV-21
<b>CL-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5651864</b>							
<b>WG3659923-3</b>	<b>DUP</b>	<b>L2663201-3</b>						
Chloride (Cl)		0.61	0.61		mg/L	0.6	20	16-NOV-21
<b>WG3659923-2</b>	<b>LCS</b>							
Chloride (Cl)			100.1		%		85-115	16-NOV-21
<b>WG3659923-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	16-NOV-21
<b>WG3659923-4</b>	<b>MS</b>	<b>L2663201-3</b>						
Chloride (Cl)			103.9		%		75-125	16-NOV-21
<b>CO3-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5653667</b>							
<b>WG3660920-1</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	17-NOV-21
<b>EC-L-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5653667</b>							
<b>WG3660920-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.7		%		90-110	17-NOV-21
<b>WG3660920-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2663201

Report Date: 25-NOV-21

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch R5653667								
WG3660920-1 MB								
Conductivity (@ 25C)								
			<2.0		uS/cm		2	17-NOV-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch R5651864								
WG3659923-3 DUP								
		L2663201-3	0.238		mg/L	1.8	20	16-NOV-21
		0.242						
WG3659923-2 LCS								
			98.9		%		90-110	16-NOV-21
WG3659923-1 MB								
			<0.020		mg/L		0.02	16-NOV-21
WG3659923-4 MS								
		L2663201-3	100.7		%		75-125	16-NOV-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
Batch R5652633								
WG3660347-3 DUP								
		L2663201-1	<0.0000050	RPD-NA	mg/L	N/A	20	17-NOV-21
		<0.0000050						
WG3660347-2 LCS								
			101.0		%		80-120	17-NOV-21
WG3660347-1 MB								
			<0.0000050		mg/L		0.000005	17-NOV-21
WG3660347-4 MS								
		L2663201-1	98.8		%		70-130	17-NOV-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
Batch R5653911								
WG3661410-3 DUP								
		L2663201-1	0.0126		mg/L	1.7	20	18-NOV-21
		0.0126	0.0128					
		0.00014	0.00013		mg/L	9.4	20	18-NOV-21
		0.00013	0.00011		mg/L	19	20	18-NOV-21
		0.199	0.198		mg/L	0.5	20	18-NOV-21
		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-NOV-21
		0.011	0.011		mg/L	1.1	20	18-NOV-21
		0.0000270	0.0000244		mg/L	9.9	20	18-NOV-21
		59.1	59.6		mg/L	0.8	20	18-NOV-21
		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-NOV-21
		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-NOV-21
		0.00025	0.00022		mg/L	11	20	18-NOV-21





## Quality Control Report

Workorder: L2663201

Report Date: 25-NOV-21

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5653911</b>							
<b>WG3661410-3</b>	<b>DUP</b>	<b>L2663201-1</b>						
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-NOV-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-NOV-21
Lithium (Li)-Dissolved		0.0072	0.0073		mg/L	0.9	20	18-NOV-21
Magnesium (Mg)-Dissolved		18.7	18.8		mg/L	0.4	20	18-NOV-21
Manganese (Mn)-Dissolved		0.00117	0.00115		mg/L	2.0	20	18-NOV-21
Molybdenum (Mo)-Dissolved		0.000558	0.000554		mg/L	0.7	20	18-NOV-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-NOV-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	18-NOV-21
Potassium (K)-Dissolved		0.93	0.93		mg/L	0.3	20	18-NOV-21
Selenium (Se)-Dissolved		0.000532	0.000569		mg/L	6.6	20	18-NOV-21
Silicon (Si)-Dissolved		4.24	4.30		mg/L	1.3	20	18-NOV-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-NOV-21
Sodium (Na)-Dissolved		3.10	3.12		mg/L	0.9	20	18-NOV-21
Strontium (Sr)-Dissolved		0.123	0.124		mg/L	0.8	20	18-NOV-21
Sulfur (S)-Dissolved		3.57	3.57		mg/L	0.0	20	18-NOV-21
Thallium (Tl)-Dissolved		0.000011	<0.000010	RPD-NA	mg/L	N/A	20	18-NOV-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-NOV-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	18-NOV-21
Uranium (U)-Dissolved		0.000385	0.000384		mg/L	0.2	20	18-NOV-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-NOV-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-NOV-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	18-NOV-21
<b>WG3661410-2</b>								
	<b>LCS</b>							
Aluminum (Al)-Dissolved			94.5		%		80-120	18-NOV-21
Antimony (Sb)-Dissolved			105.3		%		80-120	18-NOV-21
Arsenic (As)-Dissolved			94.5		%		80-120	18-NOV-21
Barium (Ba)-Dissolved			96.4		%		80-120	18-NOV-21
Bismuth (Bi)-Dissolved			97.9		%		80-120	18-NOV-21
Boron (B)-Dissolved			92.6		%		80-120	18-NOV-21
Cadmium (Cd)-Dissolved			95.5		%		80-120	18-NOV-21
Calcium (Ca)-Dissolved			95.2		%		80-120	18-NOV-21
Chromium (Cr)-Dissolved			96.3		%		80-120	18-NOV-21
Cobalt (Co)-Dissolved			96.9		%		80-120	18-NOV-21
Copper (Cu)-Dissolved			94.8		%		80-120	18-NOV-21



## Quality Control Report

Workorder: L2663201

Report Date: 25-NOV-21

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5653911</b>							
<b>WG3661410-2</b>	<b>LCS</b>							
Iron (Fe)-Dissolved			94.4		%		80-120	18-NOV-21
Lead (Pb)-Dissolved			95.8		%		80-120	18-NOV-21
Lithium (Li)-Dissolved			94.3		%		80-120	18-NOV-21
Magnesium (Mg)-Dissolved			90.5		%		80-120	18-NOV-21
Manganese (Mn)-Dissolved			93.7		%		80-120	18-NOV-21
Molybdenum (Mo)-Dissolved			101.4		%		80-120	18-NOV-21
Nickel (Ni)-Dissolved			94.8		%		80-120	18-NOV-21
Phosphorus (P)-Dissolved			93.2		%		70-130	18-NOV-21
Potassium (K)-Dissolved			96.9		%		80-120	18-NOV-21
Selenium (Se)-Dissolved			92.5		%		80-120	18-NOV-21
Silicon (Si)-Dissolved			94.5		%		60-140	18-NOV-21
Silver (Ag)-Dissolved			99.6		%		80-120	18-NOV-21
Sodium (Na)-Dissolved			94.6		%		80-120	18-NOV-21
Strontium (Sr)-Dissolved			96.9		%		80-120	18-NOV-21
Sulfur (S)-Dissolved			95.9		%		80-120	18-NOV-21
Thallium (Tl)-Dissolved			98.1		%		80-120	18-NOV-21
Tin (Sn)-Dissolved			100.0		%		80-120	18-NOV-21
Titanium (Ti)-Dissolved			87.4		%		80-120	18-NOV-21
Uranium (U)-Dissolved			96.7		%		80-120	18-NOV-21
Vanadium (V)-Dissolved			97.8		%		80-120	18-NOV-21
Zinc (Zn)-Dissolved			88.6		%		80-120	18-NOV-21
Zirconium (Zr)-Dissolved			99.0		%		80-120	18-NOV-21
<b>WG3661410-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-NOV-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-NOV-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-NOV-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-NOV-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-21



## Quality Control Report

Workorder: L2663201

Report Date: 25-NOV-21

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5653911</b>							
<b>WG3661410-1</b>	<b>MB</b>							
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-NOV-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-NOV-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-NOV-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	18-NOV-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-NOV-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-NOV-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-NOV-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	18-NOV-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-NOV-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-NOV-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-21
<b>WG3661410-4</b>	<b>MS</b>	<b>L2663201-1</b>						
Aluminum (Al)-Dissolved			88.3		%		70-130	18-NOV-21
Antimony (Sb)-Dissolved			100.9		%		70-130	18-NOV-21
Arsenic (As)-Dissolved			90.8		%		70-130	18-NOV-21
Barium (Ba)-Dissolved			77.8		%		70-130	18-NOV-21
Bismuth (Bi)-Dissolved			91.6		%		70-130	18-NOV-21
Boron (B)-Dissolved			92.6		%		70-130	18-NOV-21
Cadmium (Cd)-Dissolved			94.0		%		70-130	18-NOV-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	18-NOV-21
Chromium (Cr)-Dissolved			91.6		%		70-130	18-NOV-21
Cobalt (Co)-Dissolved			90.6		%		70-130	18-NOV-21
Copper (Cu)-Dissolved			92.1		%		70-130	18-NOV-21



## Quality Control Report

Workorder: L2663201

Report Date: 25-NOV-21

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5653911</b>							
<b>WG3661410-4</b>	<b>MS</b>	<b>L2663201-1</b>						
Iron (Fe)-Dissolved			91.0		%		70-130	18-NOV-21
Lead (Pb)-Dissolved			94.7		%		70-130	18-NOV-21
Lithium (Li)-Dissolved			94.2		%		70-130	18-NOV-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	18-NOV-21
Manganese (Mn)-Dissolved			87.1		%		70-130	18-NOV-21
Molybdenum (Mo)-Dissolved			93.6		%		70-130	18-NOV-21
Nickel (Ni)-Dissolved			91.5		%		70-130	18-NOV-21
Phosphorus (P)-Dissolved			86.8		%		70-130	18-NOV-21
Potassium (K)-Dissolved			90.5		%		70-130	18-NOV-21
Selenium (Se)-Dissolved			94.8		%		70-130	18-NOV-21
Silicon (Si)-Dissolved			81.3		%		70-130	18-NOV-21
Silver (Ag)-Dissolved			95.7		%		70-130	18-NOV-21
Sodium (Na)-Dissolved			86.7		%		70-130	18-NOV-21
Strontium (Sr)-Dissolved			91.0		%		70-130	18-NOV-21
Thallium (Tl)-Dissolved			93.7		%		70-130	18-NOV-21
Tin (Sn)-Dissolved			92.7		%		70-130	18-NOV-21
Titanium (Ti)-Dissolved			75.8		%		70-130	18-NOV-21
Uranium (U)-Dissolved			91.6		%		70-130	18-NOV-21
Vanadium (V)-Dissolved			91.1		%		70-130	18-NOV-21
Zinc (Zn)-Dissolved			89.1		%		70-130	18-NOV-21
Zirconium (Zr)-Dissolved			92.0		%		70-130	18-NOV-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5656585</b>							
<b>WG3664205-6</b>	<b>LCS</b>							
Ammonia as N			101.6		%		85-115	23-NOV-21
<b>WG3664205-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	23-NOV-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5651864</b>							
<b>WG3659923-3</b>	<b>DUP</b>	<b>L2663201-3</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	16-NOV-21
<b>WG3659923-2</b>	<b>LCS</b>							
Nitrite (as N)			99.0		%		90-110	16-NOV-21
<b>WG3659923-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	16-NOV-21



## Quality Control Report

Workorder: L2663201

Report Date: 25-NOV-21

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5651864							
<b>WG3659923-4 MS</b>		<b>L2663201-3</b>						
Nitrite (as N)			101.4		%		75-125	16-NOV-21
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5651864							
<b>WG3659923-3 DUP</b>		<b>L2663201-3</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	16-NOV-21
<b>WG3659923-2 LCS</b>								
Nitrate (as N)			100.7		%		90-110	16-NOV-21
<b>WG3659923-1 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	16-NOV-21
<b>WG3659923-4 MS</b>		<b>L2663201-3</b>						
Nitrate (as N)			104.0		%		75-125	16-NOV-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5653667							
<b>WG3660920-1 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	17-NOV-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5654903							
<b>WG3661049-3 CRM</b>		<b>CL-ORP</b>						
ORP			221		mV		210-230	20-NOV-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5654511							
<b>WG3661810-8 LCS</b>								
Phosphorus (P)-Total			97.8		%		80-120	19-NOV-21
<b>WG3661810-7 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-NOV-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5653667							
<b>WG3660920-2 LCS</b>								
pH			7.01		pH		6.9-7.1	17-NOV-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2663201

Report Date: 25-NOV-21

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5651049</b>							
<b>WG3659562-3</b>	<b>DUP</b>	<b>L2663201-2</b>						
Orthophosphate-Dissolved (as P)		0.0048	0.0049		mg/L	2.3	20	16-NOV-21
<b>WG3659562-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.1		%		80-120	16-NOV-21
<b>WG3659562-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	16-NOV-21
<b>WG3659562-4</b>	<b>MS</b>	<b>L2663201-3</b>						
Orthophosphate-Dissolved (as P)			101.4		%		70-130	16-NOV-21
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5651864</b>							
<b>WG3659923-3</b>	<b>DUP</b>	<b>L2663201-3</b>						
Sulfate (SO4)		10.4	10.3		mg/L	0.6	20	16-NOV-21
<b>WG3659923-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.5		%		90-110	16-NOV-21
<b>WG3659923-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	16-NOV-21
<b>WG3659923-4</b>	<b>MS</b>	<b>L2663201-3</b>						
Sulfate (SO4)			103.8		%		75-125	16-NOV-21
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5653842</b>							
<b>WG3659961-2</b>	<b>LCS</b>							
Total Dissolved Solids			97.1		%		85-115	17-NOV-21
<b>WG3659961-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	17-NOV-21
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5654859</b>							
<b>WG3662055-54</b>	<b>DUP</b>	<b>L2663201-1</b>						
Total Kjeldahl Nitrogen		0.057	<0.050	RPD-NA	mg/L	N/A	20	19-NOV-21
<b>WG3662055-51</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			109.0		%		75-125	19-NOV-21
<b>WG3662055-52</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95.0		%		75-125	19-NOV-21
<b>WG3662055-49</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-NOV-21
<b>WG3662055-50</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-NOV-21
<b>WG3662055-53</b>	<b>MS</b>	<b>L2663201-2</b>						
Total Kjeldahl Nitrogen			91.0		%		70-130	19-NOV-21



## Quality Control Report

Workorder: L2663201

Report Date: 25-NOV-21

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5653738							
<b>WG3659960-2</b>	<b>LCS</b>							
Total Suspended Solids			91.5		%		85-115	17-NOV-21
<b>WG3659960-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	17-NOV-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5653777							
<b>WG3660117-2</b>	<b>LCS</b>							
Turbidity			102.5		%		85-115	18-NOV-21
<b>WG3660117-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	18-NOV-21

# Quality Control Report

Workorder: L2663201

Report Date: 25-NOV-21

Page 11 of 12

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2663201

Report Date: 25-NOV-21

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	15-NOV-21 13:40	20-NOV-21 15:25	0.25	122	hours	EHTR-FM
	2	15-NOV-21 15:00	20-NOV-21 15:25	0.25	120	hours	EHTR-FM
	3	15-NOV-21 10:50	20-NOV-21 15:25	0.25	125	hours	EHTR-FM
pH	1	15-NOV-21 13:40	17-NOV-21 09:00	0.25	43	hours	EHTR-FM
	2	15-NOV-21 15:00	17-NOV-21 09:00	0.25	42	hours	EHTR-FM
	3	15-NOV-21 10:50	17-NOV-21 09:00	0.25	46	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2663201 were received on 16-NOV-21 08:37.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2663201-COFC

COC Number:

Page 1 of 1

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<b>Report To</b> Contact and company name below will appear on the final report			<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																				
Company: SNC-Lavalin			Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply						<b>EMERGENCY</b>														
Contact: Genevieve Pomerleau			Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			<b>PRIORITY (Business days)</b>			<b>1 Business day [E1 - 100%]</b>																	
Phone: Tel.: 250-354-1664 ext. 53216 Cell.: 250-505-2847			<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			4 day [P4-20%] <input type="checkbox"/>			<b>Same Day, Weekend or Statutory holiday [E2 -200%]</b>																	
Company address below will appear on the final report			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			3 day [P3-25%] <input type="checkbox"/>			<b>(Laboratory opening fees may apply)</b>																	
Street: 520 Lake Street			Emails: SNC - 'genevieve.pomerleau'			Date and Time Required for all E&P TATs:																				
City/Province: Nelson, BC			vicky.lipinski@snclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																				
Postal Code: V1L 4C6			Teck - 'crystal.sabel' and 'sarah.therrien'@teck.com			<b>Analysis Request</b>																				
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																				
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P P F/P P																				
Company:			Emails: genevieve.pomerleau@snclavalin.com			DOC (C-DIS-ORG-LOW-CL)																				
Contact:			payables@snclavalin.com			TOC (C-TOT-ORG-LOW-CL)																				
<b>Project Information</b>			<b>Oil and Gas Required Fields (client use)</b>			BCMDG D-Met. +Hg (MET-D-BCMDG-CL)																				
ALS Account # / Quote #: MOR125 / Q72340			AFE/Cost Center: PO#			Total N Calc. (N-T-CALC-CL)																				
Job #: Greenhills Operations			Major/Minor Code: Routing Code:			Nitrate + Nitrite Calc. (N2N3-CALC-CL)																				
PO / AFE: 658004			Requisitioner:			Teck Routine (TECKCOAL-ROUTINE-CL)																				
LSD:			Location:			TKN (TKN-L-F-CL)																				
ALS Lab Work Order # (lab use only): 3209			ALS Contact: Inayat Dhaliwal 403-407-1784			Bicarbonate (BIC-CL)																				
			Sampler: JVG JM			Carbonate (CO3-CL)																				
						Hydroxide (OH-CL)																				
<b>ALS Sample # (lab use only)</b>			<b>Sample Identification &amp;/or Coordinates</b>			<b>Teck Sample Location (sys_loc_code)</b>			<b>Date</b>			<b>Time</b>			<b>Sample Type</b>			<b>SAMPLES ON HOLD</b>			<b>Sample is hazardous (please provide further detail)</b>			<b>NUMBER OF CONTAINERS</b>		
(This description will appear on the report)			(For Teck data upload to EQUIS database)			(dd-mmm-yy)			(hh:mm)																	
GH_MW-MC-1C_WG_2021_NP			GH_MW-MC-1S									WG														
GH_MW-MC-1D_WG_2021_NP			GH_MW-MC-1D									WG														
GH_MW-MC-2G_WG_2021_NP			GH_MW-MC-2G									WG														
GH_MW-MC-2D_WG_2021_NP			GH_MW-MC-2D									WG														
GH_MW-Willow-1S_WG_2021_NP			GH_MW-Willow-1S									WG														
GH_MW-Willow-1D_WG_2021_NP			GH_MW-Willow-1D									WG														
GH_MW-Willow-2S_WG_2021_NP			GH_MW-Willow-2S									WG														
GH_MW-Willow-2D_WG_2021_NP			GH_MW-Willow-2D									WG														
GH_MW-Willow-3S_WG_2021_NP			GH_MW-Willow-3S			15-Nov-21			13:40			WG			X X X X X X X X X X						5					
GH_MW-Willow-3D_WG_2021_NP			GH_MW-Willow-3D			15-Nov-21			15:00			WG			X X X X X X X X X X						5					
GH_MW-Wolf-1S_WG_2021_NP			GH_MW-Wolf-1S									WG														
GH_MW-Wolf-1D_WG_2021_NP			GH_MW-Wolf-1D			15-Nov-21			10:50			WG			X X X X X X X X X X						5					
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>			<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>									<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>														
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO			PLEASE ALSO SUBMIT EQUIS UPLOAD to teckcoal@equisonline.com quote: Q75429									Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>														
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO			Teck Facility Name: (please select the applicable Facility)									Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>														
			GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS									Cooling Initiated <input type="checkbox"/>														
												INITIAL COOLER TEMPERATURES °C														
												FINAL COOLER TEMPERATURES °C														
<b>SHIPMENT RELEASE (client use)</b>			<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>						<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																	
Released by: Gen Yong rad			Date: 21/11/15		Time: 17:00		Received by: [Signature]			Date: 11/15		Time: [Signature]		Received by: [Signature]			Date: [Signature]			Time: [Signature]						

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



SNC-Lavalin  
ATTN: Genevieve Pomerleau  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 17-NOV-21  
Report Date: 25-NOV-21 12:54 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2663520  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Lovepreet Kaur  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2663520-1 WG 16-NOV-21 14:40 GH_MW-WILLOW- 1D_WG_2021_11_ 16_NP	L2663520-2 WG 16-NOV-21 12:55 GH_MW-WILLOW- 2S_WG_2021_11_ 16_NP	L2663520-3 WG 16-NOV-21 14:00 GH_MW-WILLOW- 2D_WG_2021_11_ 16_NP	L2663520-4 WG 16-NOV-21 11:15 GH_MW-WOLF- 2D_WG_2021_11_ 16_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	460	380	663	467
	Hardness (as CaCO3) (mg/L)	139	203	130	263
	pH (pH)	8.57	8.47	8.65	8.04
	ORP (mV)	437	450	457	470
	Total Suspended Solids (mg/L)	3.2	3.8	6.1	59.9
	Total Dissolved Solids (mg/L)	235	192	365	318
	Turbidity (NTU)	7.32	6.85	8.88	104
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	3.5	8.0	4.8	11.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	251	235	367	272
	Alkalinity, Carbonate (as CaCO3) (mg/L)	19.2	14.4	32.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	270	249	399	272
	Ammonia as N (mg/L)	0.0852	0.0084	0.196	0.0657
	Bicarbonate (HCO3) (mg/L)	306	286	448	332
	Bromide (Br) (mg/L)	0.050	<0.050	0.074	<0.050
	Carbonate (CO3) (mg/L)	11.5	8.6	19.2	<5.0
	Chloride (Cl) (mg/L)	8.72	0.41	12.9	0.31
	Fluoride (F) (mg/L)	0.856	0.137	1.17	0.233
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	89.2	85.3	86.4	97.0
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	0.555	0.0342	<0.0051
	Nitrate (as N) (mg/L)	<0.0050	0.555	0.0342	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.092	0.145	0.223	0.069
	Total Nitrogen (mg/L)	0.092	0.701	0.257	0.069
	Orthophosphate-Dissolved (as P) (mg/L)	0.0018	0.0220	0.0116	0.0063
	Phosphorus (P)-Total (mg/L)	0.0080	0.0201	0.0642	0.0702
	Sulfate (SO4) (mg/L)	8.23	6.48	1.25	25.7
	Anion Sum (meq/L)	5.85	5.17	8.44	6.00
	Cation Sum (meq/L)	5.22	4.41	7.28	5.82
Cation - Anion Balance (%)	-5.7	-8.0	-7.3	-1.5	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.70	3.06	1.20	1.40
	Total Organic Carbon (mg/L)	0.69	2.93	1.26	3.6
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0041	0.0037	0.0031	0.0042

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2663520-1 WG 16-NOV-21 14:40 GH_MW-WILLOW- 1D_WG_2021_11_ 16_NP	L2663520-2 WG 16-NOV-21 12:55 GH_MW-WILLOW- 2S_WG_2021_11_ 16_NP	L2663520-3 WG 16-NOV-21 14:00 GH_MW-WILLOW- 2D_WG_2021_11_ 16_NP	L2663520-4 WG 16-NOV-21 11:15 GH_MW-WOLF- 2D_WG_2021_11_ 16_NP	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00031	0.00035	0.00131	0.00167
	Barium (Ba)-Dissolved (mg/L)	1.59 <sup>RRV</sup>	0.191	0.918	0.0763
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.158	0.017	0.303	0.054
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000138	<0.0000050	0.0000136
	Calcium (Ca)-Dissolved (mg/L)	29.2	52.2	27.2	65.8
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00021
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00050	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.461	<0.010	0.070	0.030
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0893	0.0108	0.206	0.0164
	Magnesium (Mg)-Dissolved (mg/L)	16.1	17.7	15.0	23.9
	Manganese (Mn)-Dissolved (mg/L)	0.0484	<0.00010	0.0134	0.0937
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00458	0.000860	0.00450	0.00283
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00106
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.92	1.22	1.94	1.75
	Selenium (Se)-Dissolved (mg/L)	0.000055	0.000391	0.000062	0.000187
	Silicon (Si)-Dissolved (mg/L)	3.24	3.78	4.31	4.93
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	55.0	7.32	107	11.9
	Strontium (Sr)-Dissolved (mg/L)	0.596	0.133	0.386	0.401
	Sulfur (S)-Dissolved (mg/L)	3.31	2.75	0.70	9.54
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	0.000021
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000141	0.000559	0.000287	0.00142
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0017	<0.0010	0.0013	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2663520-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2663520-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2663520-1, -2, -3, -4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL**            Water            Dissolved Mercury in Water by CVAAS            APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL**    Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL**            Water            Dissolved Metals in Water by CRC ICPMS            APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL**            Water            Total Nitrogen (Calculation)            APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL**            Water            Nitrate+Nitrite            CALCULATION

**NH3-L-F-CL**            Water            Ammonia, Total (as N)            J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL**            Water            Nitrite in Water by IC (Low Level)            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**            Water            Nitrate in Water by IC (Low Level)            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL**            Water            Hydroxide in Water            APHA 2320 B-Potentiometric Titration

**ORP-CL**            Water            Oxidation reduction potential by elect.            ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**            Water            Phosphorus (P)-Total            APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL**            Water            pH            APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**        Water            Orthophosphate-Dissolved (as P)            APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**            Water            Sulfate in Water by IC            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**            Water            Total Dissolved Solids            APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**    Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2663520

Report Date: 25-NOV-21

Page 1 of 11

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Genevieve Pomerleau

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5653875</b>							
<b>WG3661140-3</b>	<b>DUP</b>	<b>L2663520-1</b>						
Acidity (as CaCO3)		3.5	3.1		mg/L	11	20	18-NOV-21
<b>WG3661140-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.8		%		85-115	18-NOV-21
<b>WG3661140-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	18-NOV-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5655218</b>							
<b>WG3661169-3</b>	<b>DUP</b>	<b>L2663520-1</b>						
Alkalinity, Total (as CaCO3)		270	258		mg/L	4.5	20	19-NOV-21
<b>WG3661169-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			108.6		%		85-115	19-NOV-21
<b>WG3661169-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-NOV-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5654503</b>							
<b>WG3661613-3</b>	<b>DUP</b>	<b>L2663520-4</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	19-NOV-21
<b>WG3661613-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			103.0		%		80-120	19-NOV-21
<b>WG3661613-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-NOV-21
<b>WG3661613-4</b>	<b>MS</b>	<b>L2663520-4</b>						
Beryllium (Be)-Dissolved			102.5		%		70-130	19-NOV-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5655218</b>							
<b>WG3661169-3</b>	<b>DUP</b>	<b>L2663520-1</b>						
Bicarbonate (HCO3)		306	290		mg/L	5.3	20	19-NOV-21
<b>WG3661169-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	19-NOV-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5653519</b>							
<b>WG3660787-6</b>	<b>LCS</b>							
Bromide (Br)			102.2		%		85-115	17-NOV-21
<b>WG3660787-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	17-NOV-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2663520

Report Date: 25-NOV-21

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5655980							
<b>WG3663597-2 LCS</b>								
Dissolved Organic Carbon			101.8		%		80-120	22-NOV-21
<b>WG3663597-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-NOV-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5655980							
<b>WG3663597-2 LCS</b>								
Total Organic Carbon			104.0		%		80-120	22-NOV-21
<b>WG3663597-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	22-NOV-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5653519							
<b>WG3660787-6 LCS</b>								
Chloride (Cl)			100.5		%		85-115	17-NOV-21
<b>WG3660787-5 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	17-NOV-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5655218							
<b>WG3661169-3 DUP</b>		<b>L2663520-1</b>						
Carbonate (CO3)		11.5	12.1		mg/L	5.1	20	19-NOV-21
<b>WG3661169-1 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	19-NOV-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5655218							
<b>WG3661169-3 DUP</b>		<b>L2663520-1</b>						
Conductivity (@ 25C)		460	461		uS/cm	0.2	10	19-NOV-21
<b>WG3661169-2 LCS</b>								
Conductivity (@ 25C)			101.2		%		90-110	19-NOV-21
<b>WG3661169-1 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	19-NOV-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5653519							
<b>WG3660787-6 LCS</b>								
Fluoride (F)			100.0		%		90-110	17-NOV-21
<b>WG3660787-5 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	17-NOV-21
<b>HG-D-CVAA-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2663520

Report Date: 25-NOV-21

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5653923</b>							
<b>WG3661130-3</b>	<b>DUP</b>	<b>L2663520-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	18-NOV-21
<b>WG3661130-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			94.0		%		80-120	18-NOV-21
<b>WG3661130-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	18-NOV-21
<b>WG3661130-4</b>	<b>MS</b>	<b>L2663520-1</b>						
Mercury (Hg)-Dissolved			100.0		%		70-130	18-NOV-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5654503</b>							
<b>WG3661613-3</b>	<b>DUP</b>	<b>L2663520-4</b>						
Aluminum (Al)-Dissolved		0.0042	0.0042		mg/L	1.4	20	19-NOV-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-NOV-21
Arsenic (As)-Dissolved		0.00167	0.00174		mg/L	4.1	20	19-NOV-21
Barium (Ba)-Dissolved		0.0763	0.0731		mg/L	4.3	20	19-NOV-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	19-NOV-21
Boron (B)-Dissolved		0.054	0.049		mg/L	9.5	20	19-NOV-21
Cadmium (Cd)-Dissolved		0.0000136	0.0000205	J	mg/L	0.000006	0.00001	19-NOV-21
Calcium (Ca)-Dissolved		65.8	64.1		mg/L	2.6	20	19-NOV-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-NOV-21
Cobalt (Co)-Dissolved		0.00021	0.00021		mg/L	2.6	20	19-NOV-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	19-NOV-21
Iron (Fe)-Dissolved		0.030	0.029		mg/L	1.1	20	19-NOV-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	19-NOV-21
Lithium (Li)-Dissolved		0.0164	0.0157		mg/L	4.4	20	19-NOV-21
Magnesium (Mg)-Dissolved		23.9	22.6		mg/L	5.6	20	19-NOV-21
Manganese (Mn)-Dissolved		0.0937	0.0896		mg/L	4.5	20	19-NOV-21
Molybdenum (Mo)-Dissolved		0.00283	0.00279		mg/L	1.4	20	19-NOV-21
Nickel (Ni)-Dissolved		0.00106	0.00104		mg/L	1.9	20	19-NOV-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	19-NOV-21
Potassium (K)-Dissolved		1.75	1.65		mg/L	5.9	20	19-NOV-21
Selenium (Se)-Dissolved		0.000187	0.000140	J	mg/L	0.000047	0.0001	19-NOV-21
Silicon (Si)-Dissolved		4.93	4.87		mg/L	1.4	20	19-NOV-21
Silver (Ag)-Dissolved		<0.000010	0.000011	RPD-NA	mg/L	N/A	20	19-NOV-21
Sodium (Na)-Dissolved		11.9	11.3		mg/L	5.1	20	19-NOV-21
Strontium (Sr)-Dissolved		0.401	0.399		mg/L	0.4	20	19-NOV-21



## Quality Control Report

Workorder: L2663520

Report Date: 25-NOV-21

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5654503</b>							
<b>WG3661613-3</b>	<b>DUP</b>	<b>L2663520-4</b>						
Sulfur (S)-Dissolved		9.54	9.19		mg/L	3.7	20	19-NOV-21
Thallium (Tl)-Dissolved		0.000021	0.000024		mg/L	15	20	19-NOV-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-NOV-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	19-NOV-21
Uranium (U)-Dissolved		0.00142	0.00138		mg/L	2.7	20	19-NOV-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	19-NOV-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	19-NOV-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	19-NOV-21
<b>WG3661613-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.2		%		80-120	19-NOV-21
Antimony (Sb)-Dissolved			109.4		%		80-120	19-NOV-21
Arsenic (As)-Dissolved			99.0		%		80-120	19-NOV-21
Barium (Ba)-Dissolved			99.6		%		80-120	19-NOV-21
Bismuth (Bi)-Dissolved			99.6		%		80-120	19-NOV-21
Boron (B)-Dissolved			95.9		%		80-120	19-NOV-21
Cadmium (Cd)-Dissolved			100.7		%		80-120	19-NOV-21
Calcium (Ca)-Dissolved			99.0		%		80-120	19-NOV-21
Chromium (Cr)-Dissolved			99.8		%		80-120	19-NOV-21
Cobalt (Co)-Dissolved			99.8		%		80-120	19-NOV-21
Copper (Cu)-Dissolved			98.0		%		80-120	19-NOV-21
Iron (Fe)-Dissolved			95.1		%		80-120	19-NOV-21
Lead (Pb)-Dissolved			99.6		%		80-120	19-NOV-21
Lithium (Li)-Dissolved			100.6		%		80-120	19-NOV-21
Magnesium (Mg)-Dissolved			100.6		%		80-120	19-NOV-21
Manganese (Mn)-Dissolved			101.5		%		80-120	19-NOV-21
Molybdenum (Mo)-Dissolved			106.0		%		80-120	19-NOV-21
Nickel (Ni)-Dissolved			98.5		%		80-120	19-NOV-21
Phosphorus (P)-Dissolved			97.4		%		70-130	19-NOV-21
Potassium (K)-Dissolved			100.7		%		80-120	19-NOV-21
Selenium (Se)-Dissolved			95.8		%		80-120	19-NOV-21
Silicon (Si)-Dissolved			99.7		%		60-140	19-NOV-21
Silver (Ag)-Dissolved			104.1		%		80-120	19-NOV-21
Sodium (Na)-Dissolved			100.2		%		80-120	19-NOV-21
Strontium (Sr)-Dissolved			99.2		%		80-120	19-NOV-21



## Quality Control Report

Workorder: L2663520

Report Date: 25-NOV-21

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5654503</b>							
<b>WG3661613-2 LCS</b>								
Sulfur (S)-Dissolved			105.3		%		80-120	19-NOV-21
Thallium (Tl)-Dissolved			99.6		%		80-120	19-NOV-21
Tin (Sn)-Dissolved			99.9		%		80-120	19-NOV-21
Titanium (Ti)-Dissolved			99.7		%		80-120	19-NOV-21
Uranium (U)-Dissolved			97.6		%		80-120	19-NOV-21
Vanadium (V)-Dissolved			100.6		%		80-120	19-NOV-21
Zinc (Zn)-Dissolved			99.3		%		80-120	19-NOV-21
Zirconium (Zr)-Dissolved			100.6		%		80-120	19-NOV-21
<b>WG3661613-1 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-NOV-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-NOV-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-NOV-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-NOV-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-NOV-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-NOV-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-NOV-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-NOV-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-NOV-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-NOV-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-NOV-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-NOV-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	19-NOV-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-NOV-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-NOV-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-NOV-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-NOV-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-NOV-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-NOV-21



## Quality Control Report

Workorder: L2663520

Report Date: 25-NOV-21

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5654503</b>							
<b>WG3661613-1</b>	<b>MB</b>							
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	19-NOV-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-NOV-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-NOV-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-NOV-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-NOV-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-NOV-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	19-NOV-21
<b>WG3661613-4</b>	<b>MS</b>	<b>L2663520-4</b>						
Aluminum (Al)-Dissolved			96.4		%		70-130	19-NOV-21
Antimony (Sb)-Dissolved			106.1		%		70-130	19-NOV-21
Arsenic (As)-Dissolved			96.9		%		70-130	19-NOV-21
Barium (Ba)-Dissolved			97.4		%		70-130	19-NOV-21
Bismuth (Bi)-Dissolved			91.7		%		70-130	19-NOV-21
Boron (B)-Dissolved			110.2		%		70-130	19-NOV-21
Cadmium (Cd)-Dissolved			98.6		%		70-130	19-NOV-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	19-NOV-21
Chromium (Cr)-Dissolved			98.0		%		70-130	19-NOV-21
Cobalt (Co)-Dissolved			97.5		%		70-130	19-NOV-21
Copper (Cu)-Dissolved			96.4		%		70-130	19-NOV-21
Iron (Fe)-Dissolved			97.3		%		70-130	19-NOV-21
Lead (Pb)-Dissolved			97.9		%		70-130	19-NOV-21
Lithium (Li)-Dissolved			99.1		%		70-130	19-NOV-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	19-NOV-21
Manganese (Mn)-Dissolved			99.5		%		70-130	19-NOV-21
Molybdenum (Mo)-Dissolved			99.3		%		70-130	19-NOV-21
Nickel (Ni)-Dissolved			97.8		%		70-130	19-NOV-21
Phosphorus (P)-Dissolved			93.0		%		70-130	19-NOV-21
Potassium (K)-Dissolved			97.1		%		70-130	19-NOV-21
Selenium (Se)-Dissolved			101.3		%		70-130	19-NOV-21
Silicon (Si)-Dissolved			91.7		%		70-130	19-NOV-21
Silver (Ag)-Dissolved			99.3		%		70-130	19-NOV-21
Sodium (Na)-Dissolved			91.4		%		70-130	19-NOV-21
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	19-NOV-21



## Quality Control Report

Workorder: L2663520

Report Date: 25-NOV-21

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5654503</b>							
<b>WG3661613-4</b>	<b>MS</b>	<b>L2663520-4</b>						
Thallium (Tl)-Dissolved			96.1		%		70-130	19-NOV-21
Tin (Sn)-Dissolved			94.7		%		70-130	19-NOV-21
Titanium (Ti)-Dissolved			99.5		%		70-130	19-NOV-21
Uranium (U)-Dissolved			96.5		%		70-130	19-NOV-21
Vanadium (V)-Dissolved			96.6		%		70-130	19-NOV-21
Zinc (Zn)-Dissolved			101.5		%		70-130	19-NOV-21
Zirconium (Zr)-Dissolved			99.8		%		70-130	19-NOV-21
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5657276</b>							
<b>WG3664981-6</b>	<b>LCS</b>							
Ammonia as N			101.1		%		85-115	24-NOV-21
<b>WG3664981-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	24-NOV-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5653519</b>							
<b>WG3660787-6</b>	<b>LCS</b>							
Nitrite (as N)			98.8		%		90-110	17-NOV-21
<b>WG3660787-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	17-NOV-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5653519</b>							
<b>WG3660787-6</b>	<b>LCS</b>							
Nitrate (as N)			100.8		%		90-110	17-NOV-21
<b>WG3660787-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	17-NOV-21
<b>OH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5655218</b>							
<b>WG3661169-3</b>	<b>DUP</b>	<b>L2663520-1</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	19-NOV-21
<b>WG3661169-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	19-NOV-21
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5654902</b>							
<b>WG3662268-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	21-NOV-21
<b>WG3662268-2</b>	<b>DUP</b>	<b>L2663520-1</b>						



## Quality Control Report

Workorder: L2663520

Report Date: 25-NOV-21

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5654902							
WG3662268-2	DUP	L2663520-1						
ORP		437	441	J	mV	4.7	15	21-NOV-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5657065							
WG3664504-2	LCS							
Phosphorus (P)-Total			96.4		%		80-120	24-NOV-21
WG3664504-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-NOV-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5655218							
WG3661169-3	DUP	L2663520-1						
pH		8.57	8.57	J	pH	0.00	0.2	19-NOV-21
WG3661169-2	LCS							
pH			7.01		pH		6.9-7.1	19-NOV-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5652559							
WG3660336-2	LCS							
Orthophosphate-Dissolved (as P)			96.8		%		80-120	17-NOV-21
WG3660336-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	17-NOV-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5653519							
WG3660787-6	LCS							
Sulfate (SO4)			103.1		%		90-110	17-NOV-21
WG3660787-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	17-NOV-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5655266							
WG3661428-2	LCS							
Total Dissolved Solids			92.1		%		85-115	19-NOV-21
WG3661428-1	MB							
Total Dissolved Solids			<10		mg/L		10	19-NOV-21
<b>TKN-L-F-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2663520

Report Date: 25-NOV-21

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5654859</b>							
<b>WG3662055-57</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			109.0		%		75-125	19-NOV-21
<b>WG3662055-58</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95.0		%		75-125	19-NOV-21
<b>WG3662055-63</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			109.0		%		75-125	19-NOV-21
<b>WG3662055-64</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			109.0		%		75-125	19-NOV-21
<b>WG3662055-55</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-NOV-21
<b>WG3662055-56</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-NOV-21
<b>WG3662055-61</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-NOV-21
<b>WG3662055-62</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-NOV-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5654375</b>							
<b>WG3660627-2</b>	<b>LCS</b>							
Total Suspended Solids			89.8		%		85-115	18-NOV-21
<b>WG3660627-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	18-NOV-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5653970</b>							
<b>WG3661043-4</b>	<b>DUP</b>	<b>L2663520-4</b>						
Turbidity		104	107		NTU	3.2	15	18-NOV-21
<b>WG3661043-2</b>	<b>LCS</b>							
Turbidity			103.0		%		85-115	18-NOV-21
<b>WG3661043-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	18-NOV-21

# Quality Control Report

Workorder: L2663520

Report Date: 25-NOV-21

Page 10 of 11

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2663520

Report Date: 25-NOV-21

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	16-NOV-21 14:40	21-NOV-21 09:00	0.25	114	hours	EHTR-FM
	2	16-NOV-21 12:55	21-NOV-21 09:00	0.25	116	hours	EHTR-FM
	3	16-NOV-21 14:00	21-NOV-21 09:00	0.25	115	hours	EHTR-FM
	4	16-NOV-21 11:15	21-NOV-21 09:00	0.25	118	hours	EHTR-FM
pH							
	1	16-NOV-21 14:40	19-NOV-21 10:00	0.25	67	hours	EHTR-FM
	2	16-NOV-21 12:55	19-NOV-21 10:00	0.25	69	hours	EHTR-FM
	3	16-NOV-21 14:00	19-NOV-21 10:00	0.25	68	hours	EHTR-FM
	4	16-NOV-21 11:15	19-NOV-21 10:00	0.25	71	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2663520 were received on 17-NOV-21 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2663520-COFC

COC Number:

Page 1 of 2

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format</b> Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Flow - Contact your AM to confirm all E&P TATs (surcharges may apply)	
Company: SNC-Lavalin		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply	
Contact: Genevieve Pomerleau		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		Priority (Business Days): 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/>	
Phone: Tel.:250-354-1664 ext. 53216 Cell.: 250-505-2847		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		EMERGENCY: 1 Business day [E1 - 100%] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>	
Company address below will appear on the final report		Emails: SNC - 'genevieve.pomerleau'		Date and Time Required for all E&P TATs:	
Street: 520 Lake Street		vicky.lipinski@sncclavalin.com		For tests that can not be performed according to the service level selected, you will be contacted.	
City/Province: Nelson, BC		Teck - 'crystal.sabel' and 'sarah.therrien'@teck.com		<b>Analysis Request</b>	
Postal Code: V1L 4C6		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		F/P P F/P	
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: genevieve.pomerleau@sncclavalin.com		DOC (C-DIS-ORG-LOW-CL)	
Company:		payables@sncclavalin.com		TOC (C-TOT-ORG-LOW-CL)	
Contact:		Project Information		BCMDG D-Met. +Hg (MET.-D-BCMDG-CL)	
ALS Account # / Quote #: MOR125 / Q72340		Oil and Gas Required Fields (client use)		Total N Calc. (N-T-CALC-CL)	
Job #: Greenhills Operations		AFE/Cost Center: PO#		Nitrate + Nitrite Calc. (N2N3-CALC-CL)	
PO / AFE: 658004		Major/Minor Code: Routing Code:		Teck Routine (TECKCOAL-ROUTINE-CL)	
LSD:		Requisitioner:		TKN (TKN-L-F-CL)	
ALS Lab Work Order # (lab use only): L2663520		Location:		Bicarbonate (BIC-CL)	
ALS Contact: Inayat Dhaliwal 403-407-1784		Sampler: JVG, JM		Carbonate (CO3-CL)	
ALS Sample # (lab use only)		Sample Identification &/or Coordinates		Hydroxide (OH-CL)	
(This description will appear on the report)		Teck Sample Location (sys_loc_code)		SAMPLES ON HOLD	
(For Teck data upload to EQUIS database)		Date (dd-mmm-yy)		Sample is hazardous (please provide further detail)	
		Time (hh:mm)		NUMBER OF CONTAINERS	
		Sample Type			
<del>GH_MW-MC-1C_WG_2021_NP</del>		<del>GH_MW-MC-1S</del>			
<del>GH_MW-MC-1D_WG_2021_NP</del>		<del>GH_MW-MC-1D</del>			
<del>GH_MW-MC-2S_WG_2021_NP</del>		<del>GH_MW-MC-2S</del>			
<del>GH_MW-MC-2D_WG_2021_NP</del>		<del>GH_MW-MC-2D</del>			
<del>GH_MW-Willow-1S_WG_2021_NP</del>		<del>GH_MW-Willow-1S</del>			
GH_MW-Willow-1D_WG_2021_11_16_NP		GH_MW-Willow-1D		16-Nov-21 14:40	
GH_MW-Willow-2S_WG_2021_11_16_NP		GH_MW-Willow-2S		16-Nov-21 12:55	
GH_MW-Willow-2D_WG_2021_11_16_NP		GH_MW-Willow-2D		16-Nov-21 14:00	
<del>GH_MW-Willow-3S_WG_2021_NP</del>		<del>GH_MW-Willow-3S</del>			
<del>GH_MW-Willow-3D_WG_2021_NP</del>		<del>GH_MW-Willow-3D</del>			
<del>GH_MW-Willow-1S_WG_2021_NP</del>		<del>GH_MW-Willow-1S</del>			
<del>GH_MW-Willow-1D_WG_2021_NP</del>		<del>GH_MW-Willow-1D</del>			
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>	
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>	
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input type="checkbox"/>	
		SHIPPING RELEASE (client use)		INITIAL COOLER TEMPERATURES °C	
Released by: Genevieve Pomerleau		Date: 21/11/16		FINAL COOLER TEMPERATURES °C	
Time: 17:00		INITIAL SHIPMENT RECEPTION (lab use only)		Received by: [Signature]	
		Date: 21/11/16		Date: 21/11/16	
		Time: 17:00		Time: 17:00	

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

WHITE - LABORATORY COPY YELLOW - CLIENT COPY



L2663520-COFC

COC Number:

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>				<b>Flow - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																															
Company: SNC-Lavalin		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)				<b>Regular [R]</b> Standard TAT if received by 3 pm - business days - no surcharges apply					<b>EMERGENCY</b>																										
Contact: Genevieve Pomerleau		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked				<b>4 day [P4-20%]</b> <input type="checkbox"/>		<b>3 day [P3-25%]</b> <input type="checkbox"/>			<b>2 day [P2-50%]</b> <input type="checkbox"/>		<b>1 Business day [E1 - 100%]</b> <input type="checkbox"/>																								
Phone: Tel.:250-354-1664 ext. 53216 Cell.: 250-505-2847		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX									<b>Same Day, Weekend or Statutory holiday [E2 -200%]</b> (Laboratory opening fees may apply) <input type="checkbox"/>																										
Company address below will appear on the final report		Emails: SNC - 'genevieve.pomerleau'				Date and Time Required for all E&P TATs:																															
Street: 520 Lake Street		vicky.lipinski@snclavalin.com				For tests that can not be performed according to the service level selected, you will be contacted.																															
City/Province: Nelson, BC		Teck - 'crystal.sabel' and 'sarah.therrien'@teck.com				<b>Analysis Request</b>																															
Postal Code: V1L 4C6		<b>Invoice Distribution</b>				Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																															
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																																			
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: genevieve.pomerleau@snclavalin.com																																			
Company:		payables@snclavalin.com																																			
Contact:		<b>Oil and Gas Required Fields (client use)</b>																																			
<b>Project Information</b>		AFE/Cost Center: PO#																																			
ALS Account # / Quote #: MOR125 / Q72340		Major/Minor Code: Routing Code:																																			
Job #: Greenhills Operations		Requisitioner:																																			
PO / AFE: 658004		Location:																																			
LSD:		ALS Lab Work Order # (lab use only):				ALS Contact: Inayat Dhaliwal 403-407-1784				Sampler: <b>JVG, JM</b>																											
<b>ALS Sample # (lab use only)</b>		<b>Sample Identification &amp;/or Coordinates</b> (This description will appear on the report)		<b>Teck Sample Location (sys_loc_code)</b> (For Teck data upload to EQUIS database)		<b>Date</b> (dd-mmm-yy)		<b>Time</b> (hh:mm)		<b>Sample Type</b>		DOC (C-DIS-ORG-LOW-CL)		TOC (C-TOT-ORG-LOW-CL)		BCMDG D-Met +Hg (MET-D-BCMDG-CL)		Total N Calc. (N-T-CALC-CL)		Nitrate + Nitrite Calc. (N2N3-CALC-CL)		Teck Routine (TECKCOAL-ROUTINE-CL)		TKN (TKN-L-F-CL)		Bicarbonate (BIC-CL)		Carbonate (CO3-CL)		Hydroxide (OH-CL)		SAMPLES ON HOLD		Sample is hazardous (please provide further detail)		NUMBER OF CONTAINERS	
		GH_MW-Wolf-2S_WG_2021_NP		GH_MW-Wolf-2S						WG																											
		GH_MW-Wolf-2D_WG_2021_11_16_NP		GH_MW-Wolf-2D		16-Nov-21		11:15		WG		XX		XX		XX		XX		XX		XX		XX		XX		XX		XX		XX		5			
		GH_MW-LC1-A_WG_2021_NP		GH_MW-LC1-A						WG																											
		GH_MW-LC1-B_WG_2021_NP		GH_MW-LC1-B						WG																											
		GH_MW-LC2-A_WG_2021_NP		GH_MW-LC2-A						WG																											
		GH_MW-LC2-B_WG_2021_NP		GH_MW-LC2-B						WG																											
		GH_MW-WC1-A_WG_2021_NP		GH_MW-WC1-A						WG																											
		GH_MW-WC1-B_WG_2021_NP		GH_MW-WC1-B						WG																											
		GH_MW-WC1-C_WG_2021_NP		GH_MW-WC1-C						WG																											
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																															
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com <b>Quote: 75429</b>				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>					Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																										
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility) GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS				Cooling Initiated <input type="checkbox"/>					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C																					
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																															
Released by: <i>Gen Vongrad</i>		Date: <i>04/11/16</i>		Time: <i>1700</i>		Received by:		Date:		Time:		Received by: <i>JVG</i>		Date: <i>7/11</i>		Time: <i>1700</i>																					

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



SNC-Lavalin  
ATTN: Katrina Cheung  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 20-NOV-21  
Report Date: 30-NOV-21 16:28 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2664712  
Project P.O. #: 658004  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers:  
Legal Site Desc:

---

Lovepreet Kaur  
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2664712-1	L2664712-2	L2664712-3
		Description	WG	WG	WG
		Sampled Date	19-NOV-21	19-NOV-21	19-NOV-21
		Sampled Time	09:50	11:00	12:00
		Client ID	GH_MW_BG1A_W G_2021-11-19_NP	GH_MW_BG1B_W G_2021-11-19_NP	GH_MW_BG1C_W G_2021-11-19_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	550	513	512	
	Hardness (as CaCO3) (mg/L)	305	271	277	
	pH (pH)	8.23	8.21	8.27	
	ORP (mV)	411	400	410	
	Total Suspended Solids (mg/L)	10.2	55.7	8.1	
	Total Dissolved Solids (mg/L)	308	304	287	
	Turbidity (NTU)	17.0	53.9	43.7	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.2	2.6	4.5	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	362	322	321	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	362	322	321	
	Ammonia as N (mg/L)	0.124	0.140	0.146	
	Bicarbonate (HCO3) (mg/L)	442	393	391	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	0.35	0.31	0.18	
	Fluoride (F) (mg/L)	0.161	0.363	0.361	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	87.6	89.5	91.5	
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	<0.0051	<0.0051	
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.130	0.161	0.161	
	Total Nitrogen (mg/L)	0.130	0.161	0.161	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	0.0015	
	Phosphorus (P)-Total (mg/L)	0.0105	0.0439	0.0141	
	Sulfate (SO4) (mg/L)	6.51	7.59	6.26	
	Anion Sum (meq/L)	7.39	6.63	6.57	
	Cation Sum (meq/L)	6.47	5.93	6.01	
Cation - Anion Balance (%)	-6.6	-5.5	-4.4		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.74	2.46	2.50	
	Total Organic Carbon (mg/L)	1.76	4.45	2.71	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0012	<0.0010	<0.0010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2664712-1	L2664712-2	L2664712-3
		Description	WG	WG	WG
		Sampled Date	19-NOV-21	19-NOV-21	19-NOV-21
		Sampled Time	09:50	11:00	12:00
		Client ID	GH_MW_BG1A_W G_2021-11-19_NP	GH_MW_BG1B_W G_2021-11-19_NP	GH_MW_BG1C_W G_2021-11-19_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00309	0.00108	0.00112
	Barium (Ba)-Dissolved (mg/L)		0.252	0.225	0.187
	Beryllium (Be)-Dissolved (mg/L)		0.000040	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.026	0.012	0.012
	Cadmium (Cd)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)		70.9	70.0	70.8
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00041	0.00256	0.00180
	Copper (Cu)-Dissolved (mg/L)		<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)		1.40	3.26	3.40
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0207	0.0042	0.0042
	Magnesium (Mg)-Dissolved (mg/L)		31.1	23.4	24.3
	Manganese (Mn)-Dissolved (mg/L)		0.217	0.164	0.154
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00564	0.00309	0.00319
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	0.00457	0.00393
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		3.00	1.29	1.23
	Selenium (Se)-Dissolved (mg/L)		0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)		3.66	3.46	3.52
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		4.70	6.76	5.53
	Strontium (Sr)-Dissolved (mg/L)		0.0977	0.107	0.204
	Sulfur (S)-Dissolved (mg/L)		2.88	3.13	2.86
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	0.000037	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.00139	0.000352	0.000552
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2664712-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2664712-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2664712-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2664712-1, -2, -3
Matrix Spike	Ammonia as N	MS-B	L2664712-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                              APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                              APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2664712

Report Date: 30-NOV-21

Page 1 of 11

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Katrina Cheung

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5655900</b>							
<b>WG3663493-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			96.4		%		85-115	22-NOV-21
<b>WG3663493-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	22-NOV-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5656142</b>							
<b>WG3663506-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			111.1		%		85-115	22-NOV-21
<b>WG3663506-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-NOV-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5659006</b>							
<b>WG3666735-3</b>	<b>DUP</b>	<b>L2664712-1</b>						
Beryllium (Be)-Dissolved		0.000040	0.000030	J	mg/L	0.000011	0.00004	29-NOV-21
<b>WG3666735-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.4		%		80-120	29-NOV-21
<b>WG3666735-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-NOV-21
<b>WG3666735-4</b>	<b>MS</b>	<b>L2664712-1</b>						
Beryllium (Be)-Dissolved			93.6		%		70-130	29-NOV-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5656142</b>							
<b>WG3663506-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	22-NOV-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5655209</b>							
<b>WG3662688-2</b>	<b>LCS</b>							
Bromide (Br)			99.9		%		85-115	21-NOV-21
<b>WG3662688-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	21-NOV-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5657437</b>							
<b>WG3665254-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			108.9		%		80-120	24-NOV-21
<b>WG3665254-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-NOV-21



## Quality Control Report

Workorder: L2664712

Report Date: 30-NOV-21

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5657437							
<b>WG3665254-6</b>	<b>LCS</b>							
Total Organic Carbon			110.6		%		80-120	24-NOV-21
<b>WG3665254-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	24-NOV-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5655209							
<b>WG3662688-2</b>	<b>LCS</b>							
Chloride (Cl)			100.7		%		85-115	21-NOV-21
<b>WG3662688-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	21-NOV-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5656142							
<b>WG3663506-13</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	22-NOV-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5656142							
<b>WG3663506-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.6		%		90-110	22-NOV-21
<b>WG3663506-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	22-NOV-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5655209							
<b>WG3662688-2</b>	<b>LCS</b>							
Fluoride (F)			94.5		%		90-110	21-NOV-21
<b>WG3662688-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	21-NOV-21
<b>HG-D-CVAA-CL</b>	<b>Water</b>							
Batch	R5656835							
<b>WG3664186-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.0		%		80-120	24-NOV-21
<b>WG3664186-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			94.9		%		80-120	24-NOV-21
<b>WG3664186-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-NOV-21
<b>WG3664186-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-NOV-21



## Quality Control Report

Workorder: L2664712

Report Date: 30-NOV-21

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5659006</b>							
<b>WG3666735-3</b>	<b>DUP</b>	<b>L2664712-1</b>						
Aluminum (Al)-Dissolved		0.0012	<0.0010	RPD-NA	mg/L	N/A	20	29-NOV-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-NOV-21
Arsenic (As)-Dissolved		0.00309	0.00311		mg/L	0.7	20	29-NOV-21
Barium (Ba)-Dissolved		0.252	0.252		mg/L	0.2	20	29-NOV-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-NOV-21
Boron (B)-Dissolved		0.026	0.027		mg/L	1.8	20	29-NOV-21
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	29-NOV-21
Calcium (Ca)-Dissolved		70.9	72.6		mg/L	2.3	20	29-NOV-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-NOV-21
Cobalt (Co)-Dissolved		0.00041	0.00043		mg/L	3.8	20	29-NOV-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	29-NOV-21
Iron (Fe)-Dissolved		1.40	1.45		mg/L	3.2	20	29-NOV-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-NOV-21
Lithium (Li)-Dissolved		0.0207	0.0207		mg/L	0.2	20	29-NOV-21
Magnesium (Mg)-Dissolved		31.1	32.0		mg/L	2.8	20	29-NOV-21
Manganese (Mn)-Dissolved		0.217	0.222		mg/L	2.2	20	29-NOV-21
Molybdenum (Mo)-Dissolved		0.00564	0.00565		mg/L	0.1	20	29-NOV-21
Nickel (Ni)-Dissolved		<0.00050	0.00052	RPD-NA	mg/L	N/A	20	29-NOV-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	29-NOV-21
Potassium (K)-Dissolved		3.00	3.04		mg/L	1.2	20	29-NOV-21
Selenium (Se)-Dissolved		0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-NOV-21
Silicon (Si)-Dissolved		3.66	3.85		mg/L	4.9	20	29-NOV-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-NOV-21
Sodium (Na)-Dissolved		4.70	4.79		mg/L	1.9	20	29-NOV-21
Strontium (Sr)-Dissolved		0.0977	0.0973		mg/L	0.4	20	29-NOV-21
Sulfur (S)-Dissolved		2.88	2.88		mg/L	0.1	20	29-NOV-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-NOV-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-NOV-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	29-NOV-21
Uranium (U)-Dissolved		0.00139	0.00139		mg/L	0.1	20	29-NOV-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	29-NOV-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	29-NOV-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	29-NOV-21
<b>WG3666735-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2664712

Report Date: 30-NOV-21

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5659006</b>							
<b>WG3666735-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.9		%		80-120	29-NOV-21
Antimony (Sb)-Dissolved			103.2		%		80-120	29-NOV-21
Arsenic (As)-Dissolved			98.9		%		80-120	29-NOV-21
Barium (Ba)-Dissolved			99.6		%		80-120	29-NOV-21
Bismuth (Bi)-Dissolved			95.8		%		80-120	29-NOV-21
Boron (B)-Dissolved			94.2		%		80-120	29-NOV-21
Cadmium (Cd)-Dissolved			97.4		%		80-120	29-NOV-21
Calcium (Ca)-Dissolved			96.7		%		80-120	29-NOV-21
Chromium (Cr)-Dissolved			96.8		%		80-120	29-NOV-21
Cobalt (Co)-Dissolved			100.8		%		80-120	29-NOV-21
Copper (Cu)-Dissolved			96.4		%		80-120	29-NOV-21
Iron (Fe)-Dissolved			95.7		%		80-120	29-NOV-21
Lead (Pb)-Dissolved			96.5		%		80-120	29-NOV-21
Lithium (Li)-Dissolved			98.2		%		80-120	29-NOV-21
Magnesium (Mg)-Dissolved			96.7		%		80-120	29-NOV-21
Manganese (Mn)-Dissolved			100.7		%		80-120	29-NOV-21
Molybdenum (Mo)-Dissolved			97.4		%		80-120	29-NOV-21
Nickel (Ni)-Dissolved			95.7		%		80-120	29-NOV-21
Phosphorus (P)-Dissolved			101.1		%		70-130	29-NOV-21
Potassium (K)-Dissolved			98.8		%		80-120	29-NOV-21
Selenium (Se)-Dissolved			91.6		%		80-120	29-NOV-21
Silicon (Si)-Dissolved			97.9		%		60-140	29-NOV-21
Silver (Ag)-Dissolved			102.4		%		80-120	29-NOV-21
Sodium (Na)-Dissolved			98.6		%		80-120	29-NOV-21
Strontium (Sr)-Dissolved			94.2		%		80-120	29-NOV-21
Sulfur (S)-Dissolved			113.8		%		80-120	29-NOV-21
Thallium (Tl)-Dissolved			96.5		%		80-120	29-NOV-21
Tin (Sn)-Dissolved			96.6		%		80-120	29-NOV-21
Titanium (Ti)-Dissolved			88.0		%		80-120	29-NOV-21
Uranium (U)-Dissolved			102.2		%		80-120	29-NOV-21
Vanadium (V)-Dissolved			99.7		%		80-120	29-NOV-21
Zinc (Zn)-Dissolved			96.8		%		80-120	29-NOV-21
Zirconium (Zr)-Dissolved			100.1		%		80-120	29-NOV-21
<b>WG3666735-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2664712

Report Date: 30-NOV-21

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5659006</b>							
<b>WG3666735-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-NOV-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-NOV-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-NOV-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-NOV-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-NOV-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-NOV-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-NOV-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-NOV-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-NOV-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-NOV-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-NOV-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-NOV-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	29-NOV-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-NOV-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-NOV-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-NOV-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-NOV-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-NOV-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-NOV-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	29-NOV-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-NOV-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-NOV-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-NOV-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-NOV-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-NOV-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	29-NOV-21
<b>WG3666735-4</b>	<b>MS</b>	<b>L2664712-1</b>						





## Quality Control Report

Workorder: L2664712

Report Date: 30-NOV-21

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5659006</b>							
<b>WG3666735-4 MS</b>		<b>L2664712-1</b>						
Aluminum (Al)-Dissolved			90.5		%		70-130	29-NOV-21
Antimony (Sb)-Dissolved			105.4		%		70-130	29-NOV-21
Arsenic (As)-Dissolved			91.3		%		70-130	29-NOV-21
Barium (Ba)-Dissolved			N/A	MS-B	%		-	29-NOV-21
Bismuth (Bi)-Dissolved			94.7		%		70-130	29-NOV-21
Boron (B)-Dissolved			99.4		%		70-130	29-NOV-21
Cadmium (Cd)-Dissolved			91.6		%		70-130	29-NOV-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	29-NOV-21
Chromium (Cr)-Dissolved			92.0		%		70-130	29-NOV-21
Cobalt (Co)-Dissolved			93.1		%		70-130	29-NOV-21
Copper (Cu)-Dissolved			91.6		%		70-130	29-NOV-21
Iron (Fe)-Dissolved			91.3		%		70-130	29-NOV-21
Lead (Pb)-Dissolved			95.4		%		70-130	29-NOV-21
Lithium (Li)-Dissolved			90.3		%		70-130	29-NOV-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	29-NOV-21
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	29-NOV-21
Molybdenum (Mo)-Dissolved			94.0		%		70-130	29-NOV-21
Nickel (Ni)-Dissolved			90.3		%		70-130	29-NOV-21
Phosphorus (P)-Dissolved			95.1		%		70-130	29-NOV-21
Potassium (K)-Dissolved			92.3		%		70-130	29-NOV-21
Selenium (Se)-Dissolved			92.0		%		70-130	29-NOV-21
Silicon (Si)-Dissolved			89.2		%		70-130	29-NOV-21
Silver (Ag)-Dissolved			92.0		%		70-130	29-NOV-21
Sodium (Na)-Dissolved			90.1		%		70-130	29-NOV-21
Strontium (Sr)-Dissolved			90.8		%		70-130	29-NOV-21
Thallium (Tl)-Dissolved			96.5		%		70-130	29-NOV-21
Tin (Sn)-Dissolved			92.1		%		70-130	29-NOV-21
Titanium (Ti)-Dissolved			91.7		%		70-130	29-NOV-21
Uranium (U)-Dissolved			95.2		%		70-130	29-NOV-21
Vanadium (V)-Dissolved			90.5		%		70-130	29-NOV-21
Zinc (Zn)-Dissolved			88.5		%		70-130	29-NOV-21
Zirconium (Zr)-Dissolved			93.4		%		70-130	29-NOV-21

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2664712

Report Date: 30-NOV-21

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Batch R5657992</b>								
<b>WG3665712-2</b>	<b>LCS</b>							
Ammonia as N			102.5		%		85-115	25-NOV-21
<b>WG3665712-6</b>	<b>LCS</b>							
Ammonia as N			100.5		%		85-115	25-NOV-21
<b>WG3665712-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	25-NOV-21
<b>WG3665712-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	25-NOV-21
<b>NO2-L-IC-N-CL</b>								
<b>Batch R5655209</b>								
<b>WG3662688-2</b>	<b>LCS</b>							
Nitrite (as N)			101.4		%		90-110	21-NOV-21
<b>WG3662688-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	21-NOV-21
<b>NO3-L-IC-N-CL</b>								
<b>Batch R5655209</b>								
<b>WG3662688-2</b>	<b>LCS</b>							
Nitrate (as N)			100.3		%		90-110	21-NOV-21
<b>WG3662688-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	21-NOV-21
<b>OH-CL</b>								
<b>Batch R5656142</b>								
<b>WG3663506-13</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	22-NOV-21
<b>ORP-CL</b>								
<b>Batch R5658297</b>								
<b>WG3666093-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	27-NOV-21
<b>P-T-L-COL-CL</b>								
<b>Batch R5657065</b>								
<b>WG3664504-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			99.97		%		80-120	24-NOV-21
<b>WG3664504-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-NOV-21
<b>PH-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2664712

Report Date: 30-NOV-21

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R5656142							
<b>WG3663506-14 LCS</b>								
pH			6.98		pH		6.9-7.1	22-NOV-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5654978							
<b>WG3662358-3 DUP</b>		<b>L2664712-2</b>						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-NOV-21
<b>WG3662358-2 LCS</b>								
Orthophosphate-Dissolved (as P)			93.1		%		80-120	21-NOV-21
<b>WG3662358-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	21-NOV-21
<b>WG3662358-4 MS</b>		<b>L2664712-3</b>						
Orthophosphate-Dissolved (as P)			93.3		%		70-130	21-NOV-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5655209							
<b>WG3662688-2 LCS</b>								
Sulfate (SO4)			98.4		%		90-110	21-NOV-21
<b>WG3662688-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	21-NOV-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5657492							
<b>WG3663159-3 DUP</b>		<b>L2664712-1</b>						
Total Dissolved Solids		308	302		mg/L	2.1	20	24-NOV-21
<b>WG3663159-2 LCS</b>								
Total Dissolved Solids			89.2		%		85-115	24-NOV-21
<b>WG3663159-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	24-NOV-21
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5657132							
<b>WG3664943-6 LCS</b>								
Total Kjeldahl Nitrogen			104.0		%		75-125	24-NOV-21
<b>WG3664943-8 LCS</b>								
Total Kjeldahl Nitrogen			103.0		%		75-125	24-NOV-21
<b>WG3664943-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-NOV-21
<b>WG3664943-7 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-NOV-21
	<b>Water</b>							



## Quality Control Report

Workorder: L2664712

Report Date: 30-NOV-21

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5657345							
<b>WG3663162-2</b>	<b>LCS</b>							
Total Suspended Solids			100.6		%		85-115	24-NOV-21
<b>WG3663162-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	24-NOV-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5654982							
<b>WG3662361-2</b>	<b>LCS</b>							
Turbidity			105.4		%		85-115	21-NOV-21
<b>WG3662361-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	21-NOV-21

# Quality Control Report

Workorder: L2664712

Report Date: 30-NOV-21

Page 10 of 11

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2664712

Report Date: 30-NOV-21

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	19-NOV-21 09:50	27-NOV-21 09:00	0.25	191	hours	EHTR-FM
	2	19-NOV-21 11:00	27-NOV-21 09:00	0.25	190	hours	EHTR-FM
	3	19-NOV-21 12:00	27-NOV-21 09:00	0.25	189	hours	EHTR-FM
pH	1	19-NOV-21 09:50	22-NOV-21 14:00	0.25	76	hours	EHTR-FM
	2	19-NOV-21 11:00	22-NOV-21 14:00	0.25	75	hours	EHTR-FM
	3	19-NOV-21 12:00	22-NOV-21 14:00	0.25	74	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes\*:  
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2664712 were received on 20-NOV-21 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2104646**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 10/4/2021  
**Sampler** : CC  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 06-Oct-2021 08:50  
**Date Analysis Commenced** : 06-Oct-2021  
**Issue Date** : 28-Oct-2021 13:35

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Courtney Cox	Analyst	Inorganics, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_HMW5_QTR	----	----	----	----
(Matrix: Water)						_2021-10-04_N				
					Client sampling date / time	04-Oct-2021 11:57	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2104646-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	145	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	177	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	145	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	367	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	182	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	439	----	----	----	----	----
pH	----	E108	0.10	pH units	8.22	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	216	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	----	----	----	----	----
turbidity	----	E121	0.10	NTU	0.32	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0596	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.39	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.377	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.063	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0061	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0201	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0182	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	56.9	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.94	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.87	----	----	----	----	----
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_HMW5_QTR	----	----	----	----
(Matrix: Water)						_2021-10-04_N				
Client sampling date / time					04-Oct-2021					
					11:57					
Analyte	CAS Number	Method	LOR	Unit	CG2104646-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.11	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	3.86	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.9	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	3.14	----	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0050	----	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	----	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.199	----	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	----	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	----	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	41.0	----	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.011	----	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.126	----	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	19.4	----	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0575	----	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.686	----	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	1.34	----	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.43	----	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.51	----	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.379	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW5_QTR _2021-10-04_N	----	----	----	----
Client sampling date / time					04-Oct-2021 11:57	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104646-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	27.0	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000020	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0013	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104646</b>	Page	: 1 of 10
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 06-Oct-2021 08:50
PO	: VPO00741392	Issue Date	: 28-Oct-2021 13:35
C-O-C number	: 10/4/2021		
Sampler	: CC		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_HMW5_QTR_2021-10-04_N	E298	04-Oct-2021	21-Oct-2021	----	----		21-Oct-2021	28 days	17 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_HMW5_QTR_2021-10-04_N	E235.Br-L	04-Oct-2021	----	----	----		06-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_HMW5_QTR_2021-10-04_N	E235.Cl-L	04-Oct-2021	----	----	----		06-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> FR_HMW5_QTR_2021-10-04_N	E378-U	04-Oct-2021	----	----	----		06-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> FR_HMW5_QTR_2021-10-04_N	E235.F	04-Oct-2021	----	----	----		06-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_HMW5_QTR_2021-10-04_N	E235.NO3-L	04-Oct-2021	----	----	----		06-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_HMW5_QTR_2021-10-04_N	E235.NO2-L	04-Oct-2021	----	----	----		06-Oct-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_HMW5_QTR_2021-10-04_N	E235.SO4	04-Oct-2021	----	----	----		06-Oct-2021	28 days	2 days		✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW5_QTR_2021-10-04_N	E318	04-Oct-2021	13-Oct-2021	----	----		14-Oct-2021	28 days	10 days		✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW5_QTR_2021-10-04_N	E372-U	04-Oct-2021	13-Oct-2021	----	----		13-Oct-2021	28 days	9 days		✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_HMW5_QTR_2021-10-04_N	E421.Cr-L	04-Oct-2021	09-Oct-2021	----	----		09-Oct-2021	180 days	5 days		✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_HMW5_QTR_2021-10-04_N	E509	04-Oct-2021	09-Oct-2021	----	----		09-Oct-2021	28 days	5 days		✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_HMW5_QTR_2021-10-04_N	E421	04-Oct-2021	09-Oct-2021	----	----		09-Oct-2021	180 days	5 days		✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_HMW5_QTR_2021-10-04_N	E358-L	04-Oct-2021	10-Oct-2021	----	----		11-Oct-2021	28 days	7 days		✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW5_QTR_2021-10-04_N	E355-L	04-Oct-2021	10-Oct-2021	----	----		11-Oct-2021	28 days	7 days		✔
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_HMW5_QTR_2021-10-04_N	E283	04-Oct-2021	----	----	----		07-Oct-2021	14 days	3 days		✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_HMW5_QTR_2021-10-04_N	E290	04-Oct-2021	----	----	----		11-Oct-2021	14 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_HMW5_QTR_2021-10-04_N	E100	04-Oct-2021	----	----	----		11-Oct-2021	28 days	7 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_HMW5_QTR_2021-10-04_N	E125	04-Oct-2021	----	----	----		14-Oct-2021	0.25 hrs	234 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_HMW5_QTR_2021-10-04_N	E108	04-Oct-2021	----	----	----		11-Oct-2021	0.25 hrs	171 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_HMW5_QTR_2021-10-04_N	E162	04-Oct-2021	----	----	----		07-Oct-2021	7 days	3 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE FR_HMW5_QTR_2021-10-04_N	E160-L	04-Oct-2021	----	----	----		07-Oct-2021	7 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE FR_HMW5_QTR_2021-10-04_N	E121	04-Oct-2021	----	----	----		07-Oct-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	313715	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	316719	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	325477	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	312685	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	312686	1	16	6.2	5.0	✓
Conductivity in Water	E100	316720	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	315558	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	315561	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	315557	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	316465	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	312382	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	312689	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	312687	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	312688	1	16	6.2	5.0	✓
ORP by Electrode	E125	318950	1	20	5.0	5.0	✓
pH by Meter	E108	316721	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	312684	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	313738	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	318572	1	11	9.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	316477	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	315796	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	313637	1	1	100.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	313715	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	316719	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	325477	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	312685	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	312686	1	16	6.2	5.0	✓
Conductivity in Water	E100	316720	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	315558	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	315561	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	315557	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	316465	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	312382	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	312689	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	312687	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	312688	1	16	6.2	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	318950	1	20	5.0	5.0	✓
pH by Meter	E108	316721	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	312684	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	313738	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	318572	1	11	9.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	316477	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	315796	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	313406	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	313637	1	1	100.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	313715	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	316719	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	325477	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	312685	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	312686	1	16	6.2	5.0	✓
Conductivity in Water	E100	316720	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	315558	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	315561	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	315557	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	316465	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	312382	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	312689	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	312687	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	312688	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	312684	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	313738	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	318572	1	11	9.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	316477	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	315796	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	313406	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	313637	1	1	100.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	325477	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	312685	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	312686	1	16	6.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	315558	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	315561	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	315557	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	316465	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	312382	1	18	5.5	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	312689	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	312687	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	312688	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	312684	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	318572	1	11	9.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	316477	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	315796	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2104646**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 10/4/2021  
**Sampler** : CC  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 06-Oct-2021 08:50  
**Date Analysis Commenced** : 06-Oct-2021  
**Issue Date** : 28-Oct-2021 13:35

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Courtney Cox	Analyst	Inorganics, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2104646  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 313637)</b>											
CG2104646-001	FR_HMW5_QTR_2021-10-04_N	turbidity	----	E121	0.10	NTU	0.32	0.31	0.003	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 313715)</b>											
CG2104646-001	FR_HMW5_QTR_2021-10-04_N	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 313738)</b>											
CG2104639-001	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1510	1580	4.73%	20%	----
<b>Physical Tests (QC Lot: 316719)</b>											
CG2104635-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	102	101	0.395%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	6.4	6.8	0.4	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	108	108	0.00%	20%	----
<b>Physical Tests (QC Lot: 316720)</b>											
CG2104635-001	Anonymous	conductivity	----	E100	2.0	µS/cm	243	242	0.412%	10%	----
<b>Physical Tests (QC Lot: 316721)</b>											
CG2104635-001	Anonymous	pH	----	E108	0.10	pH units	8.33	8.40	0.837%	4%	----
<b>Physical Tests (QC Lot: 318950)</b>											
CG2104635-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	446	451	1.07%	15%	----
<b>Anions and Nutrients (QC Lot: 312382)</b>											
CG2104639-008	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 312684)</b>											
CG2104639-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	778	798	2.51%	20%	----
<b>Anions and Nutrients (QC Lot: 312685)</b>											
CG2104639-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 312686)</b>											
CG2104639-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	5.68	6.68	16.2%	20%	----
<b>Anions and Nutrients (QC Lot: 312687)</b>											
CG2104639-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.412	0.364	12.3%	20%	----
<b>Anions and Nutrients (QC Lot: 312688)</b>											
CG2104639-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0062	0.0067	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 312689)</b>											
CG2104639-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.176	0.198	0.021	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 315796)</b>											
CG2104635-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0026	<0.0020	0.0006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 318572)</b>											
CG2104613-009	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.333	0.345	0.012	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325477)</b>											
CG2104601-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.205	0.204	0.294%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 316465)</b>											
CG2104561-006	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 316477)</b>											
CG2104568-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.33	4.53	0.20	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 315557)</b>											
CG2104646-001	FR_HMW5_QTR_2021-10-04_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0050	0.0049	0.00007	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	0.00010	0.000001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.199	0.196	1.70%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	0.026	0.0004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	41.0	42.5	3.58%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.011	0.011	0.0005	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.126	0.127	0.263%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	19.4	18.8	3.00%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0575	0.0573	0.382%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	0.000050	0.0000004	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.686	0.668	2.63%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	1.34 µg/L	0.00135	0.477%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.43	2.47	1.53%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.51	4.66	3.25%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.379	0.370	2.25%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	27.0	30.4	11.9%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 315557) - continued</b>											
CG2104646-001	FR_HMW5_QTR_2021-10-04_N	thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000020	0.000019	0.000002	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0013	0.0015	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 315558)</b>											
CG2104646-001	FR_HMW5_QTR_2021-10-04_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 315561)</b>											
CG2104646-001	FR_HMW5_QTR_2021-10-04_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 313406)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 313637)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 313715)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 313738)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 316719)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 316720)</b>						
conductivity	----	E100	1	µS/cm	1.4	----
<b>Anions and Nutrients (QCLot: 312382)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 312684)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 312685)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 312686)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 312687)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 312688)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 312689)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 315796)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 318572)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 325477)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 325477) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 316465)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 316477)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 315557)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 315557) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 315558)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 315561)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 313406)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.9	85.0	115	---
<b>Physical Tests (QCLot: 313637)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.0	85.0	115	---
<b>Physical Tests (QCLot: 313715)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 313738)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.6	85.0	115	---
<b>Physical Tests (QCLot: 316719)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 316720)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.7	90.0	110	---
<b>Physical Tests (QCLot: 316721)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 318950)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.9	95.4	104	---
<b>Anions and Nutrients (QCLot: 312382)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	97.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 312684)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 312685)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	107	85.0	115	---
<b>Anions and Nutrients (QCLot: 312686)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 312687)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 312688)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 312689)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 315796)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	99.1	80.0	120	---
<b>Anions and Nutrients (QCLot: 318572)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 318572) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	88.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 325477)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 316465)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	111	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 316477)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	112	80.0	120	----
<b>Dissolved Metals (QCLot: 315557)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.7	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.4	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	95.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.3	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.9	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	92.9	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.9	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.1	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.0	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.6	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	96.9	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	93.5	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	90.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.1	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	98.7	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.6	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	84.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.2	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 315557) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	97.8	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	95.6	80.0	120	----
<b>Dissolved Metals (QCLot: 315558)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	95.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.6	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 312382)</b>										
CG2104639-009	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0609 mg/L	0.05 mg/L	122	70.0	130	----
<b>Anions and Nutrients (QCLot: 312684)</b>										
CG2104645-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 312685)</b>										
CG2104645-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.606 mg/L	0.5 mg/L	121	75.0	125	----
<b>Anions and Nutrients (QCLot: 312686)</b>										
CG2104645-004	Anonymous	chloride	16887-00-6	E235.Cl-L	119 mg/L	100 mg/L	119	75.0	125	----
<b>Anions and Nutrients (QCLot: 312687)</b>										
CG2104645-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.89 mg/L	2.5 mg/L	116	75.0	125	----
<b>Anions and Nutrients (QCLot: 312688)</b>										
CG2104645-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.584 mg/L	0.5 mg/L	117	75.0	125	----
<b>Anions and Nutrients (QCLot: 312689)</b>										
CG2104645-004	Anonymous	fluoride	16984-48-8	E235.F	1.18 mg/L	1 mg/L	118	75.0	125	----
<b>Anions and Nutrients (QCLot: 315796)</b>										
CG2104635-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0704 mg/L	0.0676 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 318572)</b>										
CG2104613-011	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.75 mg/L	2.5 mg/L	70.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 325477)</b>										
CG2104601-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 316465)</b>										
CG2104561-006	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.7 mg/L	23.9 mg/L	107	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 316477)</b>										
CG2104568-001	Anonymous	carbon, total organic [TOC]	----	E355-L	26.1 mg/L	23.9 mg/L	109	70.0	130	----
<b>Dissolved Metals (QCLot: 315557)</b>										
CG2104653-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.198 mg/L	0.2 mg/L	99.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 315557) - continued</b>										
CG2104653-001	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00773 mg/L	0.01 mg/L	77.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.094 mg/L	0.1 mg/L	93.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.98 mg/L	2 mg/L	99.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.96 mg/L	4 mg/L	99.0	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.79 mg/L	10 mg/L	87.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00381 mg/L	0.004 mg/L	95.3	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.4 mg/L	20 mg/L	102	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00374 mg/L	0.004 mg/L	93.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.3	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00417 mg/L	0.004 mg/L	104	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0994 mg/L	0.1 mg/L	99.4	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.396 mg/L	0.4 mg/L	99.1	70.0	130	----
<b>Dissolved Metals (QCLot: 315558)</b>										
CG2104653-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
<b>Dissolved Metals (QCLot: 315561)</b>										
CG2104653-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000996 mg/L	0.0001 mg/L	99.6	70.0	130	----



COC ID: <b>10/4/2021</b>		TURNAROUND TIME:			RUSH:					
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>			
Facility Name / Job# <b>Fording River Operation</b>				Lab Name <b>ALS Calgary</b>			Report Format / Distribution			
Project Manager <b>Scott Roughead</b>				Lab Contact <b>Lyudmyla Shvets</b>			Email 1:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Email <b>scott.roughead@teck.com</b>				Email <b>Lyudmyla.Shvets@ALSGlobal.com</b>			Email 2:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Address				Address <b>2559 29 Street NE</b>			Email 3:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
City <b>Elkford</b> Province <b>BC</b>				City <b>Calgary</b> Province <b>AB</b>			Email 4:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Postal Code				Postal Code <b>T1Y 7B5</b>			Email 5:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Country <b>Canada</b>				Country <b>Canada</b>			Email 6:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Phone Number <b>1-250-433-6976</b>				Phone Number <b>403 407 1794</b>			PO number	<b>VPO00741392</b>		

SAMPLE DETAILS							ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp # Of Cont.	ALS_BrCL-MET-D-VA	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-ROUTINE-VA	N	F	N	F	N
FR_HMW5_QTR_2021-10-04_N	FR_HMW5	WG	NO	2021/10/04	11:57	G	5	1	1	1	1	1	1	1	1	1

9396

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Cruz Canlas	October 4, 2021	<i>DK</i>	<i>10/5/2021</i>

SERVICE REQUEST (rush - subject to availability)				
Regular (default) x	Sampler's Name	cruz canlas	Mobile #	250 433 6166
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	October 4, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

Environmental Division  
Calgary  
Work Order Reference  
**CG2104646**



Telephone : +1 403 407 1800

102



CERTIFICATE OF ANALYSIS

Work Order : CG2104775
Client : Teck Coal Limited
Contact : Scott Roughead
Address : PO BOX 100
ELKFORD BC Canada V0B 1H0
Telephone : ---
Project : FORDING RIVER OPERATION
PO : VPO00741392
C-O-C number : 10/7/2021
Sampler : cruz canlas
Site : ---
Quote number : Teck Coal Master Quote
No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 5
Laboratory : Calgary - Environmental
Account Manager : Justine Buma-a
Address : 2559 29th Street NE
Calgary AB Canada T1Y 7B5
Telephone : +1 403 407 1800
Date Samples Received : 09-Oct-2021 08:30
Date Analysis Commenced : 09-Oct-2021
Issue Date : 28-Oct-2021 16:44

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Lists names like Annabelle Prasad, Dee Lee, Erin Sanchez, etc., along with their roles and departments.



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID		FR_TBSSMW-1	FR_TBSSMW-2	---	---	---
(Matrix: Water)					_QTR_2021-07-05_N	_QTR_2021-07-05_N					
Client sampling date / time					06-Oct-2021 02:51	06-Oct-2021 12:18	---	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2104775-001	CG2104775-002	-----	-----	-----	-----	-----
					Result	Result	---	---	---	---	---
<b>Physical Tests</b>											
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	2.0	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	183	138	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	223	169	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	10.0	<1.0	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	6.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	193	138	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	362	518	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	147	263	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	450	460	---	---	---	---	---
pH	---	E108	0.10	pH units	8.40	8.26	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	187	350	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	4.6	---	---	---	---	---
turbidity	---	E121	0.10	NTU	0.29	0.74	---	---	---	---	---
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	3.80	<0.0050	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.25	0.24	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.320	0.223	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	3.40	0.180 <sup>TKNI</sup>	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	2.88	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0016	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0044	0.0025	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	10.4	126	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	1.12 <sup>DTC,RRV</sup>	0.59	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	0.69 <sup>DTC,RRV</sup>	1.06	---	---	---	---	---





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_TBSSMW-1 _QTR_2021-07- 05_N	FR_TBSSMW-2 _QTR_2021-07- 05_N	----	----	----
Client sampling date / time					06-Oct-2021 02:51	06-Oct-2021 12:18	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104775-001 Result	CG2104775-002 Result	-----	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.10	5.60	----	----	----	
cation sum	----	EC101	0.10	meq/L	3.84	5.30	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.6	94.6	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.27	2.75	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0018	0.0023	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00106	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	3.35	0.0714	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.020	<0.010	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0102	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	16.0	64.6	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00011	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00036	0.00284	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.380	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	0.000078	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.226	0.0084	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	26.1	24.6	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0431	0.00020	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0129	0.000956	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	7.15	0.827	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	18.7	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.52	1.52	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	9.75	0.616	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_TBSSMW-1 _QTR_2021-07- 05_N	FR_TBSSMW-2 _QTR_2021-07- 05_N	----	----	----
Client sampling date / time					06-Oct-2021 02:51	06-Oct-2021 12:18	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104775-001 Result	CG2104775-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.282	0.115	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.23	44.5	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000152	0.00106	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0025	0.0078	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104775</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 09-Oct-2021 08:30
PO	: VPO00741392	Issue Date	: 28-Oct-2021 16:45
C-O-C number	: 10/7/2021		
Sampler	: cruz canlas		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E298	06-Oct-2021	23-Oct-2021	----	----		23-Oct-2021	28 days	17 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E298	06-Oct-2021	23-Oct-2021	----	----		23-Oct-2021	28 days	17 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_TBSSMW-1_QTR_2021-07-05_N	E235.Br-L	06-Oct-2021	----	----	----		09-Oct-2021	28 days	3 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_TBSSMW-2_QTR_2021-07-05_N	E235.Br-L	06-Oct-2021	----	----	----		09-Oct-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_TBSSMW-1_QTR_2021-07-05_N	E235.Cl-L	06-Oct-2021	----	----	----		09-Oct-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_TBSSMW-2_QTR_2021-07-05_N	E235.Cl-L	06-Oct-2021	----	----	----		09-Oct-2021	28 days	3 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> FR_TBSSMW-2_QTR_2021-07-05_N	E378-U	06-Oct-2021	----	----	----		09-Oct-2021	3 days	3 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E378-U	06-Oct-2021	----	----	----		09-Oct-2021	3 days	4 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E235.F	06-Oct-2021	----	----	----		09-Oct-2021	28 days	3 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E235.F	06-Oct-2021	----	----	----		09-Oct-2021	28 days	3 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E235.NO3-L	06-Oct-2021	----	----	----		09-Oct-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E235.NO3-L	06-Oct-2021	----	----	----		09-Oct-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E235.NO2-L	06-Oct-2021	----	----	----		09-Oct-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E235.NO2-L	06-Oct-2021	----	----	----		09-Oct-2021	3 days	3 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E235.SO4	06-Oct-2021	----	----	----		09-Oct-2021	28 days	3 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E235.SO4	06-Oct-2021	----	----	----		09-Oct-2021	28 days	3 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E318	06-Oct-2021	16-Oct-2021	----	----		18-Oct-2021	28 days	12 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E318	06-Oct-2021	15-Oct-2021	----	----		19-Oct-2021	28 days	14 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E372-U	06-Oct-2021	16-Oct-2021	----	----		16-Oct-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E372-U	06-Oct-2021	16-Oct-2021	----	----		16-Oct-2021	28 days	10 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E421.Cr-L	06-Oct-2021	17-Oct-2021	----	----		17-Oct-2021	180 days	11 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E421.Cr-L	06-Oct-2021	17-Oct-2021	----	----		17-Oct-2021	180 days	11 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E509	06-Oct-2021	19-Oct-2021	----	----		19-Oct-2021	28 days	13 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E509	06-Oct-2021	19-Oct-2021	----	----		19-Oct-2021	28 days	13 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E421	06-Oct-2021	17-Oct-2021	----	----		17-Oct-2021	180 days	11 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E421	06-Oct-2021	17-Oct-2021	----	----		17-Oct-2021	180 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E358-L	06-Oct-2021	17-Oct-2021	----	----		20-Oct-2021	28 days	14 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E358-L	06-Oct-2021	17-Oct-2021	----	----		21-Oct-2021	28 days	16 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-2_QTR_2021-07-05_N	E355-L	06-Oct-2021	17-Oct-2021	----	----		20-Oct-2021	28 days	14 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TBSSMW-1_QTR_2021-07-05_N	E355-L	06-Oct-2021	17-Oct-2021	----	----		20-Oct-2021	28 days	15 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_TBSSMW-1_QTR_2021-07-05_N	E283	06-Oct-2021	----	----	----		17-Oct-2021	14 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_TBSSMW-2_QTR_2021-07-05_N	E283	06-Oct-2021	----	----	----		17-Oct-2021	14 days	11 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_TBSSMW-1_QTR_2021-07-05_N	E290	06-Oct-2021	----	----	----		17-Oct-2021	14 days	11 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_TBSSMW-2_QTR_2021-07-05_N	E290	06-Oct-2021	----	----	----		17-Oct-2021	14 days	11 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E100	06-Oct-2021	----	----	----		17-Oct-2021	28 days	11 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E100	06-Oct-2021	----	----	----		17-Oct-2021	28 days	11 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E125	06-Oct-2021	----	----	----		19-Oct-2021	0.25 hrs	311 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E125	06-Oct-2021	----	----	----		19-Oct-2021	0.25 hrs	320 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E108	06-Oct-2021	----	----	----		17-Oct-2021	0.25 hrs	265 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E108	06-Oct-2021	----	----	----		17-Oct-2021	0.25 hrs	274 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E162	06-Oct-2021	----	----	----		12-Oct-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_TBSSMW-2_QTR_2021-07-05_N	E162	06-Oct-2021	----	----	----		12-Oct-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE FR_TBSSMW-1_QTR_2021-07-05_N	E160-L	06-Oct-2021	----	----	----		12-Oct-2021	7 days	6 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE</b> FR_TBSSMW-2_QTR_2021-07-05_N	E160-L	06-Oct-2021	----	----	----		12-Oct-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_TBSSMW-1_QTR_2021-07-05_N	E121	06-Oct-2021	----	----	----		09-Oct-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_TBSSMW-2_QTR_2021-07-05_N	E121	06-Oct-2021	----	----	----		09-Oct-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	321977	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	321987	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	327787	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	315940	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	315941	1	14	7.1	5.0	✓
Conductivity in Water	E100	321986	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	321662	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	323068	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	321661	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	322056	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	316044	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	315938	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	315942	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	315943	1	14	7.1	5.0	✓
ORP by Electrode	E125	322452	1	20	5.0	5.0	✓
pH by Meter	E108	321985	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	315939	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	316759	2	27	7.4	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	320738	2	35	5.7	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	322063	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	320203	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	315915	1	11	9.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	321977	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	321987	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	327787	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	315940	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	315941	1	14	7.1	5.0	✓
Conductivity in Water	E100	321986	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	321662	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	323068	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	321661	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	322056	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	316044	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	315938	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	315942	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	315943	1	14	7.1	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	322452	1	20	5.0	5.0	✓
pH by Meter	E108	321985	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	315939	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	316759	2	27	7.4	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	320738	2	35	5.7	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	322063	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	320203	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	316755	1	3	33.3	5.0	✓
Turbidity by Nephelometry	E121	315915	1	11	9.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	321977	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	321987	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	327787	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	315940	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	315941	1	14	7.1	5.0	✓
Conductivity in Water	E100	321986	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	321662	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	323068	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	321661	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	322056	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	316044	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	315938	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	315942	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	315943	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	315939	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	316759	2	27	7.4	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	320738	2	35	5.7	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	322063	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	320203	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	316755	1	3	33.3	5.0	✓
Turbidity by Nephelometry	E121	315915	1	11	9.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	327787	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	315940	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	315941	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	321662	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	323068	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	321661	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	322056	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	316044	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	315938	1	14	7.1	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	315942	1	14	7.1	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	315943	1	14	7.1	5.0	✔
Sulfate in Water by IC	E235.SO4	315939	1	14	7.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	320738	2	35	5.7	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	322063	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	320203	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2104775**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 10/7/2021  
**Sampler** : cruz canlas  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Oct-2021 08:30  
**Date Analysis Commenced** : 09-Oct-2021  
**Issue Date** : 28-Oct-2021 16:44

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
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Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



Page : 2 of 14  
Work Order : CG2104775  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 315915)</b>											
CG2104775-001	FR_TBSSMW-1_QTR_202 1-07-05_N	turbidity	----	E121	0.10	NTU	0.29	0.30	0.008	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 316759)</b>											
CG2104732-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	216	213	1.40%	20%	----
<b>Physical Tests (QC Lot: 316760)</b>											
CG2104775-002	FR_TBSSMW-2_QTR_202 1-07-05_N	solids, total dissolved [TDS]	----	E162	20	mg/L	350	349	0.286%	20%	----
<b>Physical Tests (QC Lot: 321977)</b>											
CG2104775-001	FR_TBSSMW-1_QTR_202 1-07-05_N	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 321985)</b>											
CG2104773-016	Anonymous	pH	----	E108	0.10	pH units	7.98	8.01	0.375%	4%	----
<b>Physical Tests (QC Lot: 321986)</b>											
CG2104773-016	Anonymous	conductivity	----	E100	2.0	µS/cm	1740	1740	0.172%	10%	----
<b>Physical Tests (QC Lot: 321987)</b>											
CG2104773-016	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	366	362	1.15%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	366	362	1.15%	20%	----
<b>Physical Tests (QC Lot: 322452)</b>											
CG2104773-016	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	430	428	0.396%	15%	----
<b>Anions and Nutrients (QC Lot: 315938)</b>											
CG2104773-013	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315939)</b>											
CG2104773-013	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315940)</b>											
CG2104773-013	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315941)</b>											
CG2104773-013	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315942)</b>											
CG2104773-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 315943)</b>											
CG2104773-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 316044)</b>											
CG2104773-006	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 320203)</b>											
CG2104773-016	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0043	0.0038	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 320738)</b>											
CG2104745-007	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.055	0.084	0.029	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 321355)</b>											
CG2104775-002	FR_TBSSMW-2_QTR_202 1-07-05_N	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.180	0.193	0.013	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 327787)</b>											
CG2104775-001	FR_TBSSMW-1_QTR_202 1-07-05_N	ammonia, total (as N)	7664-41-7	E298	0.125	mg/L	3.80	3.58	5.90%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 322056)</b>											
CG2104773-016	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.70	0.72	0.02	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 322063)</b>											
CG2104769-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.53	<0.50	0.03	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 321661)</b>											
CG2104769-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0040	0.0038	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	0.00012	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0320	0.0324	1.16%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.018	0.018	0.0006	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.362 µg/L	0.000370	2.08%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	109	110	0.864%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.107	0.108	0.678%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.042	0.043	0.0003	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000336	0.000336	0.0000003	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0126	0.0129	2.42%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	52.3	51.7	1.21%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00863	0.00858	0.570%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00215	0.00212	1.26%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00083	0.00082	0.000004	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.61	1.60	0.236%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	5.91 µg/L	0.00606	2.52%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 321661) - continued</b>											
CG2104769-001	Anonymous	silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.34	4.39	0.986%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.91	7.74	2.17%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.362	0.351	2.97%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	95.4	96.3	1.01%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00198	0.00195	1.26%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0398	0.0401	0.623%	20%	----
<b>Dissolved Metals (QC Lot: 321662)</b>											
CG2104769-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 323068)</b>											
CG2104769-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 323069)</b>											
CG2104775-002	FR_TBSSMW-2_QTR_202 1-07-05_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 315915)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 316755)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 316759)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 316760)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 321977)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 321986)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 321987)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 315938)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 315939)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 315940)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 315941)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 315942)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 315943)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 316044)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 320203)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 320738)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 320738) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 321355)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 327787)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 322056)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 322063)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 321661)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 321661) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 321662)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 323068)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 323069)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low High		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 315915)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.4	85.0	115	---
<b>Physical Tests (QCLot: 316755)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	97.1	85.0	115	---
<b>Physical Tests (QCLot: 316759)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	97.3	85.0	115	---
<b>Physical Tests (QCLot: 316760)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	97.9	85.0	115	---
<b>Physical Tests (QCLot: 321977)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 321985)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 321986)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	---
<b>Physical Tests (QCLot: 321987)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	112	85.0	115	---
<b>Physical Tests (QCLot: 322452)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.9	95.4	104	---
<b>Anions and Nutrients (QCLot: 315938)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 315939)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 315940)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	96.3	85.0	115	---
<b>Anions and Nutrients (QCLot: 315941)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 315942)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 315943)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 316044)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	96.1	80.0	120	---
<b>Anions and Nutrients (QCLot: 320203)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 320203) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	99.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 320738)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	98.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 321355)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	96.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 327787)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 322056)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	92.4	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 322063)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 321661)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.2	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.3	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.7	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.4	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.8	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 321661) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	106	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.7	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	94.8	80.0	120	----
<b>Dissolved Metals (QCLot: 321662)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.4	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 315938)</b>										
CG2104773-013	Anonymous	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 315939)</b>										
CG2104773-013	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	100 mg/L	100 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 315940)</b>										
CG2104773-013	Anonymous	bromide	24959-67-9	E235.Br-L	0.486 mg/L	0.5 mg/L	97.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 315941)</b>										
CG2104773-013	Anonymous	chloride	16887-00-6	E235.Cl-L	100 mg/L	100 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 315942)</b>										
CG2104773-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.49 mg/L	2.5 mg/L	99.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 315943)</b>										
CG2104773-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.490 mg/L	0.5 mg/L	97.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 316044)</b>										
CG2104773-007	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0554 mg/L	0.05 mg/L	111	70.0	130	----
<b>Anions and Nutrients (QCLot: 320203)</b>										
CG2104773-017	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0631 mg/L	0.0676 mg/L	93.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 320738)</b>										
CG2104750-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.57 mg/L	2.5 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 321355)</b>										
CG2104779-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.62 mg/L	2.5 mg/L	105	70.0	130	----
<b>Anions and Nutrients (QCLot: 327787)</b>										
CG2104788-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0982 mg/L	0.1 mg/L	98.2	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 322056)</b>										
CG2104773-016	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.3 mg/L	23.9 mg/L	93.4	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 322063)</b>										
CG2104769-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.2 mg/L	23.9 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 321661)</b>										
CG2104769-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.200 mg/L	0.2 mg/L	99.9	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 321661) - continued</b>										
CG2104769-002	Anonymous	arsenic, dissolved	7440-38-2	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0385 mg/L	0.04 mg/L	96.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00851 mg/L	0.01 mg/L	85.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	87.9	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00396 mg/L	0.004 mg/L	99.1	70.0	130	----
		calcium, dissolved	7440-70-2	E421	3.70 mg/L	4 mg/L	92.5	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0929 mg/L	0.1 mg/L	92.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	0.978 mg/L	1 mg/L	97.8	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.88 mg/L	4 mg/L	96.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.47 mg/L	10 mg/L	94.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00375 mg/L	0.004 mg/L	93.7	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00370 mg/L	0.004 mg/L	92.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00385 mg/L	0.004 mg/L	96.2	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.385 mg/L	0.4 mg/L	96.3	70.0	130	----
<b>Dissolved Metals (QCLot: 321662)</b>										
CG2104769-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
<b>Dissolved Metals (QCLot: 323068)</b>										
CG2104769-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000973 mg/L	0.0001 mg/L	97.3	70.0	130	----
<b>Dissolved Metals (QCLot: 323069)</b>										
CG2104779-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000956 mg/L	0.0001 mg/L	95.6	70.0	130	----



# Teck

COC ID: 10/7/2021		TURNAROUND TIME:			RUSH:												
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO										
Facility Name / Job# Fording River Operation				Lab Name ALS Calgary			Report Format / Distribution										
Project Manager Scott Roughead				Lab Contact Lyudmyla Shvets			Email 1:	David Burroughs@teck.com	X	X	X						
Email scott.roughead@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com			Email 2:	scott.roughead@teck.com	X	X	X						
Address				Address 2559 29 Street NE			Email 3:	teckcoal@equilonline.com			X						
City Elkford				Province BC	City Calgary		Province AB	Email 4:	cruz.canlas@teck.com	X	X	X					
Postal Code				Country Canada	Postal Code T1Y 7B5		Country Canada	Email 5:	jamie.walsh@teck.com	X	X	X					
Phone Number 1-250-433-6976				Phone Number 403 407 1794			PO number		VPO00741392								
SAMPLE DETAILS						ANALYSIS REQUESTED											
Sample ID	Sample Location (sys_loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G-Grab C-Comp	# Of Cont.	ALS_BrCL-MET-D-VA	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-ROUTINE-VA					
FR_TBSSMW-1_QTR_2021-07-05_N	FR_TBSSMW-1	WG	NO	2021/10/06	2:11	G	5	1	1	1	1	1					
FR_TBSSMW-2_QTR_2021-07-05_N	FR_TBSSMW-2	WG	NO	2021/10/06	12:18	G	5	1	1	1	1	1					
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS			RELINQUISHED BY/AFFILIATION			DATE/TIME		ACCEPTED BY/AFFILIATION			DATE/TIME						
			Cruz Canlas			October 7, 2021		GT			Oct 8 8:30						
SERVICE REQUEST (rush - subject to availability)																	
Regular (default) x			Sampler's Name			cruz canlas			Mobile #			250 433 6166					
Priority (2-3 business days) - 50% surcharge			Sampler's Signature						Date/Time			October 7, 2021					
Emergency (1 Business Day) - 100% surcharge																	
For Emergency <1 Day, ASAP or Weekend - Contact ALS																	

Environmental Division  
Calgary

Work Order Reference  
**CG2104775**



Telephone : +1 403 407 1800

**GOC**



CERTIFICATE OF ANALYSIS

Work Order : CG2104847
Client : Teck Coal Limited
Contact : Scott Roughead
Address : PO BOX 100
ELKFORD BC Canada V0B 1H0
Telephone : ----
Project : FORDING RIVER OPERATIONS
PO : VPO00741392
C-O-C number : 10/12/2021
Sampler : cc
Site : ----
Quote number : Teck Coal Master Quote
No. of samples received : 4
No. of samples analysed : 4

Page : 1 of 5
Laboratory : Calgary - Environmental
Account Manager : Justine Buma-a
Address : 2559 29th Street NE
Calgary AB Canada T1Y 7B5
Telephone : +1 403 407 1800
Date Samples Received : 13-Oct-2021 09:00
Date Analysis Commenced : 13-Oct-2021
Issue Date : 28-Oct-2021 17:53

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Lists names like Elke Tabora, Erin Sanchez, Hannah Phung, etc., along with their roles and departments.



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.





## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					FR_STPNWWEL L4A_2021-10-1 1_NP	FR_STPNWWEL L3C_2021-10-1 1_NP	FR_MW_STPN W_2021-10-11_ NP	FR_MW13-41_2 021-10-11_NP	----
Client sampling date / time					11-Oct-2021 14:03	11-Oct-2021 14:55	11-Oct-2021 15:05	11-Oct-2021 11:27	----
Analyte	CAS Number	Method	LOR	Unit	CG2104847-001	CG2104847-002	CG2104847-003	CG2104847-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	8.7	8.4	<2.0	9.6	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	285	319	176	325	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	347	389	215	396	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	3.6	<1.0	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	2.2	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	285	319	180	325	----
conductivity	----	E100	2.0	µS/cm	1030	1030	310	1540	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	572	571	129	602	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	445	448	447	426	----
pH	----	E108	0.10	pH units	8.02	8.03	8.30	8.08	----
solids, total dissolved [TDS]	----	E162	10	mg/L	756	709	205	957	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.0	<1.0	1.6	4.8	----
turbidity	----	E121	0.10	NTU	2.16	1.80	1.77	0.34	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0088	<0.0050	0.165	11.3 <sup>RRV</sup>	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.050	0.464	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	8.89	16.9	4.27	122	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.165	0.120	0.127	0.133	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.458 <sup>TKNI</sup>	0.341 <sup>TKNI</sup>	0.199	8.99	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	5.23	9.03	<0.0050	32.8	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.110	<0.0050 <sup>DLDS</sup>	<0.0010	0.0180	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0053	0.0042	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0165	0.0085	0.0230	0.0081	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	298	234	<0.30	202	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	4.00	2.46 <sup>DTC,RRV</sup>	0.93 <sup>DTC,RRV</sup>	3.00	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.58	1.40 <sup>DTC,RRV</sup>	0.57 <sup>DTC,RRV</sup>	3.04	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_STPNWWEL L4A_2021-10-1 1_NP	FR_STPNWWEL L3C_2021-10-1 1_NP	FR_MW_STPN W_2021-10-11_ NP	FR_MW13-41_2 021-10-11_NP	----
Client sampling date / time					11-Oct-2021 14:03	11-Oct-2021 14:55	11-Oct-2021 15:05	11-Oct-2021 11:27	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104847-001 Result	CG2104847-002 Result	CG2104847-003 Result	CG2104847-004 Result	----- ----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	12.5	12.4	3.72	16.5	----	
cation sum	----	EC101	0.10	meq/L	11.9	11.8	3.52	16.8	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	95.2	95.2	94.6	102	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.46	2.48	2.76	0.901	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0029	0.0014	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00030	0.00015	<0.00010	0.00011	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	<0.00010	0.00045	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0691	0.140	0.632	0.205	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.024	0.022	0.024	0.036	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.121	0.105	<0.0050	2.16	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	129	146	33.0	147	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00028	<0.00010	0.00012	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.18	0.16	<0.10	4.34	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00086	0.00068	0.00035	0.00155	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.012	<0.010	0.357	0.034	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	0.000383	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0691	0.0470	0.0194	0.0465	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	60.7	50.2	11.4	57.0	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0354	0.00039	0.0510	1.41	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00164	0.000714	0.00162	0.00198	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00216	0.00097	<0.00050	0.00806	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.16	2.59	1.19	4.34	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	18.7	39.2	<0.050	1.14	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.14	3.04	3.14	3.60	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	8.64	6.96	20.3	87.3	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_STPNWWEL L4A_2021-10-1 1_NP	FR_STPNWWEL L3C_2021-10-1 1_NP	FR_MW_STPN W_2021-10-11_ NP	FR_MW13-41_2 021-10-11_NP	----
Client sampling date / time					11-Oct-2021 14:03	11-Oct-2021 14:55	11-Oct-2021 15:05	11-Oct-2021 11:27	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104847-001 Result	CG2104847-002 Result	CG2104847-003 Result	CG2104847-004 Result	----- ----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.209	0.262	0.297	0.286	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	112	84.1	<0.50	77.8	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000024	<0.000010	<0.000010	0.000081	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00405	0.00244	0.000064	0.00261	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0031	0.0033	0.0022	0.0243	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104847</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 13-Oct-2021 09:00
PO	: VPO00741392	Issue Date	: 28-Oct-2021 17:53
C-O-C number	: 10/12/2021		
Sampler	: cc		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW_STPNW_2021-10-11_NP	E298	11-Oct-2021	24-Oct-2021	----	----		24-Oct-2021	28 days	13 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW13-41_2021-10-11_NP	E298	11-Oct-2021	24-Oct-2021	----	----		24-Oct-2021	28 days	13 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_STPNWWELL3C_2021-10-11_NP	E298	11-Oct-2021	24-Oct-2021	----	----		24-Oct-2021	28 days	13 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_STPNWWELL4A_2021-10-11_NP	E298	11-Oct-2021	24-Oct-2021	----	----		24-Oct-2021	28 days	13 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW_STPNW_2021-10-11_NP	E235.Br-L	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW13-41_2021-10-11_NP	E235.Br-L	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_STPNWWELL3C_2021-10-11_NP	E235.Br-L	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_STPNWELL4A_2021-10-11_NP	E235.Br-L	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_MW_STPNW_2021-10-11_NP	E235.Cl-L	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_MW13-41_2021-10-11_NP	E235.Cl-L	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_STPNWELL3C_2021-10-11_NP	E235.Cl-L	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_STPNWELL4A_2021-10-11_NP	E235.Cl-L	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_MW_STPNW_2021-10-11_NP	E378-U	11-Oct-2021	----	----	----		13-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_MW13-41_2021-10-11_NP	E378-U	11-Oct-2021	----	----	----		13-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_STPNWELL3C_2021-10-11_NP	E378-U	11-Oct-2021	----	----	----		13-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_STPNWELL4A_2021-10-11_NP	E378-U	11-Oct-2021	----	----	----		13-Oct-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_MW_STPNW_2021-10-11_NP	E235.F	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_MW13-41_2021-10-11_NP	E235.F	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_STPNWWELL3C_2021-10-11_NP	E235.F	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_STPNWWELL4A_2021-10-11_NP	E235.F	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_MW_STPNW_2021-10-11_NP	E235.NO3-L	11-Oct-2021	----	----	----		14-Oct-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_MW13-41_2021-10-11_NP	E235.NO3-L	11-Oct-2021	----	----	----		14-Oct-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_STPNWWELL3C_2021-10-11_NP	E235.NO3-L	11-Oct-2021	----	----	----		14-Oct-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_STPNWWELL4A_2021-10-11_NP	E235.NO3-L	11-Oct-2021	----	----	----		14-Oct-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_MW_STPNW_2021-10-11_NP	E235.NO2-L	11-Oct-2021	----	----	----		14-Oct-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_MW13-41_2021-10-11_NP	E235.NO2-L	11-Oct-2021	----	----	----		14-Oct-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_STPNWELL3C_2021-10-11_NP	E235.NO2-L	11-Oct-2021	----	----	----		14-Oct-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_STPNWELL4A_2021-10-11_NP	E235.NO2-L	11-Oct-2021	----	----	----		14-Oct-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_MW_STPNW_2021-10-11_NP	E235.SO4	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_MW13-41_2021-10-11_NP	E235.SO4	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_STPNWELL3C_2021-10-11_NP	E235.SO4	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_STPNWELL4A_2021-10-11_NP	E235.SO4	11-Oct-2021	----	----	----		14-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
Amber glass total (sulfuric acid) FR_MW_STPNW_2021-10-11_NP	E318	11-Oct-2021	19-Oct-2021	----	----		20-Oct-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
Amber glass total (sulfuric acid) FR_MW13-41_2021-10-11_NP	E318	11-Oct-2021	19-Oct-2021	----	----		20-Oct-2021	28 days	9 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_STPNWWELL3C_2021-10-11_NP	E318	11-Oct-2021	19-Oct-2021	----	----		20-Oct-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_STPNWWELL4A_2021-10-11_NP	E318	11-Oct-2021	19-Oct-2021	----	----		20-Oct-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW_STPNW_2021-10-11_NP	E372-U	11-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW13-41_2021-10-11_NP	E372-U	11-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_STPNWWELL3C_2021-10-11_NP	E372-U	11-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_STPNWWELL4A_2021-10-11_NP	E372-U	11-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW_STPNW_2021-10-11_NP	E421.Cr-L	11-Oct-2021	18-Oct-2021	----	----		19-Oct-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW13-41_2021-10-11_NP	E421.Cr-L	11-Oct-2021	18-Oct-2021	----	----		19-Oct-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_STPNWWELL3C_2021-10-11_NP	E421.Cr-L	11-Oct-2021	18-Oct-2021	----	----		19-Oct-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_STPNWWELL4A_2021-10-11_NP	E421.Cr-L	11-Oct-2021	18-Oct-2021	----	----		19-Oct-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_MW_STPNW_2021-10-11_NP	E509	11-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_MW13-41_2021-10-11_NP	E509	11-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	9 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_STPNWWELL3C_2021-10-11_NP	E509	11-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	9 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_STPNWWELL4A_2021-10-11_NP	E509	11-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	9 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW_STPNW_2021-10-11_NP	E421	11-Oct-2021	18-Oct-2021	----	----		19-Oct-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW13-41_2021-10-11_NP	E421	11-Oct-2021	18-Oct-2021	----	----		19-Oct-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_STPNWWELL3C_2021-10-11_NP	E421	11-Oct-2021	18-Oct-2021	----	----		19-Oct-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_STPNWWELL4A_2021-10-11_NP	E421	11-Oct-2021	18-Oct-2021	----	----		19-Oct-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW_STPNW_2021-10-11_NP	E358-L	11-Oct-2021	19-Oct-2021	----	----		22-Oct-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW13-41_2021-10-11_NP	E358-L	11-Oct-2021	19-Oct-2021	----	----		22-Oct-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_STPNWELL4A_2021-10-11_NP	E358-L	11-Oct-2021	19-Oct-2021	----	----		22-Oct-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_STPNWELL3C_2021-10-11_NP	E358-L	11-Oct-2021	19-Oct-2021	----	----		23-Oct-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW_STPNW_2021-10-11_NP	E355-L	11-Oct-2021	19-Oct-2021	----	----		22-Oct-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW13-41_2021-10-11_NP	E355-L	11-Oct-2021	19-Oct-2021	----	----		22-Oct-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_STPNWELL3C_2021-10-11_NP	E355-L	11-Oct-2021	19-Oct-2021	----	----		22-Oct-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_STPNWELL4A_2021-10-11_NP	E355-L	11-Oct-2021	19-Oct-2021	----	----		22-Oct-2021	28 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_MW_STPNW_2021-10-11_NP	E283	11-Oct-2021	----	----	----		18-Oct-2021	14 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_MW13-41_2021-10-11_NP	E283	11-Oct-2021	----	----	----		18-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_STPNWELL3C_2021-10-11_NP	E283	11-Oct-2021	----	----	----		18-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_STPNWELL4A_2021-10-11_NP	E283	11-Oct-2021	----	----	----		18-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW_STPNW_2021-10-11_NP	E290	11-Oct-2021	----	----	----		18-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_MW13-41_2021-10-11_NP	E290	11-Oct-2021	----	----	----		18-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_STPNWELL3C_2021-10-11_NP	E290	11-Oct-2021	----	----	----		18-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_STPNWELL4A_2021-10-11_NP	E290	11-Oct-2021	----	----	----		18-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW_STPNW_2021-10-11_NP	E100	11-Oct-2021	----	----	----		18-Oct-2021	28 days	7 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW13-41_2021-10-11_NP	E100	11-Oct-2021	----	----	----		18-Oct-2021	28 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_STPNWELL3C_2021-10-11_NP	E100	11-Oct-2021	----	----	----		18-Oct-2021	28 days	7 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_STPNWELL4A_2021-10-11_NP	E100	11-Oct-2021	----	----	----		18-Oct-2021	28 days	7 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW_STPNW_2021-10-11_NP	E125	11-Oct-2021	----	----	----		20-Oct-2021	0.25 hrs	214 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_STPNWELL3C_2021-10-11_NP	E125	11-Oct-2021	----	----	----		20-Oct-2021	0.25 hrs	214 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_STPNWELL4A_2021-10-11_NP	E125	11-Oct-2021	----	----	----		20-Oct-2021	0.25 hrs	215 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW13-41_2021-10-11_NP	E125	11-Oct-2021	----	----	----		20-Oct-2021	0.25 hrs	218 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW_STPNW_2021-10-11_NP	E108	11-Oct-2021	----	----	----		18-Oct-2021	0.25 hrs	164 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_STPNWELL3C_2021-10-11_NP	E108	11-Oct-2021	----	----	----		18-Oct-2021	0.25 hrs	164 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_STPNWELL4A_2021-10-11_NP	E108	11-Oct-2021	----	----	----		18-Oct-2021	0.25 hrs	165 hrs		* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : pH by Meter</b>										
<b>HDPE</b> FR_MW13-41_2021-10-11_NP	E108	11-Oct-2021	----	----	----		18-Oct-2021	0.25 hrs	168 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> FR_MW_STPNW_2021-10-11_NP	E162	11-Oct-2021	----	----	----		15-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> FR_MW13-41_2021-10-11_NP	E162	11-Oct-2021	----	----	----		15-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> FR_STPNWELL3C_2021-10-11_NP	E162	11-Oct-2021	----	----	----		15-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> FR_STPNWELL4A_2021-10-11_NP	E162	11-Oct-2021	----	----	----		15-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_MW_STPNW_2021-10-11_NP	E160-L	11-Oct-2021	----	----	----		15-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_MW13-41_2021-10-11_NP	E160-L	11-Oct-2021	----	----	----		15-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_STPNWELL3C_2021-10-11_NP	E160-L	11-Oct-2021	----	----	----		15-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_STPNWELL4A_2021-10-11_NP	E160-L	11-Oct-2021	----	----	----		15-Oct-2021	7 days	4 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_MW_STPNW_2021-10-11_NP	E121	11-Oct-2021	----	----	----		14-Oct-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_MW13-41_2021-10-11_NP	E121	11-Oct-2021	----	----	----		14-Oct-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_STPNWWELL3C_2021-10-11_NP	E121	11-Oct-2021	----	----	----		14-Oct-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_STPNWWELL4A_2021-10-11_NP	E121	11-Oct-2021	----	----	----		14-Oct-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	322421	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	322365	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	328283	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	318978	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	318979	1	18	5.5	5.0	✓
Conductivity in Water	E100	322363	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	322954	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	324214	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	322955	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	323947	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	318679	1	4	25.0	5.0	✓
Fluoride in Water by IC	E235.F	318976	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	318980	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	318981	1	18	5.5	5.0	✓
ORP by Electrode	E125	323549	1	20	5.0	5.0	✓
pH by Meter	E108	322364	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	318977	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	320165	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	323198	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	323950	2	21	9.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	321720	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	319186	2	28	7.1	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	322421	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	322365	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	328283	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	318978	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	318979	1	18	5.5	5.0	✓
Conductivity in Water	E100	322363	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	322954	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	324214	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	322955	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	323947	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	318679	1	4	25.0	5.0	✓
Fluoride in Water by IC	E235.F	318976	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	318980	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	318981	1	18	5.5	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	323549	1	20	5.0	5.0	✓
pH by Meter	E108	322364	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	318977	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	320165	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	323198	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	323950	2	21	9.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	321720	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	320161	1	6	16.6	5.0	✓
Turbidity by Nephelometry	E121	319186	2	28	7.1	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	322421	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	322365	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	328283	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	318978	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	318979	1	18	5.5	5.0	✓
Conductivity in Water	E100	322363	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	322954	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	324214	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	322955	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	323947	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	318679	1	4	25.0	5.0	✓
Fluoride in Water by IC	E235.F	318976	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	318980	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	318981	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	318977	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	320165	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	323198	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	323950	2	21	9.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	321720	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	320161	1	6	16.6	5.0	✓
Turbidity by Nephelometry	E121	319186	2	28	7.1	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	328283	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	318978	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	318979	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	322954	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	324214	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	322955	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	323947	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	318679	1	4	25.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	318976	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	318980	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	318981	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	318977	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	323198	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	323950	2	21	9.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	321720	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2104847**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00741392  
**C-O-C number** : 10/12/2021  
**Sampler** : cc  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 13-Oct-2021 09:00  
**Date Analysis Commenced** : 13-Oct-2021  
**Issue Date** : 28-Oct-2021 17:53

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2104847  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 319186)</b>											
CG2104779-001	Anonymous	turbidity	----	E121	0.10	NTU	40.4	39.4	2.41%	15%	----
<b>Physical Tests (QC Lot: 319279)</b>											
CG2104828-010	Anonymous	turbidity	----	E121	0.10	NTU	3.27	3.25	0.490%	15%	----
<b>Physical Tests (QC Lot: 320165)</b>											
CG2104824-002	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	3820	3480	9.26%	20%	----
<b>Physical Tests (QC Lot: 322363)</b>											
CG2104828-013	Anonymous	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 322364)</b>											
CG2104828-013	Anonymous	pH	----	E108	0.10	pH units	4.65	4.79	0.14	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 322365)</b>											
CG2104828-013	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 322421)</b>											
CG2104842-008	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 323549)</b>											
CG2104844-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	455	458	0.569%	15%	----
<b>Anions and Nutrients (QC Lot: 318679)</b>											
CG2104847-001	FR_STPNWELL4A_2021-10-11_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0053	0.0055	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 318976)</b>											
CG2104779-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.557	0.550	1.19%	20%	----
<b>Anions and Nutrients (QC Lot: 318977)</b>											
CG2104779-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 318978)</b>											
CG2104779-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 318979)</b>											
CG2104779-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.17	0.19	0.02	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 318980)</b>											
CG2104779-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 318981)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 318981) - continued</b>											
CG2104779-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 321720)</b>											
CG2104842-007	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0022	<0.0020	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 323198)</b>											
CG2104840-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.101	0.124	0.023	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 328283)</b>											
CG2104846-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 323947)</b>											
CG2104846-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.88	1.03	0.15	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 323950)</b>											
CG2104842-006	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.56	1.49	0.07	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 323951)</b>											
CG2104847-004	FR_MW13-41_2021-10-11_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.04	3.14	0.10	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 322954)</b>											
CG2104846-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00014	0.00014	0.000009	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 322955)</b>											
CG2104846-001	Anonymous	copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00127	0.00119	0.00008	Diff <2x LOR	----
CG2104846-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0029	0.0028	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00033	0.00032	0.000004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0865	0.0871	0.715%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.010	0.010	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0364 µg/L	0.0000311	0.0000052	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	115	114	0.787%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.13 µg/L	0.00013	0.000001	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000051	0.000051	0.00000004	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0518	0.0508	2.10%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	50.2	51.4	2.19%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00227	0.00225	1.08%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00158	0.00158	0.182%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00578	0.00580	0.295%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.01	2.03	0.888%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 322955) - continued</b>											
CG2104846-001	Anonymous	selenium, dissolved	7782-49-2	E421	0.050	mg/L	61.7 µg/L	0.0616	0.122%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.79	1.76	2.04%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.07	2.05	1.23%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.174	0.171	1.84%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	90.6	91.4	0.853%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00320	0.00330	2.93%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0034	0.0034	0.00007	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 324214)</b>											
CG2104842-009	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 319186)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 319279)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 320161)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 320165)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 322363)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 322365)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 322421)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 318679)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 318976)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 318977)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 318978)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 318979)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 318980)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 318981)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 321720)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 323198)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 323198) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 328283)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 323947)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 323950)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 323951)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 322954)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 322955)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 322955) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 324214)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 319186)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.8	85.0	115	---
<b>Physical Tests (QCLot: 319279)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.4	85.0	115	---
<b>Physical Tests (QCLot: 320161)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	92.5	85.0	115	---
<b>Physical Tests (QCLot: 320165)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.8	85.0	115	---
<b>Physical Tests (QCLot: 322363)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.7	90.0	110	---
<b>Physical Tests (QCLot: 322364)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 322365)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 322421)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 323549)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 318679)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	95.0	80.0	120	---
<b>Anions and Nutrients (QCLot: 318976)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 318977)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 318978)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.2	85.0	115	---
<b>Anions and Nutrients (QCLot: 318979)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 318980)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 318981)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 321720)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		
						Low	High		
<b>Anions and Nutrients (QCLot: 321720) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	106	80.0	120	----
<b>Anions and Nutrients (QCLot: 323198)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	98.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 328283)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 323947)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	94.0	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 323950)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 323951)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	99.9	80.0	120	----
<b>Dissolved Metals (QCLot: 322954)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 322955)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.4	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	106	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.1	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 322955) - continued</b>									
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.1	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	110	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	94.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	110	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.2	80.0	120	----





## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 318679)</b>										
CG2104847-002	FR_STPNWVWELL3C_2021-10-11_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0545 mg/L	0.05 mg/L	109	70.0	130	----
<b>Anions and Nutrients (QCLot: 318976)</b>										
CG2104848-006	Anonymous	fluoride	16984-48-8	E235.F	1.03 mg/L	1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 318977)</b>										
CG2104848-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	124 mg/L	100 mg/L	124	75.0	125	----
<b>Anions and Nutrients (QCLot: 318978)</b>										
CG2104848-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.550 mg/L	0.5 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 318979)</b>										
CG2104848-006	Anonymous	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 318980)</b>										
CG2104848-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.70 mg/L	2.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 318981)</b>										
CG2104848-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.539 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 321720)</b>										
CG2104842-008	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0701 mg/L	0.0676 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 323198)</b>										
CG2104840-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.59 mg/L	2.5 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 328283)</b>										
CG2104846-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.119 mg/L	0.1 mg/L	119	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 323947)</b>										
CG2104846-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.6 mg/L	23.9 mg/L	98.6	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 323950)</b>										
CG2104842-006	Anonymous	carbon, total organic [TOC]	----	E355-L	24.4 mg/L	23.9 mg/L	102	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 323951)</b>										
CG2104847-004	FR_MW13-41_2021-10-11_NP	carbon, total organic [TOC]	----	E355-L	23.4 mg/L	23.9 mg/L	98.1	70.0	130	----
<b>Dissolved Metals (QCLot: 322954)</b>										
CG2104846-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0396 mg/L	0.04 mg/L	98.9	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 322955)</b>										
CG2104846-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.194 mg/L	0.2 mg/L	97.1	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00871 mg/L	0.01 mg/L	87.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.092 mg/L	0.1 mg/L	92.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00399 mg/L	0.004 mg/L	99.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	96.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0966 mg/L	0.1 mg/L	96.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0376 mg/L	0.04 mg/L	94.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.06 mg/L	4 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.16 mg/L	10 mg/L	91.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00384 mg/L	0.004 mg/L	95.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00385 mg/L	0.004 mg/L	96.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00396 mg/L	0.004 mg/L	99.1	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.398 mg/L	0.4 mg/L	99.5	70.0	130	----
<b>Dissolved Metals (QCLot: 324214)</b>										
CG2104842-010	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000981 mg/L	0.0001 mg/L	98.1	70.0	130	----







**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2104954**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 10/15/2021  
**Sampler** : Cruz Canlas  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 7  
**No. of samples analysed** : 7

**Page** : 1 of 8  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 16-Oct-2021 09:30  
**Date Analysis Commenced** : 17-Oct-2021  
**Issue Date** : 28-Oct-2021 19:06

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-01-A_QT R_2021-10-04_ N	FR_09-01-B_QT R_2021-10-04_ N	FR_09-02-A_QT R_2021-10-04_ N	FR_09-02-B_QT R_2021-10-04_ N	FR_FLD_QTR_2 021-10-04_N
Client sampling date / time					15-Oct-2021 13:30	15-Oct-2021 12:10	15-Oct-2021 10:38	15-Oct-2021 10:45	15-Oct-2021 10:38	
Analyte	CAS Number	Method	LOR	Unit	CG2104954-001 Result	CG2104954-002 Result	CG2104954-003 Result	CG2104954-004 Result	CG2104954-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	8.1	7.6	2.6	3.1	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	366	273	208	220	<1.0	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	446	333	253	269	<1.0	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	366	273	208	220	<1.0	
conductivity	----	E100	2.0	µS/cm	1510	1260	950	921	<2.0	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	926	788	546	510	<0.50	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	510	475	471	471	511	
pH	----	E108	0.10	pH units	8.05	7.89	8.04	8.20	4.62	
solids, total dissolved [TDS]	----	E162	10	mg/L	1220	1020	714	659	<10	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.7	7.5	1.2	<1.0	
turbidity	----	E121	0.10	NTU	<0.10	3.28	9.98	0.44	<0.10	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0050	0.0065	<0.0050	0.0053	<0.0050	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.49	2.46	1.68	2.06	<0.10	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLDS</sup>	0.153	0.142	0.159	<0.020	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	0.092 <sup>TKNI</sup>	0.102 <sup>TKNI</sup>	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	44.6	31.3	15.7	14.3	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0038	0.0035	0.0044	0.0037	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0065 <sup>DLM</sup>	0.0042	0.0126	0.0116 <sup>DLM</sup>	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	394	360	284	267	<0.30	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0.81	<0.50	<0.50	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	0.54	0.73	<0.50	<0.50	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-01-A_QT R_2021-10-04_ N	FR_09-01-B_QT R_2021-10-04_ N	FR_09-02-A_QT R_2021-10-04_ N	FR_09-02-B_QT R_2021-10-04_ N	FR_FLD_QTR_2 021-10-04_N
Client sampling date / time					15-Oct-2021 13:30	15-Oct-2021 12:10	15-Oct-2021 10:38	15-Oct-2021 10:45	15-Oct-2021 10:38	
Analyte	CAS Number	Method	LOR	Unit	CG2104954-001 Result	CG2104954-002 Result	CG2104954-003 Result	CG2104954-004 Result	CG2104954-005 Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	18.7	15.3	11.2	11.0	<0.10	
cation sum	----	EC101	0.10	meq/L	18.8	16.0	11.1	10.4	<0.10	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	104	99.1	94.5	100	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.267	2.24	0.448	2.80	<0.010	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0050	0.0010	0.0011	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00033	0.00016	0.00027	0.00018	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.100	0.122	0.156	0.154	<0.00010	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLM</sup>	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	0.022	0.015	0.016	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0523	0.0348	0.0255	0.0197	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	211	187	129	123	<0.050	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	<0.00010	0.00013	0.00016	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.13	<0.10	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00255	0.00026	<0.00020	0.00299	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000081	<0.000050	<0.000050	0.000100	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0982	0.0829	0.0453	0.0538	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	97.0	78.0	54.4	49.4	<0.0050	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.00011	<0.00010	<0.00010	<0.00010	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000680	0.00103	0.00130	0.00135	<0.000050	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00087	0.00077	<0.00050	0.00069	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.93	3.43	2.92	2.21	<0.050	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	178	117	64.7	47.7	<0.050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.61	2.38	2.27	2.16	<0.050	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.40	4.53	2.38	2.67	<0.050	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-01-A_QT R_2021-10-04_ N	FR_09-01-B_QT R_2021-10-04_ N	FR_09-02-A_QT R_2021-10-04_ N	FR_09-02-B_QT R_2021-10-04_ N	FR_FLD_QTR_2 021-10-04_N
Client sampling date / time					15-Oct-2021 13:30	15-Oct-2021 12:10	15-Oct-2021 10:38	15-Oct-2021 10:45	15-Oct-2021 10:38	
Analyte	CAS Number	Method	LOR	Unit	CG2104954-001 Result	CG2104954-002 Result	CG2104954-003 Result	CG2104954-004 Result	CG2104954-005 Result	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.242	0.230	0.167	0.190	<0.00020	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	140	125	103	90.5	<0.50	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00603	0.00616	0.00338	0.00341	<0.000010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0024	<0.0010	<0.0010	0.0023	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_TRP_QTR_2 021-10-04_N	FR_DC1_QTR_2 021-10-04_N	----	----	----
Client sampling date / time					15-Oct-2021 12:00	15-Oct-2021 12:10	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104954-006 Result	CG2104954-007 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	9.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	300	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	<1.0	366	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	300	----	----	----	
conductivity	----	E100	2.0	µS/cm	<2.0	1250	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	<0.50	808	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	476	470	----	----	----	
pH	----	E108	0.10	pH units	4.60	7.85	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	1050	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.1	----	----	----	
turbidity	----	E121	0.10	NTU	<0.10	2.78	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.250 <sup>DLDS</sup>	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	2.44	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	0.148	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050 <sup>TKNI</sup>	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0261 <sup>RRV</sup>	30.6	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0050 <sup>DLDS</sup>	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0036	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0042	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	359	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	15.7	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_TRP_QTR_2 021-10-04_N	FR_DC1_QTR_2 021-10-04_N	----	----	----
Client sampling date / time					15-Oct-2021 12:00	15-Oct-2021 12:10	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104954-006 Result	CG2104954-007 Result	-----	-----	-----	
<b>Ion Balance</b>										
cation sum	----	EC101	0.10	meq/L	<0.10	16.4	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100 <sup>RRV</sup>	104	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	2.18	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0061	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00018	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	0.134	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.021	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0291	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	183	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00012	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.15	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00388	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	0.000112	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	0.0822	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	85.2	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.00018	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	0.00105	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00078	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	3.65	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	121	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	2.43	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	4.97	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	0.237	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	132	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_TRP_QTR_2 021-10-04_N	FR_DC1_QTR_2 021-10-04_N	----	----	----
Client sampling date / time					15-Oct-2021 12:00	15-Oct-2021 12:10	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104954-006	CG2104954-007	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	0.00624	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0028	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104954</b>	Page	: 1 of 26
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 16-Oct-2021 09:30
PO	: VPO00741392	Issue Date	: 28-Oct-2021 19:06
C-O-C number	: 10/15/2021		
Sampler	: Cruz Canlas		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-01-A_QTR_2021-10-04_N	E298	15-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-01-B_QTR_2021-10-04_N	E298	15-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-02-A_QTR_2021-10-04_N	E298	15-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-02-B_QTR_2021-10-04_N	E298	15-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_QTR_2021-10-04_N	E298	15-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD_QTR_2021-10-04_N	E298	15-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP_QTR_2021-10-04_N	E298	15-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-01-A_QTR_2021-10-04_N	E235.Br-L	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-01-B_QTR_2021-10-04_N	E235.Br-L	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-02-A_QTR_2021-10-04_N	E235.Br-L	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-02-B_QTR_2021-10-04_N	E235.Br-L	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC1_QTR_2021-10-04_N	E235.Br-L	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_FLD_QTR_2021-10-04_N	E235.Br-L	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_TRP_QTR_2021-10-04_N	E235.Br-L	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-01-A_QTR_2021-10-04_N	E235.Cl-L	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-01-B_QTR_2021-10-04_N	E235.Cl-L	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_09-02-A_QTR_2021-10-04_N	E235.Cl-L	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_09-02-B_QTR_2021-10-04_N	E235.Cl-L	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_DC1_QTR_2021-10-04_N	E235.Cl-L	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_FLD_QTR_2021-10-04_N	E235.Cl-L	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_TRP_QTR_2021-10-04_N	E235.Cl-L	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_09-01-A_QTR_2021-10-04_N	E378-U	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_09-01-B_QTR_2021-10-04_N	E378-U	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_09-02-A_QTR_2021-10-04_N	E378-U	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_09-02-B_QTR_2021-10-04_N	E378-U	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_DC1_QTR_2021-10-04_N	E378-U	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_FLD_QTR_2021-10-04_N	E378-U	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_TRP_QTR_2021-10-04_N	E378-U	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_09-01-A_QTR_2021-10-04_N	E235.F	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_09-01-B_QTR_2021-10-04_N	E235.F	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_09-02-A_QTR_2021-10-04_N	E235.F	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_09-02-B_QTR_2021-10-04_N	E235.F	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_DC1_QTR_2021-10-04_N	E235.F	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_FLD_QTR_2021-10-04_N	E235.F	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_TRP_QTR_2021-10-04_N	E235.F	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-01-A_QTR_2021-10-04_N	E235.NO3-L	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-01-B_QTR_2021-10-04_N	E235.NO3-L	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-02-A_QTR_2021-10-04_N	E235.NO3-L	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-02-B_QTR_2021-10-04_N	E235.NO3-L	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC1_QTR_2021-10-04_N	E235.NO3-L	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_FLD_QTR_2021-10-04_N	E235.NO3-L	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_TRP_QTR_2021-10-04_N	E235.NO3-L	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-01-A_QTR_2021-10-04_N	E235.NO2-L	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_09-01-B_QTR_2021-10-04_N	E235.NO2-L	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_09-02-A_QTR_2021-10-04_N	E235.NO2-L	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_09-02-B_QTR_2021-10-04_N	E235.NO2-L	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_DC1_QTR_2021-10-04_N	E235.NO2-L	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_FLD_QTR_2021-10-04_N	E235.NO2-L	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_TRP_QTR_2021-10-04_N	E235.NO2-L	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_09-01-A_QTR_2021-10-04_N	E235.SO4	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_09-01-B_QTR_2021-10-04_N	E235.SO4	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_09-02-A_QTR_2021-10-04_N	E235.SO4	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_09-02-B_QTR_2021-10-04_N	E235.SO4	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_DC1_QTR_2021-10-04_N	E235.SO4	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_FLD_QTR_2021-10-04_N	E235.SO4	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_TRP_QTR_2021-10-04_N	E235.SO4	15-Oct-2021	----	----	----		17-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-01-A_QTR_2021-10-04_N	E318	15-Oct-2021	21-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-01-B_QTR_2021-10-04_N	E318	15-Oct-2021	21-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-02-A_QTR_2021-10-04_N	E318	15-Oct-2021	21-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-02-B_QTR_2021-10-04_N	E318	15-Oct-2021	21-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_QTR_2021-10-04_N	E318	15-Oct-2021	21-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD_QTR_2021-10-04_N	E318	15-Oct-2021	21-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP_QTR_2021-10-04_N	E318	15-Oct-2021	21-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-01-A_QTR_2021-10-04_N	E372-U	15-Oct-2021	22-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-01-B_QTR_2021-10-04_N	E372-U	15-Oct-2021	22-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-02-A_QTR_2021-10-04_N	E372-U	15-Oct-2021	22-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-02-B_QTR_2021-10-04_N	E372-U	15-Oct-2021	22-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_QTR_2021-10-04_N	E372-U	15-Oct-2021	22-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD_QTR_2021-10-04_N	E372-U	15-Oct-2021	22-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP_QTR_2021-10-04_N	E372-U	15-Oct-2021	22-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-01-A_QTR_2021-10-04_N	E421.Cr-L	15-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-01-B_QTR_2021-10-04_N	E421.Cr-L	15-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-02-A_QTR_2021-10-04_N	E421.Cr-L	15-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-02-B_QTR_2021-10-04_N	E421.Cr-L	15-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC1_QTR_2021-10-04_N	E421.Cr-L	15-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FLD_QTR_2021-10-04_N	E421.Cr-L	15-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TRP_QTR_2021-10-04_N	E421.Cr-L	15-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_09-01-A_QTR_2021-10-04_N	E509	15-Oct-2021	22-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_09-01-B_QTR_2021-10-04_N	E509	15-Oct-2021	22-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_09-02-A_QTR_2021-10-04_N	E509	15-Oct-2021	22-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_09-02-B_QTR_2021-10-04_N	E509	15-Oct-2021	22-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_DC1_QTR_2021-10-04_N	E509	15-Oct-2021	22-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_FLD_QTR_2021-10-04_N	E509	15-Oct-2021	22-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_TRP_QTR_2021-10-04_N	E509	15-Oct-2021	22-Oct-2021	----	----		22-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-01-A_QTR_2021-10-04_N	E421	15-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-01-B_QTR_2021-10-04_N	E421	15-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-02-A_QTR_2021-10-04_N	E421	15-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-02-B_QTR_2021-10-04_N	E421	15-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC1_QTR_2021-10-04_N	E421	15-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FLD_QTR_2021-10-04_N	E421	15-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TRP_QTR_2021-10-04_N	E421	15-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-01-A_QTR_2021-10-04_N	E358-L	15-Oct-2021	24-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-01-B_QTR_2021-10-04_N	E358-L	15-Oct-2021	24-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-02-A_QTR_2021-10-04_N	E358-L	15-Oct-2021	24-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-02-B_QTR_2021-10-04_N	E358-L	15-Oct-2021	24-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_DC1_QTR_2021-10-04_N	E358-L	15-Oct-2021	24-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_FLD_QTR_2021-10-04_N	E358-L	15-Oct-2021	24-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_TRP_QTR_2021-10-04_N	E358-L	15-Oct-2021	24-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-01-A_QTR_2021-10-04_N	E355-L	15-Oct-2021	24-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-01-B_QTR_2021-10-04_N	E355-L	15-Oct-2021	24-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-02-A_QTR_2021-10-04_N	E355-L	15-Oct-2021	24-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-02-B_QTR_2021-10-04_N	E355-L	15-Oct-2021	24-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_QTR_2021-10-04_N	E355-L	15-Oct-2021	24-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD_QTR_2021-10-04_N	E355-L	15-Oct-2021	24-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP_QTR_2021-10-04_N	E355-L	15-Oct-2021	24-Oct-2021	----	----		25-Oct-2021	28 days	10 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_09-01-A_QTR_2021-10-04_N	E283	15-Oct-2021	----	----	----		24-Oct-2021	14 days	9 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_09-01-B_QTR_2021-10-04_N	E283	15-Oct-2021	----	----	----		24-Oct-2021	14 days	9 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_09-02-A_QTR_2021-10-04_N	E283	15-Oct-2021	----	----	----		24-Oct-2021	14 days	9 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_09-02-B_QTR_2021-10-04_N	E283	15-Oct-2021	----	----	----		24-Oct-2021	14 days	9 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_DC1_QTR_2021-10-04_N	E283	15-Oct-2021	----	----	----		24-Oct-2021	14 days	9 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_FLD_QTR_2021-10-04_N	E283	15-Oct-2021	----	----	----		24-Oct-2021	14 days	9 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_TRP_QTR_2021-10-04_N	E283	15-Oct-2021	----	----	----		24-Oct-2021	14 days	9 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_09-01-A_QTR_2021-10-04_N	E290	15-Oct-2021	----	----	----		20-Oct-2021	14 days	5 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_09-01-B_QTR_2021-10-04_N	E290	15-Oct-2021	----	----	----		20-Oct-2021	14 days	5 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_09-02-A_QTR_2021-10-04_N	E290	15-Oct-2021	----	----	----		20-Oct-2021	14 days	5 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_09-02-B_QTR_2021-10-04_N	E290	15-Oct-2021	----	----	----		20-Oct-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_DC1_QTR_2021-10-04_N	E290	15-Oct-2021	----	----	----		20-Oct-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_FLD_QTR_2021-10-04_N	E290	15-Oct-2021	----	----	----		20-Oct-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_TRP_QTR_2021-10-04_N	E290	15-Oct-2021	----	----	----		20-Oct-2021	14 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_09-01-A_QTR_2021-10-04_N	E100	15-Oct-2021	----	----	----		20-Oct-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_09-01-B_QTR_2021-10-04_N	E100	15-Oct-2021	----	----	----		20-Oct-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_09-02-A_QTR_2021-10-04_N	E100	15-Oct-2021	----	----	----		20-Oct-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_09-02-B_QTR_2021-10-04_N	E100	15-Oct-2021	----	----	----		20-Oct-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_DC1_QTR_2021-10-04_N	E100	15-Oct-2021	----	----	----		20-Oct-2021	28 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_FLD_QTR_2021-10-04_N	E100	15-Oct-2021	----	----	----		20-Oct-2021	28 days	5 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_TRP_QTR_2021-10-04_N	E100	15-Oct-2021	----	----	----		20-Oct-2021	28 days	5 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_09-01-A_QTR_2021-10-04_N	E125	15-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	239 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_09-01-B_QTR_2021-10-04_N	E125	15-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	240 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_DC1_QTR_2021-10-04_N	E125	15-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	240 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_TRP_QTR_2021-10-04_N	E125	15-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	241 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_09-02-A_QTR_2021-10-04_N	E125	15-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	242 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_09-02-B_QTR_2021-10-04_N	E125	15-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	242 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_FLD_QTR_2021-10-04_N	E125	15-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	242 hrs		* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : pH by Meter</b>										
HDPE FR_09-01-A_QTR_2021-10-04_N	E108	15-Oct-2021	----	----	----		20-Oct-2021	0.25 hrs	119 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_09-01-B_QTR_2021-10-04_N	E108	15-Oct-2021	----	----	----		20-Oct-2021	0.25 hrs	120 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_DC1_QTR_2021-10-04_N	E108	15-Oct-2021	----	----	----		20-Oct-2021	0.25 hrs	120 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_TRP_QTR_2021-10-04_N	E108	15-Oct-2021	----	----	----		20-Oct-2021	0.25 hrs	120 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_09-02-B_QTR_2021-10-04_N	E108	15-Oct-2021	----	----	----		20-Oct-2021	0.25 hrs	121 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_09-02-A_QTR_2021-10-04_N	E108	15-Oct-2021	----	----	----		20-Oct-2021	0.25 hrs	122 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_FLD_QTR_2021-10-04_N	E108	15-Oct-2021	----	----	----		20-Oct-2021	0.25 hrs	122 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_09-01-A_QTR_2021-10-04_N	E162	15-Oct-2021	----	----	----		20-Oct-2021	7 days	5 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_09-01-B_QTR_2021-10-04_N	E162	15-Oct-2021	----	----	----		20-Oct-2021	7 days	5 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_09-02-A_QTR_2021-10-04_N	E162	15-Oct-2021	----	----	----		20-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_09-02-B_QTR_2021-10-04_N	E162	15-Oct-2021	----	----	----		20-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_DC1_QTR_2021-10-04_N	E162	15-Oct-2021	----	----	----		20-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_FLD_QTR_2021-10-04_N	E162	15-Oct-2021	----	----	----		20-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_TRP_QTR_2021-10-04_N	E162	15-Oct-2021	----	----	----		20-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_09-01-A_QTR_2021-10-04_N	E160-L	15-Oct-2021	----	----	----		20-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_09-01-B_QTR_2021-10-04_N	E160-L	15-Oct-2021	----	----	----		20-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_09-02-A_QTR_2021-10-04_N	E160-L	15-Oct-2021	----	----	----		20-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_09-02-B_QTR_2021-10-04_N	E160-L	15-Oct-2021	----	----	----		20-Oct-2021	7 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_DC1_QTR_2021-10-04_N	E160-L	15-Oct-2021	----	----	----		20-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_FLD_QTR_2021-10-04_N	E160-L	15-Oct-2021	----	----	----		20-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_TRP_QTR_2021-10-04_N	E160-L	15-Oct-2021	----	----	----		20-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_09-01-A_QTR_2021-10-04_N	E121	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_09-01-B_QTR_2021-10-04_N	E121	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_09-02-A_QTR_2021-10-04_N	E121	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_09-02-B_QTR_2021-10-04_N	E121	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_DC1_QTR_2021-10-04_N	E121	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_FLD_QTR_2021-10-04_N	E121	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_TRP_QTR_2021-10-04_N	E121	15-Oct-2021	----	----	----		17-Oct-2021	3 days	2 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	328475	2	40	5.0	5.0	✓
Alkalinity Species by Titration	E290	324617	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	328959	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	321735	1	7	14.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	321736	1	7	14.2	5.0	✓
Conductivity in Water	E100	324616	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	324674	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	326489	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	324675	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	328457	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	321733	1	7	14.2	5.0	✓
Fluoride in Water by IC	E235.F	321739	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	321737	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	321738	1	7	14.2	5.0	✓
ORP by Electrode	E125	328516	2	40	5.0	5.0	✓
pH by Meter	E108	324615	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	321734	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	324257	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	325419	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	328467	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	325354	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	321791	1	16	6.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	328475	2	40	5.0	5.0	✓
Alkalinity Species by Titration	E290	324617	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	328959	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	321735	1	7	14.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	321736	1	7	14.2	5.0	✓
Conductivity in Water	E100	324616	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	324674	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	326489	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	324675	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	328457	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	321733	1	7	14.2	5.0	✓
Fluoride in Water by IC	E235.F	321739	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	321737	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	321738	1	7	14.2	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	328516	2	40	5.0	5.0	✔
pH by Meter	E108	324615	2	40	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	321734	1	7	14.2	5.0	✔
TDS by Gravimetry	E162	324257	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	325419	1	18	5.5	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	328467	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	325354	2	40	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	324252	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	321791	1	16	6.2	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	328475	2	40	5.0	5.0	✔
Alkalinity Species by Titration	E290	324617	2	40	5.0	5.0	✔
Ammonia by Fluorescence	E298	328959	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	321735	1	7	14.2	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	321736	1	7	14.2	5.0	✔
Conductivity in Water	E100	324616	2	40	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	324674	1	13	7.6	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	326489	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	324675	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	328457	2	40	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	321733	1	7	14.2	5.0	✔
Fluoride in Water by IC	E235.F	321739	1	7	14.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	321737	1	7	14.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	321738	1	7	14.2	5.0	✔
Sulfate in Water by IC	E235.SO4	321734	1	7	14.2	5.0	✔
TDS by Gravimetry	E162	324257	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	325419	1	18	5.5	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	328467	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	325354	2	40	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	324252	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	321791	1	16	6.2	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	328959	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	321735	1	7	14.2	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	321736	1	7	14.2	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	324674	1	13	7.6	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	326489	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	324675	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	328457	1	40	2.5	5.0	✖
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	321733	1	7	14.2	5.0	✔



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	321739	1	7	14.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	321737	1	7	14.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	321738	1	7	14.2	5.0	✔
Sulfate in Water by IC	E235.SO4	321734	1	7	14.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	325419	1	18	5.5	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	328467	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	325354	2	40	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2104954**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 10/15/2021  
**Sampler** : Cruz Canlas  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 7  
**No. of samples analysed** : 7

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 16-Oct-2021 09:30  
**Date Analysis Commenced** : 17-Oct-2021  
**Issue Date** : 28-Oct-2021 19:06

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
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Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2104954  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 321791)</b>											
CG2104954-001	FR_09-01-A_QTR_2021-10-04_N	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 324257)</b>											
CG2104953-016	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1560	1520	2.27%	20%	----
<b>Physical Tests (QC Lot: 324615)</b>											
CG2104953-001	Anonymous	pH	----	E108	0.10	pH units	8.02	8.07	0.622%	4%	----
<b>Physical Tests (QC Lot: 324616)</b>											
CG2104953-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2130	1950	8.82%	10%	----
<b>Physical Tests (QC Lot: 324617)</b>											
CG2104953-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	543	606	11.0%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	543	606	11.0%	20%	----
<b>Physical Tests (QC Lot: 324618)</b>											
CG2104954-003	FR_09-02-A_QTR_2021-10-04_N	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	208	206	0.774%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	208	206	0.774%	20%	----
<b>Physical Tests (QC Lot: 324619)</b>											
CG2104954-003	FR_09-02-A_QTR_2021-10-04_N	pH	----	E108	0.10	pH units	8.04	8.05	0.124%	4%	----
<b>Physical Tests (QC Lot: 324620)</b>											
CG2104954-003	FR_09-02-A_QTR_2021-10-04_N	conductivity	----	E100	2.0	µS/cm	950	953	0.315%	10%	----
<b>Physical Tests (QC Lot: 328475)</b>											
CG2104953-001	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	30.6	24.9	5.7	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 328476)</b>											
CG2104954-003	FR_09-02-A_QTR_2021-10-04_N	acidity (as CaCO3)	----	E283	2.0	mg/L	2.6	2.2	0.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 328516)</b>											
CG2104953-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	431	429	0.512%	15%	----
<b>Physical Tests (QC Lot: 328517)</b>											
CG2104954-003	FR_09-02-A_QTR_2021-10-04_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	471	469	0.447%	15%	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 321733)</b>											
CG2104954-001	FR_09-01-A_QTR_2021-10-04_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0038	0.0038	0.00002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 321734)</b>											
CG2104954-001	FR_09-01-A_QTR_2021-10-04_N	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	394	396	0.574%	20%	----
<b>Anions and Nutrients (QC Lot: 321735)</b>											
CG2104954-001	FR_09-01-A_QTR_2021-10-04_N	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 321736)</b>											
CG2104954-001	FR_09-01-A_QTR_2021-10-04_N	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.49	1.17	0.32	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 321737)</b>											
CG2104954-001	FR_09-01-A_QTR_2021-10-04_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	44.6	44.8	0.524%	20%	----
<b>Anions and Nutrients (QC Lot: 321738)</b>											
CG2104954-001	FR_09-01-A_QTR_2021-10-04_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 321739)</b>											
CG2104954-001	FR_09-01-A_QTR_2021-10-04_N	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325354)</b>											
CG2104953-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325355)</b>											
CG2104954-003	FR_09-02-A_QTR_2021-10-04_N	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0126	0.0119	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325419)</b>											
CG2104954-001	FR_09-01-A_QTR_2021-10-04_N	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 328959)</b>											
CG2104953-008	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.184	0.184	0.218%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 328458)</b>											
CG2104954-003	FR_09-02-A_QTR_2021-10-04_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.81	0.93	0.12	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 328467)</b>											
CG2104954-001	FR_09-01-A_QTR_2021-10-04_N	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 324674)</b>											
CG2104954-001	FR_09-01-A_QTR_2021-10-04_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	0.00012	0.0000009	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 324675)</b>											
CG2104954-001	FR_09-01-A_QTR_2021-10-04_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 324675) - continued</b>											
CG2104954-001	FR_09-01-A_QTR_2021-10-04_N	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00033	0.00032	0.000010	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.100	0.110	9.48%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	0.026	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0523 µg/L	0.0000478	9.16%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	211	218	3.33%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00255	0.00268	4.81%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000081	0.000080	0.000002	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0982	0.103	5.05%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	97.0	101	4.55%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000680	0.000712	4.67%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00087	0.00093	0.00006	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.93	4.11	4.42%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	178 µg/L	0.185	3.77%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.61	2.62	0.384%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.40	5.65	4.44%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.242	0.238	1.61%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	140	143	2.52%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00603	0.00593	1.63%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0024	0.0024	0.00003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 326489)</b>											
CG2104953-013	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 321791)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 324252)</b>						
solids, total suspended [TSS]	---	E160-L	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 324257)</b>						
solids, total dissolved [TDS]	---	E162	10	mg/L	<10	---
<b>Physical Tests (QCLot: 324616)</b>						
conductivity	---	E100	1	µS/cm	<1.0	---
<b>Physical Tests (QCLot: 324617)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, carbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, hydroxide (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 324618)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, carbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, hydroxide (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 324620)</b>						
conductivity	---	E100	1	µS/cm	<1.0	---
<b>Physical Tests (QCLot: 328475)</b>						
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	<2.0	---
<b>Physical Tests (QCLot: 328476)</b>						
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	<2.0	---
<b>Anions and Nutrients (QCLot: 321733)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 321734)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 321735)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 321736)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 321737)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 321738)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 321739)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 325354)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 325355)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 325419)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 328959)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 328457)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 328458)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 328467)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 324674)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 324675)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 324675) - continued</b>						
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 326489)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 321791)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	103	85.0	115	---
<b>Physical Tests (QCLot: 324252)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	91.2	85.0	115	---
<b>Physical Tests (QCLot: 324257)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	98.4	85.0	115	---
<b>Physical Tests (QCLot: 324615)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 324616)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	---
<b>Physical Tests (QCLot: 324617)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 324618)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 324619)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 324620)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	---
<b>Physical Tests (QCLot: 328475)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 328476)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 328516)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.4	95.4	104	---
<b>Physical Tests (QCLot: 328517)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.5	95.4	104	---
<b>Anions and Nutrients (QCLot: 321733)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	95.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 321734)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 321735)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	106	85.0	115	---
<b>Anions and Nutrients (QCLot: 321736)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		
						Low	High		
<b>Anions and Nutrients (QCLot: 321736) - continued</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 321737)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	105	90.0	110	----
<b>Anions and Nutrients (QCLot: 321738)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	105	90.0	110	----
<b>Anions and Nutrients (QCLot: 321739)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 325354)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	94.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 325355)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 325419)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	95.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 328959)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 328457)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	99.3	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 328458)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 328467)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Dissolved Metals (QCLot: 324674)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
<b>Dissolved Metals (QCLot: 324675)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.4	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.0	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 324675) - continued</b>									
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	94.5	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.2	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.5	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.4	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	96.9	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.5	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	91.2	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	97.8	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	84.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.9	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	89.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.6	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 321733)</b>										
CG2104954-002	FR_09-01-B_QTR_2021-10-04_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0595 mg/L	0.05 mg/L	119	70.0	130	----
<b>Anions and Nutrients (QCLot: 321734)</b>										
CG2104954-006	FR_TRP_QTR_2021-10-04_N	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 321735)</b>										
CG2104954-006	FR_TRP_QTR_2021-10-04_N	bromide	24959-67-9	E235.Br-L	0.538 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 321736)</b>										
CG2104954-006	FR_TRP_QTR_2021-10-04_N	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 321737)</b>										
CG2104954-006	FR_TRP_QTR_2021-10-04_N	nitrate (as N)	14797-55-8	E235.NO3-L	2.64 mg/L	2.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 321738)</b>										
CG2104954-006	FR_TRP_QTR_2021-10-04_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.527 mg/L	0.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 321739)</b>										
CG2104954-006	FR_TRP_QTR_2021-10-04_N	fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 325354)</b>										
CG2104953-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0628 mg/L	0.0676 mg/L	92.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 325355)</b>										
CG2104954-004	FR_09-02-B_QTR_2021-10-04_N	phosphorus, total	7723-14-0	E372-U	0.0608 mg/L	0.0676 mg/L	90.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 325419)</b>										
CG2104954-002	FR_09-01-B_QTR_2021-10-04_N	Kjeldahl nitrogen, total [TKN]	----	E318	2.14 mg/L	2.5 mg/L	85.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 328959)</b>										
CG2104953-012	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.115 mg/L	0.1 mg/L	115	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 328458)</b>										
CG2104954-003	FR_09-02-A_QTR_2021-10-04_N	carbon, dissolved organic [DOC]	----	E358-L	25.2 mg/L	23.9 mg/L	105	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Organic / Inorganic Carbon (QCLot: 328467)</b>										
CG2104954-001	FR_09-01-A_QTR_2021-10-04_N	carbon, total organic [TOC]	----	E355-L	25.3 mg/L	23.9 mg/L	106	70.0	130	----
<b>Dissolved Metals (QCLot: 324674)</b>										
CG2104954-002	FR_09-01-B_QTR_2021-10-04_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
<b>Dissolved Metals (QCLot: 324675)</b>										
CG2104954-002	FR_09-01-B_QTR_2021-10-04_N	aluminum, dissolved	7429-90-5	E421	0.187 mg/L	0.2 mg/L	93.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0213 mg/L	0.02 mg/L	107	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0178 mg/L	0.02 mg/L	88.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.089 mg/L	0.1 mg/L	89.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00379 mg/L	0.004 mg/L	94.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0180 mg/L	0.02 mg/L	89.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0173 mg/L	0.02 mg/L	86.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.83 mg/L	2 mg/L	91.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0176 mg/L	0.02 mg/L	88.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0955 mg/L	0.1 mg/L	95.5	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0177 mg/L	0.02 mg/L	88.4	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0353 mg/L	0.04 mg/L	88.2	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.84 mg/L	4 mg/L	96.1	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.81 mg/L	10 mg/L	88.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00382 mg/L	0.004 mg/L	95.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00351 mg/L	0.004 mg/L	87.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0360 mg/L	0.04 mg/L	89.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0982 mg/L	0.1 mg/L	98.2	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.373 mg/L	0.4 mg/L	93.3	70.0	130	----

Page : 14 of 14  
 Work Order : CG2104954  
 Client : Teck Coal Limited  
 Project : FORDING RIVER OPERATION



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 326489)</b>										
CG2104953-014	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000912 mg/L	0.0001 mg/L	91.2	70.0	130	----

# Teck

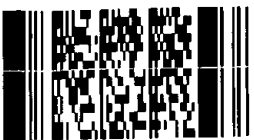
COC ID: **10/15/2021**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution				
Project Manager	Scott Roughead			Lab Contact	Lyudnyla Shvets			Email 1:	david.burroughs@teck.com	Excel	PDF	EDD
Email	scott.roughead@teck.com			Email	Lyudnyla Shvets@ALSGlobal.com			Email 2:	scott.roughead@teck.com	X	X	X
Address				Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elford	Province	BC	City	Calgary	Province	AB	Email 4:	cruz.canlas@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	jamie.walsh@teck.com	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00741392			

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered: F: Field; L: Lab; FL: Field & Lab; N: None					
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_BrCL-MET-D-VA	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-ROUTINE-VA						
FR_09-01-A_QTR_2021-10-04_N	FR_09-01-A	WG		15-Oct	13:30	G	5	1	1	1	1	1						
FR_09-01-B_QTR_2021-10-04_N	FR_09-01-B	WG		15-Oct	12:10	G	5	1	1	1	1	1						
FR_09-02-A_QTR_2021-10-04_N	FR_09-02-A	WG		15-Oct	10:38	G	5	1	1	1	1	1						
FR_09-02-B_QTR_2021-10-04_N	FR_09-02-B	WG		15-Oct	10:45	G	5	1	1	1	1	1						
FR_FLD_QTR_2021-10-04_N	FR_FLD	WG		15-Oct	10:38	G	5	1	1	1	1	1						
FR_TRP_QTR_2021-10-04_N	FR_TRP	WG		15-Oct	12:00	G	5	1	1	1	1	1						
FR_DC1_QTR_2021-10-04_N	FR_DC1	WG		15-Oct	12:10	G	5	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELIQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Environmental Division Calgary Work Order Reference <b>CG2104954</b>	Cruz Canlas	October 15, 2021		10/15/21 9:30

to availability)				
Regular (default) x	Sampler's Name	Cruz Canlas	Mobile #	250 433 6166
business days) - 50% surcharge business Day) - 100% surcharge	Sampler's Signature		Date/Time	October 15, 2021
AP or Weekend - Contact ALS				



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105048**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 10/19/2021  
**Sampler** : CRUZ CANLAS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Oct-2021 09:00  
**Date Analysis Commenced** : 20-Oct-2021  
**Issue Date** : 28-Oct-2021 20:52

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW3_QTR _2021-10-18_N	FR_SKP2H_MO N_2021-10-18_ N	FR_EC1H_MON _2021-10-18_N	----	----
Client sampling date / time					18-Oct-2021 13:10	18-Oct-2021 10:30	18-Oct-2021 10:53	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105048-001 Result	CG2105048-002 Result	CG2105048-003 Result	----- ---	----- ---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	4.3	9.3	6.8	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	215	299	355	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	262	365	433	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	215	299	355	----	----	
conductivity	----	E100	2.0	µS/cm	877	1350	3030	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	525	859	2290	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	494	454	458	----	----	
pH	----	E108	0.10	pH units	8.12	8.00	8.18	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	696	1090	3010	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.3	1.7	3.7	----	----	
turbidity	----	E121	0.10	NTU	1.49	0.25	1.21	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.121	0.0078	0.0271	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.80	1.10	12.9	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.337	0.256	<0.100 <sup>DLDS</sup>	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.470 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	0.202 <sup>TKNI</sup>	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	8.43	42.2	36.0	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0076	0.0086	0.0628	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0065	0.0018	0.0028	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0073	0.0036	0.0092	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	279	374	1690	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.12	1.03	2.78	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.30	0.98	4.88	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW3_QTR _2021-10-18_N	FR_SKP2H_MO N_2021-10-18_ N	FR_EC1H_MON _2021-10-18_N	----	----
Client sampling date / time					18-Oct-2021 13:10	18-Oct-2021 10:30	18-Oct-2021 10:53	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105048-001 Result	CG2105048-002 Result	CG2105048-003 Result	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	10.7	16.8	45.2	----	----	
cation sum	----	EC101	0.10	meq/L	10.6	17.5	46.7	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	99.1	104	103	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.469	2.04	1.63	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	----	0.0142	0.0247	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	----	0.00040	0.00059	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	----	<0.00010	0.00022	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	----	0.0373	0.0154	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	----	<0.020	<0.040 <sup>DLA</sup>	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	----	<0.000050	<0.000100 <sup>DLA</sup>	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	----	0.021	0.038	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	----	0.486	0.0335	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	----	193	322	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	----	<0.00010	<0.00020 <sup>DLA</sup>	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	----	0.11	<0.20 <sup>DLA</sup>	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	----	0.00083	0.00137	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	----	0.031	0.053	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	----	0.000061	<0.000100 <sup>DLA</sup>	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	----	0.106	0.146	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	----	84.9	351	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	----	0.00160	0.00210	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	----	<0.00050	<0.00050	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	----	0.00135	0.00286	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	----	0.0303	0.0223	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	----	3.40	6.50	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	----	129	330	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	----	1.97	1.41	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	----	<0.000010	<0.000020 <sup>DLA</sup>	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	----	4.83	17.2	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW3_QTR _2021-10-18_N	FR_SKP2H_MO N_2021-10-18_ N	FR_EC1H_MON _2021-10-18_N	----	----
Client sampling date / time					18-Oct-2021 13:10	18-Oct-2021 10:30	18-Oct-2021 10:53	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105048-001 Result	CG2105048-002 Result	CG2105048-003 Result	----- ----	----- ----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	----	0.230	0.335	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	----	132	621	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	----	0.000024	0.000028	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	----	<0.00010	<0.00020 <sup>DLA</sup>	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	----	<0.00030	<0.00060 <sup>DLA</sup>	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	----	0.00732	0.0236	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	----	<0.00050	<0.00100 <sup>DLA</sup>	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	----	0.0124	<0.0060 <sup>DLA</sup>	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0010	0.0030	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00018	0.00039	0.00057	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	<0.00010	<0.00020 <sup>DLA</sup>	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0376	0.0368	0.0142	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.040 <sup>DLA</sup>	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.019	0.019	0.037	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0428	0.404	0.0446	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	122	197	330	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.18	<0.10	<0.20 <sup>DLA</sup>	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00153	0.00023	<0.00040 <sup>DLA</sup>	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.026	<0.010	<0.020 <sup>DLA</sup>	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000060	<0.000050	<0.000100 <sup>DLA</sup>	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0385	0.105	0.144	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	53.5	89.2	357	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.102	0.00056	0.00103	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00100	0.00138	0.00280	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00141	0.0299	0.0221	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.21	3.47	6.42	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_HMW3_QTR _2021-10-18_N	FR_SKP2H_MO N_2021-10-18_ N	FR_EC1H_MON _2021-10-18_N	----	----
Client sampling date / time					18-Oct-2021 13:10	18-Oct-2021 10:30	18-Oct-2021 10:53	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105048-001 Result	CG2105048-002 Result	CG2105048-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	59.8	151	313	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.69	1.94	1.40	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.33	4.78	16.6	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.132	0.227	0.337	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	94.8	129	611	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	0.000024	0.000028	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00060 <sup>DLA</sup>	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00209	0.00737	0.0243	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0022	0.0111	0.0032	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105048</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 20-Oct-2021 09:00
PO	: VPO00741392	Issue Date	: 28-Oct-2021 20:53
C-O-C number	: 10/19/2021		
Sampler	: CRUZ CANLAS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	38.2 % TKND	20%	Duplicate RPD does not meet the DQO for this test.

**Result Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_EC1H_MON_2021-10-18_N	E298	18-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW3_QTR_2021-10-18_N	E298	18-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_SKP2H_MON_2021-10-18_N	E298	18-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_EC1H_MON_2021-10-18_N	E235.Br-L	18-Oct-2021	----	----	----		20-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW3_QTR_2021-10-18_N	E235.Br-L	18-Oct-2021	----	----	----		20-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_SKP2H_MON_2021-10-18_N	E235.Br-L	18-Oct-2021	----	----	----		20-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_EC1H_MON_2021-10-18_N	E235.Cl-L	18-Oct-2021	----	----	----		20-Oct-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_HMW3_QTR_2021-10-18_N	E235.Cl-L	18-Oct-2021	----	----	----		20-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_SKP2H_MON_2021-10-18_N	E235.Cl-L	18-Oct-2021	----	----	----		20-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_EC1H_MON_2021-10-18_N	E378-U	18-Oct-2021	----	----	----		20-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_HMW3_QTR_2021-10-18_N	E378-U	18-Oct-2021	----	----	----		20-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_SKP2H_MON_2021-10-18_N	E378-U	18-Oct-2021	----	----	----		20-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_EC1H_MON_2021-10-18_N	E235.F	18-Oct-2021	----	----	----		20-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_HMW3_QTR_2021-10-18_N	E235.F	18-Oct-2021	----	----	----		20-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_SKP2H_MON_2021-10-18_N	E235.F	18-Oct-2021	----	----	----		20-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_EC1H_MON_2021-10-18_N	E235.NO3-L	18-Oct-2021	----	----	----		20-Oct-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_HMW3_QTR_2021-10-18_N	E235.NO3-L	18-Oct-2021	----	----	----		20-Oct-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_SKP2H_MON_2021-10-18_N	E235.NO3-L	18-Oct-2021	----	----	----		20-Oct-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_EC1H_MON_2021-10-18_N	E235.NO2-L	18-Oct-2021	----	----	----		20-Oct-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_HMW3_QTR_2021-10-18_N	E235.NO2-L	18-Oct-2021	----	----	----		20-Oct-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_SKP2H_MON_2021-10-18_N	E235.NO2-L	18-Oct-2021	----	----	----		20-Oct-2021	3 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_EC1H_MON_2021-10-18_N	E235.SO4	18-Oct-2021	----	----	----		20-Oct-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_HMW3_QTR_2021-10-18_N	E235.SO4	18-Oct-2021	----	----	----		20-Oct-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_SKP2H_MON_2021-10-18_N	E235.SO4	18-Oct-2021	----	----	----		20-Oct-2021	28 days	2 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
Amber glass total (sulfuric acid) FR_EC1H_MON_2021-10-18_N	E318	18-Oct-2021	24-Oct-2021	----	----		26-Oct-2021	28 days	8 days	✔





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW3_QTR_2021-10-18_N	E318	18-Oct-2021	24-Oct-2021	----	----		26-Oct-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_SKP2H_MON_2021-10-18_N	E318	18-Oct-2021	24-Oct-2021	----	----		26-Oct-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_EC1H_MON_2021-10-18_N	E372-U	18-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW3_QTR_2021-10-18_N	E372-U	18-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_SKP2H_MON_2021-10-18_N	E372-U	18-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_EC1H_MON_2021-10-18_N	E421.Cr-L	18-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_HMW3_QTR_2021-10-18_N	E421.Cr-L	18-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_SKP2H_MON_2021-10-18_N	E421.Cr-L	18-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_EC1H_MON_2021-10-18_N	E509	18-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	8 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_HMW3_QTR_2021-10-18_N	E509	18-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_SKP2H_MON_2021-10-18_N	E509	18-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_EC1H_MON_2021-10-18_N	E421	18-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_HMW3_QTR_2021-10-18_N	E421	18-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_SKP2H_MON_2021-10-18_N	E421	18-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	180 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_EC1H_MON_2021-10-18_N	E358-L	18-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_HMW3_QTR_2021-10-18_N	E358-L	18-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_SKP2H_MON_2021-10-18_N	E358-L	18-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_EC1H_MON_2021-10-18_N	E355-L	18-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	28 days	9 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW3_QTR_2021-10-18_N	E355-L	18-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_SKP2H_MON_2021-10-18_N	E355-L	18-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	28 days	9 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_EC1H_MON_2021-10-18_N	E283	18-Oct-2021	----	----	----		25-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_HMW3_QTR_2021-10-18_N	E283	18-Oct-2021	----	----	----		25-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_SKP2H_MON_2021-10-18_N	E283	18-Oct-2021	----	----	----		25-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_EC1H_MON_2021-10-18_N	E290	18-Oct-2021	----	----	----		25-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_HMW3_QTR_2021-10-18_N	E290	18-Oct-2021	----	----	----		25-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_SKP2H_MON_2021-10-18_N	E290	18-Oct-2021	----	----	----		25-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> FR_EC1H_MON_2021-10-18_N	E100	18-Oct-2021	----	----	----		25-Oct-2021	28 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_HMW3_QTR_2021-10-18_N	E100	18-Oct-2021	----	----	----		25-Oct-2021	28 days	7 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_SKP2H_MON_2021-10-18_N	E100	18-Oct-2021	----	----	----		25-Oct-2021	28 days	7 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_HMW3_QTR_2021-10-18_N	E125	18-Oct-2021	----	----	----		27-Oct-2021	0.25 hrs	220 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_EC1H_MON_2021-10-18_N	E125	18-Oct-2021	----	----	----		27-Oct-2021	0.25 hrs	222 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_SKP2H_MON_2021-10-18_N	E125	18-Oct-2021	----	----	----		27-Oct-2021	0.25 hrs	222 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_HMW3_QTR_2021-10-18_N	E108	18-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	168 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_EC1H_MON_2021-10-18_N	E108	18-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	170 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_SKP2H_MON_2021-10-18_N	E108	18-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	170 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_EC1H_MON_2021-10-18_N	E162	18-Oct-2021	----	----	----		22-Oct-2021	7 days	4 days		✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_HMW3_QTR_2021-10-18_N	E162	18-Oct-2021	----	----	----		22-Oct-2021	7 days	4 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_SKP2H_MON_2021-10-18_N	E162	18-Oct-2021	----	----	----		22-Oct-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_EC1H_MON_2021-10-18_N	E160-L	18-Oct-2021	----	----	----		22-Oct-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_HMW3_QTR_2021-10-18_N	E160-L	18-Oct-2021	----	----	----		22-Oct-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_SKP2H_MON_2021-10-18_N	E160-L	18-Oct-2021	----	----	----		22-Oct-2021	7 days	4 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_EC1H_MON_2021-10-18_N	E121	18-Oct-2021	----	----	----		21-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_HMW3_QTR_2021-10-18_N	E121	18-Oct-2021	----	----	----		21-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_SKP2H_MON_2021-10-18_N	E121	18-Oct-2021	----	----	----		21-Oct-2021	3 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_EC1H_MON_2021-10-18_N	E420.Cr-L	18-Oct-2021	----	----	----		25-Oct-2021	180 days	8 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_SKP2H_MON_2021-10-18_N	E420.Cr-L	18-Oct-2021	----	----	----		25-Oct-2021	180 days	8 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> FR_EC1H_MON_2021-10-18_N	E508-L	18-Oct-2021	----	----	----		27-Oct-2021	28 days	9 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> FR_SKP2H_MON_2021-10-18_N	E508-L	18-Oct-2021	----	----	----		27-Oct-2021	28 days	9 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_EC1H_MON_2021-10-18_N	E420	18-Oct-2021	----	----	----		25-Oct-2021	180 days	8 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_SKP2H_MON_2021-10-18_N	E420	18-Oct-2021	----	----	----		25-Oct-2021	180 days	8 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	328847	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	328877	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	329716	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	324860	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	324861	1	10	10.0	5.0	✓
Conductivity in Water	E100	328878	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328997	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	329389	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	328996	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329846	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	324788	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	324858	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	324862	1	10	10.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	324863	1	10	10.0	5.0	✓
ORP by Electrode	E125	330180	1	20	5.0	5.0	✓
pH by Meter	E108	328876	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	324859	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	326558	1	15	6.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	329143	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	328387	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	331213	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	329142	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	329849	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	328520	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	325515	1	6	16.6	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	328847	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	328877	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	329716	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	324860	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	324861	1	10	10.0	5.0	✓
Conductivity in Water	E100	328878	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328997	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	329389	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	328996	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329846	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	324788	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	324858	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	324862	1	10	10.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	324863	1	10	10.0	5.0	✓
ORP by Electrode	E125	330180	1	20	5.0	5.0	✓
pH by Meter	E108	328876	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	324859	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	326558	1	15	6.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	329143	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	328387	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	331213	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	329142	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	329849	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	328520	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	326555	1	10	10.0	5.0	✓
Turbidity by Nephelometry	E121	325515	1	6	16.6	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	328847	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	328877	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	329716	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	324860	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	324861	1	10	10.0	5.0	✓
Conductivity in Water	E100	328878	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328997	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	329389	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	328996	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329846	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	324788	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	324858	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	324862	1	10	10.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	324863	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	324859	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	326558	1	15	6.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	329143	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	328387	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	331213	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	329142	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	329849	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	328520	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	326555	1	10	10.0	5.0	✓
Turbidity by Nephelometry	E121	325515	1	6	16.6	5.0	✓





Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	329716	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	324860	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	324861	1	10	10.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328997	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	329389	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	328996	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329846	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	324788	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	324858	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	324862	1	10	10.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	324863	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	324859	1	10	10.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	329143	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	328387	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	331213	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	329142	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	329849	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	328520	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

Page : 18 of 18  
Work Order : CG2105048  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2105048**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 10/19/2021  
**Sampler** : CRUZ CANLAS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Oct-2021 09:00  
**Date Analysis Commenced** : 20-Oct-2021  
**Issue Date** : 28-Oct-2021 20:52

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 18  
Work Order : CG2105048  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 325515)</b>											
CG2105045-004	Anonymous	turbidity	----	E121	0.10	NTU	3.11	3.19	2.54%	15%	----
<b>Physical Tests (QC Lot: 326558)</b>											
CG2105045-005	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1230	1260	2.09%	20%	----
<b>Physical Tests (QC Lot: 328847)</b>											
CG2105047-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	3.6	3.0	0.6	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 328876)</b>											
CG2105046-001	Anonymous	pH	----	E108	0.10	pH units	8.45	8.44	0.118%	4%	----
<b>Physical Tests (QC Lot: 328877)</b>											
CG2105046-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	239	237	0.756%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	16.0	15.8	1.26%	20%	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	255	253	0.787%	20%	----
<b>Physical Tests (QC Lot: 328878)</b>											
CG2105046-001	Anonymous	conductivity	----	E100	2.0	µS/cm	992	982	1.01%	10%	----
<b>Physical Tests (QC Lot: 330180)</b>											
CG2105046-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	436	440	0.959%	15%	----
<b>Anions and Nutrients (QC Lot: 324788)</b>											
CG2105047-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0010	0.00002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 324858)</b>											
CG2105046-002	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.145	0.150	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 324859)</b>											
CG2105046-002	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	287	290	0.965%	20%	----
<b>Anions and Nutrients (QC Lot: 324860)</b>											
CG2105046-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 324861)</b>											
CG2105046-002	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	2.14	2.06	0.08	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 324862)</b>											
CG2105046-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	20.5	20.7	0.883%	20%	----
<b>Anions and Nutrients (QC Lot: 324863)</b>											
CG2105046-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0259	0.0229	0.0030	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 328387)</b>											





Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 328387) - continued</b>											
CG2105047-006	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.644	0.948	38.2%	20%	TKND
<b>Anions and Nutrients (QC Lot: 328520)</b>											
CG2105054-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0026	0.0040	0.0014	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 329716)</b>											
CG2105047-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.125	mg/L	1.19	1.21	0.0192	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 329846)</b>											
CG2105047-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.76	1.76	0.002	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 329849)</b>											
CG2105047-002	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.84	1.83	0.010	Diff <2x LOR	----
<b>Total Metals (QC Lot: 329142)</b>											
CG2104989-009	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00048	0.00048	0.000005	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00076	0.00081	0.00004	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0117	0.0117	0.167%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.034	0.034	0.0003	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.364 µg/L	0.000358	1.57%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	276	271	1.66%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	16.9 µg/L	0.0169	0.0569%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.346	0.343	0.917%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000108	0.000106	0.000002	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0590	0.0573	3.02%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	166	168	1.06%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.438	0.437	0.228%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0204	0.0206	0.581%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0597	0.0604	1.18%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	5.07	5.11	0.750%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	15.2 µg/L	0.0153	0.209%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.13	3.18	1.72%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	7.00	7.21	2.98%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.382	0.379	0.644%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	315	316	0.430%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 329142) - continued</b>											
CG2104989-009	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	0.000088	0.000090	0.000001	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.0138	0.0137	0.545%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0255	0.0251	0.0004	Diff <2x LOR	----
<b>Total Metals (QC Lot: 329143)</b>											
CG2104989-009	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 331213)</b>											
CG2105019-008	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 328996)</b>											
CG2105048-001	FR_HMW3_QTR_2021-10-18_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0029	0.0017	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00018	0.00018	0.000007	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	0.00011	0.000004	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0376	0.0378	0.630%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.019	0.018	0.0008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0428 µg/L	0.0000413	0.0000015	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	122	122	0.307%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.18 µg/L	0.00019	0.00001	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00153	0.00159	0.00006	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.026	0.027	0.0007	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000060	0.000061	0.0000006	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0385	0.0356	7.80%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	53.5	55.0	2.80%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.102	0.103	1.29%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00100	0.000944	5.88%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00141	0.00134	0.00007	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.21	2.24	1.29%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	59.8 µg/L	0.0611	2.18%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.69	1.69	0.118%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.33	1.31	1.82%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.132	0.130	0.995%	20%	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 328996) - continued</b>											
CG2105048-001	FR_HMW3_QTR_2021-10-18_N	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	94.8	96.6	1.91%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	0.000015	0.000001	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00209	0.00214	2.72%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0022	0.0023	0.0001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 328997)</b>											
CG2105048-001	FR_HMW3_QTR_2021-10-18_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 329389)</b>											
CG2104989-008	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

### Qualifiers

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 325515)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 326555)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 326558)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 328847)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 328877)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 328878)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 324788)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 324858)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 324859)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 324860)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 324861)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 324862)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 324863)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 328387)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 328520)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 329716)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 329716) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 329846)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 329849)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 329142)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 329142) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 329143)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 331213)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	---
<b>Dissolved Metals (QCLot: 328996)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---

Page : 10 of 18  
Work Order : CG2105048  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 328996) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 328997)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 329389)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 325515)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	106	85.0	115	---
<b>Physical Tests (QCLot: 326555)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 326558)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	97.0	85.0	115	---
<b>Physical Tests (QCLot: 328847)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	110	85.0	115	---
<b>Physical Tests (QCLot: 328876)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 328877)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 328878)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	106	90.0	110	---
<b>Physical Tests (QCLot: 330180)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 324788)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	103	80.0	120	---
<b>Anions and Nutrients (QCLot: 324858)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 324859)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 324860)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.9	85.0	115	---
<b>Anions and Nutrients (QCLot: 324861)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 324862)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 324863)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 328387)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	103	75.0	125	---
<b>Anions and Nutrients (QCLot: 328520)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 328520) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 329716)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	92.4	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 329846)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	112	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 329849)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	118	80.0	120	----
<b>Total Metals (QCLot: 329142)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	107	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	97.2	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	84.1	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.9	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.6	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	96.7	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	106	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.0	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.0	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	96.5	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	88.8	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	86.2	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	99.6	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.7	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 329142) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	98.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	97.1	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	108	80.0	120	----
<b>Total Metals (QCLot: 329143)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
<b>Total Metals (QCLot: 331213)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	86.6	80.0	120	----
<b>Dissolved Metals (QCLot: 328996)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.5	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	85.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	89.7	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	111	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.7	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.5	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 328996) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 328997)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.7	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 324788)</b>										
CG2105047-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0589 mg/L	0.05 mg/L	118	70.0	130	----
<b>Anions and Nutrients (QCLot: 324858)</b>										
CG2105046-008	Anonymous	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 324859)</b>										
CG2105046-008	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 324860)</b>										
CG2105046-008	Anonymous	bromide	24959-67-9	E235.Br-L	0.520 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 324861)</b>										
CG2105046-008	Anonymous	chloride	16887-00-6	E235.Cl-L	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 324862)</b>										
CG2105046-008	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.65 mg/L	2.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 324863)</b>										
CG2105046-008	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.526 mg/L	0.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 328387)</b>										
CG2105048-001	FR_HMW3_QTR_2021-10-18_N	Kjeldahl nitrogen, total [TKN]	----	E318	2.72 mg/L	2.5 mg/L	109	70.0	130	----
<b>Anions and Nutrients (QCLot: 328520)</b>										
CG2105054-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0557 mg/L	0.0676 mg/L	82.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 329716)</b>										
CG2105047-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 329846)</b>										
CG2105047-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	28.2 mg/L	23.9 mg/L	118	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 329849)</b>										
CG2105047-002	Anonymous	carbon, total organic [TOC]	----	E355-L	28.1 mg/L	23.9 mg/L	118	70.0	130	----
<b>Total Metals (QCLot: 329142)</b>										
CG2104989-015	Anonymous	aluminum, total	7429-90-5	E420	0.198 mg/L	0.2 mg/L	99.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 329142) - continued</b>										
CG2104989-015	Anonymous	barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00881 mg/L	0.01 mg/L	88.1	70.0	130	----
		boron, total	7440-42-8	E420	0.088 mg/L	0.1 mg/L	87.8	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	----
		copper, total	7440-50-8	E420	0.0180 mg/L	0.02 mg/L	90.0	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0180 mg/L	0.02 mg/L	89.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0968 mg/L	0.1 mg/L	96.8	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0213 mg/L	0.02 mg/L	107	70.0	130	----
		nickel, total	7440-02-0	E420	0.0361 mg/L	0.04 mg/L	90.2	70.0	130	----
		potassium, total	7440-09-7	E420	4.18 mg/L	4 mg/L	105	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	8.86 mg/L	10 mg/L	88.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00383 mg/L	0.004 mg/L	95.8	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00356 mg/L	0.004 mg/L	89.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		titanium, total	7440-32-6	E420	0.0400 mg/L	0.04 mg/L	100.0	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, total	7440-66-6	E420	0.379 mg/L	0.4 mg/L	94.6	70.0	130	----
<b>Total Metals (QCLot: 329143)</b>										
CG2104989-015	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0398 mg/L	0.04 mg/L	99.4	70.0	130	----
<b>Total Metals (QCLot: 331213)</b>										
CG2105019-009	Anonymous	mercury, total	7439-97-6	E508-L	4.02 ng/L	5 ng/L	80.4	70.0	130	----
<b>Dissolved Metals (QCLot: 328996)</b>										
CG2105048-002	FR_SKP2H_MON_2021-10-18_N	aluminum, dissolved	7429-90-5	E421	0.200 mg/L	0.2 mg/L	100.0	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 328996) - continued</b>										
CG2105048-002	FR_SKP2H_MON_2021-10-18_N	barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00838 mg/L	0.01 mg/L	83.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.087 mg/L	0.1 mg/L	87.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00384 mg/L	0.004 mg/L	95.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0179 mg/L	0.02 mg/L	89.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.87 mg/L	2 mg/L	93.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0180 mg/L	0.02 mg/L	89.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0350 mg/L	0.04 mg/L	87.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.95 mg/L	4 mg/L	98.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.66 mg/L	10 mg/L	86.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00377 mg/L	0.004 mg/L	94.2	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00354 mg/L	0.004 mg/L	88.5	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----		
uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.390 mg/L	0.4 mg/L	97.5	70.0	130	----		
<b>Dissolved Metals (QCLot: 328997)</b>										
CG2105048-002	FR_SKP2H_MON_2021-10-18_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0398 mg/L	0.04 mg/L	99.4	70.0	130	----
<b>Dissolved Metals (QCLot: 329389)</b>										
CG2104989-009	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000979 mg/L	0.0001 mg/L	97.9	70.0	130	----

Page : 18 of 18  
Work Order : CG2105048  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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COC ID: 10/19/2021 TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution				
Project Manager	Scott Roughead			Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com	X	X	X
Email	scott.roughead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	scott.roughead@teck.com	X	X	X
Address				Address	2559 29 Street NE			Email 3:	ts@kcoast@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	cruz.canlas@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	jamie.watsh@teck.com	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00741392			

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-MET-D-VA	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-ROUTINE-VA	HG-TU-CVAF-VA	TECKCOAL-METNHG-T-CL	Filtered: F: Field, L: Lab, FL: Field & Lab, N: None						
FR_HMW3_QTR_2021-10-18_N	FR_HMW3	WG	NO	2021/10/18	13:10	G	5	1	1	1	1	1	1	1	F	F	N	F	N	N	N
FR_SKP2H_MON_2021-10-18_N	FR_SKP2H	WS	NO	2021/10/18	10:30	G	7	1	1	1	1	1	1	1	F	F	N	F	N	N	N
FR_EC1H_MON_2021-10-18_N	FR_EC1H	WS	NO	2021/10/18	10:53	G	7	1	1	1	1	1	1	1	F	F	N	F	N	N	N

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Cruz Canlas	October 19, 2021	<i>[Signature]</i>	20/10/2021

SERVICE REQUEST (rush - subject to availability)				
Regular (default) x	Sampler's Name	cruz canlas	Mobile #	250 433 6166
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	October 19, 2021
Emergency (1 Business Day) - 100% surcharge				
Weekend - Contact ALS				

Environmental Division  
Calgary  
Work Order Reference  
**CG2105048**



Telephone : +1 403 407 1600





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105054**  
**Client** : **Teck Coal Limited**  
**Contact** : Lauren Lundquist  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00735496  
**C-O-C number** : FRO\_STP\_2021-10-19  
**Sampler** : SS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Oct-2021 08:50  
**Date Analysis Commenced** : 20-Oct-2021  
**Issue Date** : 01-Nov-2021 13:54

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Daniel Ching	Lab Analyst	Metals, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Metals, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Millicent Brentnall	Laboratory Analyst	Metals, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	<i>Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.</i>
DLM	<i>Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).</i>
RRV	<i>Reported result verified by repeat analysis.</i>



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-04-A_W G_2021-10-19	FR_09-04-B_W G_2021-10-19	FR_MW_STPS W-A_WG_2021- 10-19	----	----
Client sampling date / time					19-Oct-2021 11:19	19-Oct-2021 12:15	19-Oct-2021 14:15	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105054-001 Result	CG2105054-002 Result	CG2105054-003 Result	----- ---	----- ---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	17.5	17.1	3.9	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	382	381	184	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	466	465	225	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	382	381	184	----	----	
conductivity	----	E100	2.0	µS/cm	1210	1220	686	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	797	824	383	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	375	364	368	----	----	
pH	----	E108	0.10	pH units	7.82	7.81	8.10	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	892	902	477	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
turbidity	----	E121	0.10	NTU	<0.10	<0.10	0.58	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0178	0.0111	<0.0050	----	----	
ammonia, total dissolved (as N)	7664-41-7	E309	0.0050	mg/L	0.0174	0.0112	<0.0050	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	8.04	8.34	1.34	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.256	0.250	0.202	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.38	0.117	5.97	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	0.134	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0038 <sup>RRV</sup>	0.0039	0.0054	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0050 <sup>RRV</sup>	0.0050	0.0073	----	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0040 <sup>DLM</sup>	0.0047 <sup>DLM</sup>	0.0070 <sup>DLM</sup>	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	387	394	191	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.20	1.19	1.57	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-04-A_W G_2021-10-19	FR_09-04-B_W G_2021-10-19	FR_MW_STPS W-A_WG_2021- 10-19	----	----
Client sampling date / time					19-Oct-2021 11:19	19-Oct-2021 12:15	19-Oct-2021 14:15	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105054-001 Result	CG2105054-002 Result	CG2105054-003 Result	-----	-----	
<b>Total Sulfides</b>										
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	<0.0015	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	16.0	16.1	8.14	----	----	
cation sum	----	EC101	0.10	meq/L	16.4	17.0	8.08	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	102	106	99.3	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.23	2.72	0.370	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0019	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	0.00012	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0.00023	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.122	0.121	0.109	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.030	0.030	0.023	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.711	0.656	0.0245	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	165	178	104	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.71	0.66	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00022	0.00037	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0870	0.0873	0.0136	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	93.4	92.3	30.0	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.57	1.52	0.247	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00186	0.00194	0.00151	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00770	0.00763	0.00078	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.96	5.81	1.57	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.078	0.112	11.1	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.78	2.82	3.26	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_09-04-A_W G_2021-10-19	FR_09-04-B_W G_2021-10-19	FR_MW_STPS W-A_WG_2021- 10-19	----	----
Client sampling date / time					19-Oct-2021 11:19	19-Oct-2021 12:15	19-Oct-2021 14:15	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105054-001 Result	CG2105054-002 Result	CG2105054-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.53	7.38	8.68	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.246	0.273	0.302	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	139	140	60.1	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000052	0.000062	0.000018	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00694	0.00660	0.00134	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0029	0.0027	<0.0010	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2105054</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Lauren Lundquist <b>Address</b> : Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0  <b>Telephone</b> : ---- <b>Project</b> : FORDING RIVER OPERATIONS <b>PO</b> : VPO00735496 <b>C-O-C number</b> : FRO_STP_2021-10-19 <b>Sampler</b> : SS <b>Site</b> : ---- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 3 <b>No. of samples analysed</b> : 3	<b>Page</b> : 1 of 16  <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Justine Buma-a <b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5  <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 20-Oct-2021 08:50 <b>Issue Date</b> : 01-Nov-2021 13:54
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### ***Outliers: Reference Material (RM) Samples***

- No Reference Material (RM) Sample outliers occur.

#### ***Outliers : Analysis Holding Time Compliance (Breaches)***

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-04-A_WG_2021-10-19	E298	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-04-B_WG_2021-10-19	E298	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW_STPSW-A_WG_2021-10-19	E298	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-A_WG_2021-10-19	E235.Br-L	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-B_WG_2021-10-19	E235.Br-L	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW_STPSW-A_WG_2021-10-19	E235.Br-L	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-A_WG_2021-10-19	E235.Cl-L	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-B_WG_2021-10-19	E235.Cl-L	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW_STPSW-A_WG_2021-10-19	E235.Cl-L	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Ammonia by Fluorescence</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-04-A_WG_2021-10-19	E309	19-Oct-2021	29-Oct-2021	----	----		29-Oct-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Dissolved Ammonia by Fluorescence</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-04-B_WG_2021-10-19	E309	19-Oct-2021	29-Oct-2021	----	----		29-Oct-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Dissolved Ammonia by Fluorescence</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW_STPSW-A_WG_2021-10-19	E309	19-Oct-2021	29-Oct-2021	----	----		29-Oct-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> FR_09-04-A_WG_2021-10-19	E378-U	19-Oct-2021	----	----	----		20-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> FR_09-04-B_WG_2021-10-19	E378-U	19-Oct-2021	----	----	----		20-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> FR_MW_STPSW-A_WG_2021-10-19	E378-U	19-Oct-2021	----	----	----		20-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_09-04-A_WG_2021-10-19	E235.F	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_09-04-B_WG_2021-10-19	E235.F	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> FR_MW_STPSW-A_WG_2021-10-19	E235.F	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-A_WG_2021-10-19	E235.NO3-L	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-B_WG_2021-10-19	E235.NO3-L	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW_STPSW-A_WG_2021-10-19	E235.NO3-L	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-A_WG_2021-10-19	E235.NO2-L	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-B_WG_2021-10-19	E235.NO2-L	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW_STPSW-A_WG_2021-10-19	E235.NO2-L	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_09-04-A_WG_2021-10-19	E235.SO4	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_09-04-B_WG_2021-10-19	E235.SO4	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW_STPSW-A_WG_2021-10-19	E235.SO4	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-04-A_WG_2021-10-19	E375-T	19-Oct-2021	30-Oct-2021	----	----		30-Oct-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-04-B_WG_2021-10-19	E375-T	19-Oct-2021	30-Oct-2021	----	----		30-Oct-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW_STPSW-A_WG_2021-10-19	E375-T	19-Oct-2021	30-Oct-2021	----	----		30-Oct-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-04-A_WG_2021-10-19	E372-U	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-04-B_WG_2021-10-19	E372-U	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW_STPSW-A_WG_2021-10-19	E372-U	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-04-A_WG_2021-10-19	E421.Cr-L	19-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	180 days	8 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> FR_09-04-B_WG_2021-10-19	E421.Cr-L	19-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	180 days	8 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> FR_MW_STPSW-A_WG_2021-10-19	E421.Cr-L	19-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	180 days	8 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> FR_09-04-A_WG_2021-10-19	E509	19-Oct-2021	21-Oct-2021	----	----		21-Oct-2021	28 days	2 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> FR_09-04-B_WG_2021-10-19	E509	19-Oct-2021	21-Oct-2021	----	----		21-Oct-2021	28 days	2 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> FR_MW_STPSW-A_WG_2021-10-19	E509	19-Oct-2021	21-Oct-2021	----	----		21-Oct-2021	28 days	2 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> FR_09-04-A_WG_2021-10-19	E421	19-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	180 days	8 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> FR_09-04-B_WG_2021-10-19	E421	19-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	180 days	8 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> FR_MW_STPSW-A_WG_2021-10-19	E421	19-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	180 days	8 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-04-A_WG_2021-10-19	E358-L	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-04-B_WG_2021-10-19	E358-L	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW_STPSW-A_WG_2021-10-19	E358-L	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_09-04-A_WG_2021-10-19	E283	19-Oct-2021	----	----	----		25-Oct-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_09-04-B_WG_2021-10-19	E283	19-Oct-2021	----	----	----		25-Oct-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_MW_STPSW-A_WG_2021-10-19	E283	19-Oct-2021	----	----	----		25-Oct-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_09-04-A_WG_2021-10-19	E290	19-Oct-2021	----	----	----		25-Oct-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_09-04-B_WG_2021-10-19	E290	19-Oct-2021	----	----	----		25-Oct-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_MW_STPSW-A_WG_2021-10-19	E290	19-Oct-2021	----	----	----		25-Oct-2021	14 days	6 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> FR_09-04-A_WG_2021-10-19	E100	19-Oct-2021	----	----	----		25-Oct-2021	28 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_09-04-B_WG_2021-10-19	E100	19-Oct-2021	----	----	----		25-Oct-2021	28 days	6 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW_STPSW-A_WG_2021-10-19	E100	19-Oct-2021	----	----	----		25-Oct-2021	28 days	6 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW_STPSW-A_WG_2021-10-19	E125	19-Oct-2021	----	----	----		27-Oct-2021	0.25 hrs	195 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_09-04-B_WG_2021-10-19	E125	19-Oct-2021	----	----	----		27-Oct-2021	0.25 hrs	197 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_09-04-A_WG_2021-10-19	E125	19-Oct-2021	----	----	----		27-Oct-2021	0.25 hrs	198 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW_STPSW-A_WG_2021-10-19	E108	19-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	142 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_09-04-B_WG_2021-10-19	E108	19-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	144 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_09-04-A_WG_2021-10-19	E108	19-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	145 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_09-04-A_WG_2021-10-19	E162	19-Oct-2021	----	----	----		23-Oct-2021	7 days	4 days		✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_09-04-B_WG_2021-10-19	E162	19-Oct-2021	----	----	----		23-Oct-2021	7 days	4 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_MW_STPSW-A_WG_2021-10-19	E162	19-Oct-2021	----	----	----		23-Oct-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_09-04-A_WG_2021-10-19	E160-L	19-Oct-2021	----	----	----		23-Oct-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_09-04-B_WG_2021-10-19	E160-L	19-Oct-2021	----	----	----		23-Oct-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_MW_STPSW-A_WG_2021-10-19	E160-L	19-Oct-2021	----	----	----		23-Oct-2021	7 days	4 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_09-04-A_WG_2021-10-19	E121	19-Oct-2021	----	----	----		22-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_09-04-B_WG_2021-10-19	E121	19-Oct-2021	----	----	----		22-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_MW_STPSW-A_WG_2021-10-19	E121	19-Oct-2021	----	----	----		22-Oct-2021	3 days	3 days	✓	
<b>Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)</b>											
<b>HDPE total (zinc acetate+sodium hydroxide)</b> FR_09-04-A_WG_2021-10-19	E395	19-Oct-2021	----	----	----		24-Oct-2021	7 days	5 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)</b>										
<b>HDPE total (zinc acetate+sodium hydroxide)</b> FR_09-04-B_WG_2021-10-19	E395	19-Oct-2021	----	----	----		24-Oct-2021	7 days	5 days	✔
<b>Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)</b>										
<b>HDPE total (zinc acetate+sodium hydroxide)</b> FR_MW_STPSW-A_WG_2021-10-19	E395	19-Oct-2021	----	----	----		24-Oct-2021	7 days	5 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	328847	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	328881	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	329716	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	325339	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	325340	1	20	5.0	5.0	✓
Conductivity in Water	E100	328880	1	20	5.0	5.0	✓
Dissolved Ammonia by Fluorescence	E309	332893	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328663	1	3	33.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	325700	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	328662	1	10	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329846	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	325080	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	325337	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	325341	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	325342	1	20	5.0	5.0	✓
ORP by Electrode	E125	330181	1	19	5.2	5.0	✓
pH by Meter	E108	328879	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	325338	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	327235	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	332754	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	328520	1	20	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	328357	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	326738	2	40	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	328847	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	328881	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	329716	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	325339	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	325340	1	20	5.0	5.0	✓
Conductivity in Water	E100	328880	1	20	5.0	5.0	✓
Dissolved Ammonia by Fluorescence	E309	332893	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328663	1	3	33.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	325700	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	328662	1	10	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329846	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	325080	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	325337	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	325341	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	325342	1	20	5.0	5.0	✓
ORP by Electrode	E125	330181	1	19	5.2	5.0	✓
pH by Meter	E108	328879	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	325338	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	327235	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	332754	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	328520	1	20	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	328357	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	327231	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	326738	2	40	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	328847	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	328881	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	329716	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	325339	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	325340	1	20	5.0	5.0	✓
Conductivity in Water	E100	328880	1	20	5.0	5.0	✓
Dissolved Ammonia by Fluorescence	E309	332893	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328663	1	3	33.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	325700	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	328662	1	10	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329846	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	325080	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	325337	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	325341	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	325342	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	325338	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	327235	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	332754	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	328520	1	20	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	328357	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	327231	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	326738	2	40	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	329716	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	325339	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	325340	1	20	5.0	5.0	✓
Dissolved Ammonia by Fluorescence	E309	332893	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328663	1	3	33.3	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Mercury in Water by CVAAS	E509	325700	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	328662	1	10	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329846	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	325080	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	325337	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	325341	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	325342	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	325338	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	332754	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	328520	1	20	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	328357	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Dissolved Ammonia by Fluorescence	E309 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Dissolved ammonia is measured on a filtered (0.45 um) and preserved sample which is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Sulfide by Colourimetry (Automated Flow)	E395 Vancouver - Environmental	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methylene blue colourimetric method. Results expressed "as H <sub>2</sub> S" if reported represent the maximum possible H <sub>2</sub> S concentration based on the total sulfide concentration in the sample. The H <sub>2</sub> S calculation converts Total Sulphide as (S <sub>2</sub> <sup>-</sup> ) and reports it as Total Sulphide as (H <sub>2</sub> S)
Dissolved Metals in Water by CRC ICPMS	E421 Calgary - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Calgary - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Calgary - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Calgary - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Dissolved Ammonia	EP309 Calgary - Environmental	Water		Preparation for Dissolved Ammonia
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Calgary - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Calgary - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105054**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Lauren Lundquist  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00735496  
**C-O-C number** : FRO\_STP\_2021-10-19  
**Sampler** : SS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Oct-2021 08:50  
**Date Analysis Commenced** : 20-Oct-2021  
**Issue Date** : 01-Nov-2021 13:54

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Daniel Ching	Lab Analyst	Metals, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Metals, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Millicent Brentnall	Laboratory Analyst	Metals, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2105054  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 326738)</b>											
CG2105018-009	Anonymous	turbidity	----	E121	0.10	NTU	0.62	0.60	0.02	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 326997)</b>											
CG2105044-001	Anonymous	turbidity	----	E121	0.10	NTU	0.16	0.16	0.005	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 327235)</b>											
CG2105052-003	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	417	403	3.54%	20%	----
<b>Physical Tests (QC Lot: 328847)</b>											
CG2105047-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	3.6	3.0	0.6	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 328879)</b>											
CG2105051-006	Anonymous	pH	----	E108	0.10	pH units	7.51	7.53	0.266%	4%	----
<b>Physical Tests (QC Lot: 328880)</b>											
CG2105051-006	Anonymous	conductivity	----	E100	2.0	µS/cm	6060	6090	0.494%	10%	----
<b>Physical Tests (QC Lot: 328881)</b>											
CG2105051-006	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	407	406	0.345%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	407	406	0.345%	20%	----
<b>Physical Tests (QC Lot: 330181)</b>											
CG2105054-001	FR_09-04-A_WG_2021-10-19	oxidation-reduction potential [ORP]	----	E125	0.10	mV	375	368	1.86%	15%	----
<b>Anions and Nutrients (QC Lot: 325080)</b>											
CG2105050-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0032	0.0030	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325337)</b>											
CG2105052-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.172	0.173	0.0008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325338)</b>											
CG2105052-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	218	218	0.250%	20%	----
<b>Anions and Nutrients (QC Lot: 325339)</b>											
CG2105052-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325340)</b>											
CG2105052-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.92	0.88	0.04	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325341)</b>											
CG2105052-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.697	0.692	0.619%	20%	----
<b>Anions and Nutrients (QC Lot: 325342)</b>											





Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 325342) - continued</b>											
CG2105052-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0013	0.0012	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 328520)</b>											
CG2105054-003	FR_MW_STPSW-A_WG_2 021-10-19	phosphorus, total	7723-14-0	E372-U	0.0040	mg/L	0.0073	0.0080	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 329716)</b>											
CG2105047-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.125	mg/L	1.19	1.21	0.0192	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332754)</b>											
CG2105054-001	FR_09-04-A_WG_2021-10-19	phosphorus, total dissolved	7723-14-0	E375-T	0.0040	mg/L	0.0040	0.0048	0.0008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332893)</b>											
CG2105054-001	FR_09-04-A_WG_2021-10-19	ammonia, total dissolved (as N)	7664-41-7	E309	0.0050	mg/L	0.0174	0.0175	0.0001	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 329846)</b>											
CG2105047-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.76	1.76	0.002	Diff <2x LOR	----
<b>Total Sulfides (QC Lot: 328357)</b>											
CG2105054-001	FR_09-04-A_WG_2021-10-19	sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 325700)</b>											
CG2105015-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 328662)</b>											
CG2105019-012	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00050	mg/L	0.0108	0.0112	2.95%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000250	mg/L	0.0000616	0.0000721	0.0000106	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.250	mg/L	256	257	0.278%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00050	mg/L	0.00797	0.00812	1.85%	20%	----
		copper, dissolved	7440-50-8	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0050	mg/L	0.0446	0.0423	0.0023	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0250	mg/L	163	166	1.61%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00050	mg/L	0.234	0.238	1.85%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000250	mg/L	0.00452	0.00491	8.40%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 328662) - continued</b>											
CG2105019-012	Anonymous	nickel, dissolved	7440-02-0	E421	0.00250	mg/L	0.0305	0.0306	0.398%	20%	----
		potassium, dissolved	7440-09-7	E421	0.250	mg/L	4.50	4.62	2.66%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000250	mg/L	0.00450	0.00472	4.89%	20%	----
		silicon, dissolved	7440-21-3	E421	0.250	mg/L	2.98	3.06	2.64%	20%	----
		silver, dissolved	7440-22-4	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.250	mg/L	6.18	6.29	1.76%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00100	mg/L	0.360	0.381	5.63%	20%	----
		sulfur, dissolved	7704-34-9	E421	2.50	mg/L	264	271	2.28%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000050	mg/L	0.000052	<0.000050	0.000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00150	mg/L	<0.00150	<0.00150	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000050	mg/L	0.00880	0.00918	4.16%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0050	mg/L	0.0086	0.0089	0.0003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 328663)</b>											
CG2105054-001	FR_09-04-A_WG_2021-10-19	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 326738)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 326997)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 327231)</b>						
solids, total suspended [TSS]	---	E160-L	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 327235)</b>						
solids, total dissolved [TDS]	---	E162	10	mg/L	<10	---
<b>Physical Tests (QCLot: 328847)</b>						
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	<2.0	---
<b>Physical Tests (QCLot: 328880)</b>						
conductivity	---	E100	1	µS/cm	<1.0	---
<b>Physical Tests (QCLot: 328881)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, carbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, hydroxide (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
<b>Anions and Nutrients (QCLot: 325080)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 325337)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 325338)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 325339)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 325340)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 325341)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 325342)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 328520)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 329716)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 329716) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 332754)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 332893)</b>						
ammonia, total dissolved (as N)	7664-41-7	E309	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 329846)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Total Sulfides (QCLot: 328357)</b>						
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	----
<b>Dissolved Metals (QCLot: 325700)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 328662)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 328662) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 328663)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 326738)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	95.0	85.0	115	---
<b>Physical Tests (QCLot: 326997)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.0	85.0	115	---
<b>Physical Tests (QCLot: 327231)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 327235)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 328847)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	110	85.0	115	---
<b>Physical Tests (QCLot: 328879)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 328880)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.9	90.0	110	---
<b>Physical Tests (QCLot: 328881)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	96.0	85.0	115	---
<b>Physical Tests (QCLot: 330181)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 325080)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	92.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 325337)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 325338)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 325339)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 325340)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 325341)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 325342)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 328520)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 328520) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 329716)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	92.4	85.0	115	----
<b>Anions and Nutrients (QCLot: 332754)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	112	80.0	120	----
<b>Anions and Nutrients (QCLot: 332893)</b>									
ammonia, total dissolved (as N)	7664-41-7	E309	0.005	mg/L	0.2 mg/L	100	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 329846)</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	10 mg/L	112	80.0	120	----
<b>Total Sulfides (QCLot: 328357)</b>									
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.08 mg/L	87.3	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.9	80.0	120	----
<b>Dissolved Metals (QCLot: 328662)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.2	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.0	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.2	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.0	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.5	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	109	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	106	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.7	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	93.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.7	60.0	140	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 328662) - continued</b>									
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.7	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	95.6	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	84.3	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	93.1	80.0	120	----
<b>Dissolved Metals (QCLot: 328663)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 325080)</b>										
CG2105050-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0560 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 325337)</b>										
CG2105052-002	Anonymous	fluoride	16984-48-8	E235.F	1.03 mg/L	1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 325338)</b>										
CG2105052-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	111 mg/L	100 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 325339)</b>										
CG2105052-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.561 mg/L	0.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 325340)</b>										
CG2105052-002	Anonymous	chloride	16887-00-6	E235.Cl-L	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 325341)</b>										
CG2105052-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.79 mg/L	2.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 325342)</b>										
CG2105052-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.536 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 328520)</b>										
CG2105054-003	FR_MW_STPSW-A_WG_20 21-10-19	phosphorus, total	7723-14-0	E372-U	0.0510 mg/L	0.0676 mg/L	75.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 329716)</b>										
CG2105047-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 332754)</b>										
CG2105054-002	FR_09-04-B_WG_2021-10-1 9	phosphorus, total dissolved	7723-14-0	E375-T	0.0583 mg/L	0.0676 mg/L	86.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 332893)</b>										
CG2105126-007	Anonymous	ammonia, total dissolved (as N)	7664-41-7	E309	0.105 mg/L	0.1 mg/L	105	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 329846)</b>										
CG2105047-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	28.2 mg/L	23.9 mg/L	118	70.0	130	----
<b>Total Sulfides (QCLot: 328357)</b>										
CG2105054-002	FR_09-04-B_WG_2021-10-1 9	sulfide, total (as S)	18496-25-8	E395	0.204 mg/L	0.2 mg/L	102	75.0	125	----
<b>Dissolved Metals (QCLot: 325700)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 325700) - continued</b>										
CG2105015-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 328662)</b>										
CG2105019-013	Anonymous	aluminum, dissolved	7429-90-5	E421	1.84 mg/L	2 mg/L	92.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.195 mg/L	0.2 mg/L	97.5	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.183 mg/L	0.2 mg/L	91.3	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.191 mg/L	0.2 mg/L	95.4	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.378 mg/L	0.4 mg/L	94.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0873 mg/L	0.1 mg/L	87.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	1.08 mg/L	1 mg/L	108	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	38.8 mg/L	40 mg/L	97.0	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.186 mg/L	0.2 mg/L	93.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.190 mg/L	0.2 mg/L	94.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	18.4 mg/L	20 mg/L	92.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.197 mg/L	0.2 mg/L	98.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.886 mg/L	1 mg/L	88.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	9.06 mg/L	10 mg/L	90.6	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.190 mg/L	0.2 mg/L	95.2	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.197 mg/L	0.2 mg/L	98.3	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.382 mg/L	0.4 mg/L	95.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	37.4 mg/L	40 mg/L	93.6	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.357 mg/L	0.4 mg/L	89.3	70.0	130	----
		silicon, dissolved	7440-21-3	E421	94.4 mg/L	100 mg/L	94.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0358 mg/L	0.04 mg/L	89.4	70.0	130	----
		sodium, dissolved	17341-25-2	E421	18.6 mg/L	20 mg/L	93.0	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.190 mg/L	0.2 mg/L	95.1	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	188 mg/L	200 mg/L	93.8	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0351 mg/L	0.04 mg/L	87.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.190 mg/L	0.2 mg/L	95.3	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.378 mg/L	0.4 mg/L	94.4	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0360 mg/L	0.04 mg/L	90.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.955 mg/L	1 mg/L	95.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.63 mg/L	4 mg/L	90.7	70.0	130	----
<b>Dissolved Metals (QCLot: 328663)</b>										
CG2105054-002	FR_09-04-B_WG_2021-10-19	chromium, dissolved	7440-47-3	E421.Cr-L	0.373 mg/L	0.4 mg/L	93.2	70.0	130	----



# Teck

COC ID: **FRO STP\_2021-10-19**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY		OTHER INFO				
Facility Name / Job#	Teck			Lab Name	ALS Environmental		Report Format / Distribution	Excel	PDF	EDD
Project Manager	Lauren Lundquist			Lab Contact	Lyuda Shivets		Email 1:	X	X	X
Email	lauren.lundquist@teck.com			Email	lyuda.shivets@teck.com		Email 2:	X	X	X
Address	421 Pine Ave			Address	2559 29th St. NE		Email 3:	X	X	X
City	Sparwood	Province	BC	City	Calgary	AB	Email 4:	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Canada	Email 5:		X	X
Phone Number	250-433-6189			Phone Number	403-407-1800		PO number	00735496		

SAMPLE DETAILS					ANALYSIS REQUESTED							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC/DINUTRIENTS (INCL. NH3 & PHOSPHORUS)	HG-D-CYAF-CL	TECK COAL - MET-D-CL	TOTAL SULFIDE
								N	F	F	F	N
								NONE	H2SO4	HCL	HNO3	ZNAC/NAOH
FR_STPBARGE_WS_2021	FR_STPBARGE	WS					5	1	1	1	1	1
FR_STPSWSEEP_WS_2021	FR_STPSWSEEP	WS					5	1	1	1	1	1
FR_STPWSEEP_WS_2021	FR_STPWSEEP	WS					5	1	1	1	1	1
FR_09-04-A_WG_2021-10-19	FR_09-04-A	WG		2021/10/19	11:19		5	1	1	1	1	1
FR_09-04-B_WG_2021-10-19	FR_09-04-B	WG		2021/10/19	12:15		5	1	1	1	1	1
FR_MW_STPSW-A_WG_2021-10-19	FR_MW_STPSW-A	WG		2021/10/19	14:15		5	1	1	1	1	1
FR_MW_STPSW-B_WG_2021	FR_MW_STPSW-B	WG					5	1	1	1	1	1
FR_TP3_WS_2021	FR_TP3	WS					5	1	1	1	1	1
FR_DC1_WG_2021	FR_DC1	WG					5	1	1	1	1	1
FR_FLD1_WG_2021	FR_FLD1	WG					5	1	1	1	1	1
FR_TRP1_WG_2021	FR_TRP1	WG					2	1				1

CG 9054

Environmental Division  
Calgary  
Work Order Reference  
**CG2105054**



Telephone : +1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS:	DATE/TIME	DATE/TIME
*35 Element scan by collision reaction cell (CRC) ICP-MS		

*R* 10/20 850 3

SERVICE REQUEST (rush, subject to availability)			
Regular (default):	<input checked="" type="checkbox"/>	Sampler's Name	S. Suel
Priority (2-3 business days) - 50% surcharge	<input type="checkbox"/>	Sampler's Signature	<i>[Signature]</i>
Emergency (1 Business Day) - 100% surcharge	<input type="checkbox"/>	Mobile #	(250) 464-0839
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<input type="checkbox"/>	Date/Time	Oct 19, 2021



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105240**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 10/26/2021  
**Sampler** : Aric Keane  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 4  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-Oct-2021 08:50  
**Date Analysis Commenced** : 27-Oct-2021  
**Issue Date** : 05-Nov-2021 10:07

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Millicent Brentnall	Laboratory Analyst	Metals, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	<i>Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.</i>
DLM	<i>Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).</i>
RRV	<i>Reported result verified by repeat analysis.</i>
TKNI	<i>TKN result may be biased low due to Nitrate interference. Nitrate-N is &gt; 10x TKN.</i>



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC2_QTR_2 021-10-04_N	FR_HMW1S_QT R_2021-10-04_ N	FR_HMW1D_QT R_2021-10-04_ N	----	----
Client sampling date / time					25-Oct-2021 13:38	25-Oct-2021 13:38	25-Oct-2021 14:10	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105240-001	CG2105240-002	CG2105240-003	-----	-----	
					Result	Result	Result	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	13.1	15.9	21.2	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	422	416	460	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	515	507	562	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	422	416	460	----	----	
conductivity	----	E100	2.0	µS/cm	3640	3670	3750	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	2380	2380	2590	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	339	319	391	----	----	
pH	----	E108	0.10	pH units	8.01	8.00	7.80	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	3440	3330	3410	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.0	2.8	----	----	
turbidity	----	E121	0.10	NTU	<0.10	<0.10	1.04	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.593	0.624 <sup>RRV</sup>	0.0158	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.500 <sup>DLDS</sup>	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.94	2.27	2.81	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.284	0.268	0.265	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.527 <sup>TKNI</sup>	0.311 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	107	108	112	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0102	<0.0050 <sup>DLDS</sup>	0.178	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0014	0.0011	0.0038	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0.0035 <sup>DLM</sup>	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1780	1830	1960	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.36	<0.50	2.28	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.14	0.59	1.55	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC2_QTR_2 021-10-04_N	FR_HMW1S_QT R_2021-10-04_ N	FR_HMW1D_QT R_2021-10-04_ N	----	----
Client sampling date / time					25-Oct-2021 13:38	25-Oct-2021 13:38	25-Oct-2021 14:10	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105240-001 Result	CG2105240-002 Result	CG2105240-003 Result	----- ----	----- ----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	53.2	54.2	58.1	----	----	
cation sum	----	EC101	0.10	meq/L	47.9	47.9	52.0	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	90.0	88.4	89.5	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.24	6.17	5.54	----	----	
<b>Dissolved Metals</b>										
calcium, dissolved	7440-70-2	E421	0.050	mg/L	471	472	525	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	293	292	311	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	6.86	6.75	6.11	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.45	2.35	2.32	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Laboratory	Laboratory	Laboratory	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105240</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 27-Oct-2021 08:50
PO	: VPO00741392	Issue Date	: 05-Nov-2021 10:07
C-O-C number	: 10/26/2021		
Sampler	: Aric Keane		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC2_QTR_2021-10-04_N	E298	25-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1D_QTR_2021-10-04_N	E298	25-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1S_QTR_2021-10-04_N	E298	25-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC2_QTR_2021-10-04_N	E235.Br-L	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW1D_QTR_2021-10-04_N	E235.Br-L	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_HMW1S_QTR_2021-10-04_N	E235.Br-L	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC2_QTR_2021-10-04_N	E235.Cl-L	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Container / Client Sample ID(s)				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_HMW1D_QTR_2021-10-04_N	E235.Cl-L	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_HMW1S_QTR_2021-10-04_N	E235.Cl-L	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_DC2_QTR_2021-10-04_N	E378-U	25-Oct-2021	----	----	----		27-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_HMW1D_QTR_2021-10-04_N	E378-U	25-Oct-2021	----	----	----		27-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_HMW1S_QTR_2021-10-04_N	E378-U	25-Oct-2021	----	----	----		27-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_DC2_QTR_2021-10-04_N	E235.F	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_HMW1D_QTR_2021-10-04_N	E235.F	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_HMW1S_QTR_2021-10-04_N	E235.F	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_DC2_QTR_2021-10-04_N	E235.NO3-L	25-Oct-2021	----	----	----		27-Oct-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_HMW1D_QTR_2021-10-04_N	E235.NO3-L	25-Oct-2021	----	----	----		27-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_HMW1S_QTR_2021-10-04_N	E235.NO3-L	25-Oct-2021	----	----	----		27-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_DC2_QTR_2021-10-04_N	E235.NO2-L	25-Oct-2021	----	----	----		27-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_HMW1D_QTR_2021-10-04_N	E235.NO2-L	25-Oct-2021	----	----	----		27-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_HMW1S_QTR_2021-10-04_N	E235.NO2-L	25-Oct-2021	----	----	----		27-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_DC2_QTR_2021-10-04_N	E235.SO4	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_HMW1D_QTR_2021-10-04_N	E235.SO4	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_HMW1S_QTR_2021-10-04_N	E235.SO4	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_DC2_QTR_2021-10-04_N	E318	25-Oct-2021	01-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1D_QTR_2021-10-04_N	E318	25-Oct-2021	01-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1S_QTR_2021-10-04_N	E318	25-Oct-2021	01-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC2_QTR_2021-10-04_N	E372-U	25-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1D_QTR_2021-10-04_N	E372-U	25-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1S_QTR_2021-10-04_N	E372-U	25-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	10 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_DC2_QTR_2021-10-04_N	E509	25-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_HMW1D_QTR_2021-10-04_N	E509	25-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_HMW1S_QTR_2021-10-04_N	E509	25-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC2_QTR_2021-10-04_N	E421	25-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_HMW1D_QTR_2021-10-04_N	E421	25-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_HMW1S_QTR_2021-10-04_N	E421	25-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	180 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_DC2_QTR_2021-10-04_N	E358-L	25-Oct-2021	01-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_HMW1D_QTR_2021-10-04_N	E358-L	25-Oct-2021	01-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_HMW1S_QTR_2021-10-04_N	E358-L	25-Oct-2021	01-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC2_QTR_2021-10-04_N	E355-L	25-Oct-2021	01-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1D_QTR_2021-10-04_N	E355-L	25-Oct-2021	01-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_HMW1S_QTR_2021-10-04_N	E355-L	25-Oct-2021	01-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_DC2_QTR_2021-10-04_N	E283	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_HMW1D_QTR_2021-10-04_N	E283	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_HMW1S_QTR_2021-10-04_N	E283	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_DC2_QTR_2021-10-04_N	E290	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_HMW1D_QTR_2021-10-04_N	E290	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_HMW1S_QTR_2021-10-04_N	E290	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_DC2_QTR_2021-10-04_N	E100	25-Oct-2021	----	----	----		31-Oct-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_HMW1D_QTR_2021-10-04_N	E100	25-Oct-2021	----	----	----		31-Oct-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_HMW1S_QTR_2021-10-04_N	E100	25-Oct-2021	----	----	----		31-Oct-2021	28 days	6 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_HMW1D_QTR_2021-10-04_N	E125	25-Oct-2021	----	----	----		03-Nov-2021	0.25 hrs	214 hrs	* EHTR-FM	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_DC2_QTR_2021-10-04_N	E125	25-Oct-2021	----	----	----		03-Nov-2021	0.25 hrs	215 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_HMW1S_QTR_2021-10-04_N	E125	25-Oct-2021	----	----	----		03-Nov-2021	0.25 hrs	215 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_HMW1D_QTR_2021-10-04_N	E108	25-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	141 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_DC2_QTR_2021-10-04_N	E108	25-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	142 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_HMW1S_QTR_2021-10-04_N	E108	25-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	142 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_DC2_QTR_2021-10-04_N	E162	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_HMW1D_QTR_2021-10-04_N	E162	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_HMW1S_QTR_2021-10-04_N	E162	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] FR_DC2_QTR_2021-10-04_N	E160-L	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_HMW1D_QTR_2021-10-04_N	E160-L	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_HMW1S_QTR_2021-10-04_N	E160-L	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_DC2_QTR_2021-10-04_N	E121	25-Oct-2021	----	----	----		28-Oct-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_HMW1D_QTR_2021-10-04_N	E121	25-Oct-2021	----	----	----		28-Oct-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_HMW1S_QTR_2021-10-04_N	E121	25-Oct-2021	----	----	----		28-Oct-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	334303	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334301	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	335751	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	331234	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	331235	1	19	5.2	5.0	✓
Conductivity in Water	E100	334299	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336097	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334456	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334968	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	331228	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	331238	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	331236	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	331237	1	19	5.2	5.0	✓
ORP by Electrode	E125	335912	1	20	5.0	5.0	✓
pH by Meter	E108	334300	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	331233	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	332711	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335051	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334974	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336485	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	332055	2	31	6.4	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	334303	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334301	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	335751	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	331234	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	331235	1	19	5.2	5.0	✓
Conductivity in Water	E100	334299	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336097	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334456	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334968	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	331228	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	331238	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	331236	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	331237	1	19	5.2	5.0	✓
ORP by Electrode	E125	335912	1	20	5.0	5.0	✓
pH by Meter	E108	334300	1	15	6.6	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Sulfate in Water by IC	E235.SO4	331233	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	332711	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335051	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334974	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336485	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	332706	1	10	10.0	5.0	✓
Turbidity by Nephelometry	E121	332055	2	31	6.4	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	334303	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334301	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	335751	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	331234	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	331235	1	19	5.2	5.0	✓
Conductivity in Water	E100	334299	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336097	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334456	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334968	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	331228	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	331238	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	331236	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	331237	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	331233	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	332711	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335051	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334974	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336485	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	332706	1	10	10.0	5.0	✓
Turbidity by Nephelometry	E121	332055	2	31	6.4	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	335751	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	331234	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	331235	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336097	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334456	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334968	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	331228	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	331238	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	331236	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	331237	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	331233	1	19	5.2	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335051	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334974	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336485	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Calgary - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Calgary - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Calgary - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105240**

**Page** : 1 of 10

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 10/26/2021  
**Sampler** : Aric Keane  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-Oct-2021 08:50  
**Date Analysis Commenced** : 27-Oct-2021  
**Issue Date** : 05-Nov-2021 10:07

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
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Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



Page : 2 of 10  
Work Order : CG2105240  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 332055)</b>											
CG2105180-004	Anonymous	turbidity	----	E121	0.10	NTU	0.18	0.16	0.02	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 332056)</b>											
CG2105240-002	FR_HMW1S_QTR_2021-1 0-04_N	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 332711)</b>											
CG2105204-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1150	1140	0.348%	20%	----
<b>Physical Tests (QC Lot: 334299)</b>											
CG2105233-004	Anonymous	conductivity	----	E100	2.0	µS/cm	4500	4510	0.222%	10%	----
<b>Physical Tests (QC Lot: 334300)</b>											
CG2105235-002	Anonymous	pH	----	E108	0.10	pH units	8.22	8.26	0.485%	4%	----
<b>Physical Tests (QC Lot: 334301)</b>											
CG2105235-004	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	139	146	5.18%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	5.0	5.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	144	152	5.01%	20%	----
<b>Physical Tests (QC Lot: 334303)</b>											
CG2105235-004	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 335912)</b>											
CG2105235-004	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	471	478	1.52%	15%	----
<b>Anions and Nutrients (QC Lot: 331228)</b>											
CG2105236-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0080	0.0081	0.00002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 331233)</b>											
CG2105236-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	261	242	7.73%	20%	----
<b>Anions and Nutrients (QC Lot: 331234)</b>											
CG2105236-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 331235)</b>											
CG2105236-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	20.2	20.4	0.791%	20%	----
<b>Anions and Nutrients (QC Lot: 331236)</b>											
CG2105236-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	45.5	46.5	2.23%	20%	----
<b>Anions and Nutrients (QC Lot: 331237)</b>											
CG2105236-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0122	0.0119	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 331238)</b>											



Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 331238) - continued</b>											
CG2105236-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.134	0.111	0.022	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 335051)</b>											
CG2105219-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.483	0.435	0.048	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 335751)</b>											
CG2105224-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.183	0.179	1.82%	20%	----
<b>Anions and Nutrients (QC Lot: 336485)</b>											
CG2105235-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0049	0.0058	0.0008	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334968)</b>											
CG2105219-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.68	1.71	0.04	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334974)</b>											
CG2105219-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.72	1.82	0.10	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 334456)</b>											
CG2105218-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.050	mg/L	63.9	59.5	7.06%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	33.0	32.9	0.232%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	57.6	59.6	3.36%	20%	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	114	114	0.117%	20%	----
<b>Dissolved Metals (QC Lot: 336097)</b>											
CG2105219-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 332055)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 332056)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 332706)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 332711)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 334299)</b>						
conductivity	----	E100	1	µS/cm	1.1	----
<b>Physical Tests (QCLot: 334301)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 334303)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 331228)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 331233)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 331234)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 331235)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 331236)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 331237)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 331238)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 335051)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 335751)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 335751) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 336485)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Organic / Inorganic Carbon (QCLot: 334968)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 334974)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 334456)</b>						
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
<b>Dissolved Metals (QCLot: 336097)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 332055)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.4	85.0	115	---
<b>Physical Tests (QCLot: 332056)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.2	85.0	115	---
<b>Physical Tests (QCLot: 332706)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 332711)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.5	85.0	115	---
<b>Physical Tests (QCLot: 334299)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	---
<b>Physical Tests (QCLot: 334300)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 334301)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	93.2	85.0	115	---
<b>Physical Tests (QCLot: 334303)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	99.3	85.0	115	---
<b>Physical Tests (QCLot: 335912)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 331228)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 331233)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	108	90.0	110	---
<b>Anions and Nutrients (QCLot: 331234)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 331235)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	109	90.0	110	---
<b>Anions and Nutrients (QCLot: 331236)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	110	90.0	110	---
<b>Anions and Nutrients (QCLot: 331237)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 331238)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 335051)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 335051) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 335751)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
<b>Anions and Nutrients (QCLot: 336485)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	115	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 334968)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	108	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 334974)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	113	80.0	120	----
<b>Dissolved Metals (QCLot: 334456)</b>									
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	108	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	113	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.0	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 331228)</b>										
CG2105236-006	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0519 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 331233)</b>										
CG2105236-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 331234)</b>										
CG2105236-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.507 mg/L	0.5 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 331235)</b>										
CG2105236-006	Anonymous	chloride	16887-00-6	E235.Cl-L	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 331236)</b>										
CG2105236-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.60 mg/L	2.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 331237)</b>										
CG2105236-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.532 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 331238)</b>										
CG2105236-006	Anonymous	fluoride	16984-48-8	E235.F	1.11 mg/L	1 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 335051)</b>										
CG2105219-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.14 mg/L	2.5 mg/L	85.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 335751)</b>										
CG2105224-012	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.116 mg/L	0.1 mg/L	116	75.0	125	----
<b>Anions and Nutrients (QCLot: 336485)</b>										
CG2105235-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0516 mg/L	0.0676 mg/L	76.3	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 334968)</b>										
CG2105219-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.4 mg/L	23.9 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 334974)</b>										
CG2105219-001	Anonymous	carbon, total organic [TOC]	----	E355-L	26.3 mg/L	23.9 mg/L	110	70.0	130	----
<b>Dissolved Metals (QCLot: 334456)</b>										
CG2105240-001	FR_DC2_QTR_2021-10-04_N	calcium, dissolved	7440-70-2	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	37.5 mg/L	40 mg/L	93.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	18.6 mg/L	20 mg/L	93.1	70.0	130	----



Page : 10 of 10  
 Work Order : CG2105240  
 Client : Teck Coal Limited  
 Project : FORDING RIVER OPERATION



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 336097)</b>										
CG2105219-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000963 mg/L	0.0001 mg/L	96.3	70.0	130	----

Teck

COC ID: 10/26/2021 TURNAROUND TIME: RUSH:

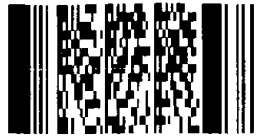
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO								
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD				
Project Manager	Scott Roughead			Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com	X	X	X				
Email	scott.roughead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	scott.roughead@teck.com	X	X	X				
Address				Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X				
City	Elkford		Province	BC		City	Calgary		Province	AB		Email 4:	jamie.walsh@teck.com	X	X	X
Postal Code			Country	Canada		Postal Code	T1Y 7B5		Country	Canada		Email 6:	scott.roughead@teck.com	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00741392							

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G-Grab C-Comp	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	ALS Package-BOD	ALS Package-Colour	ALS Package-PAH	ALS Package-TSS/TURB	ALS Package-EPH
FR_DC2_QTR_2021-10-04_N	FR_DC2	WG	NO	25-Oct	13:38	G	4	1	1	1				1					
FR_HMW1S_QTR_2021-10-04_N	FR_HMW1S	WG	NO	25-Oct	13:38	G	4	1	1	1				1					
FR_HMW1D_QTR_2021-10-04_N	FR_HMW1D	WG	NO	25-Oct	14:10	G	4	1	1	1				1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Aric Keane	October 26, 2021		10/27/21

SERVICE REQUEST (rush - subject to availability)				
Regular (default) x	Sampler's Name	Aric Keane	Mobile #	250 427 1062
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	October 26, 2021
Emergency (1 Business Day) - 100% surcharge				
ASAP or Weekend - Contact ALS				

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2105240**



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105410**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 11/2/2021 WG SEEP  
**Sampler** : Cruz Canlas  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Page** : 1 of 11  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 03-Nov-2021 09:00  
**Date Analysis Commenced** : 03-Nov-2021  
**Issue Date** : 16-Nov-2021 17:35

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	<i>Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.</i>
DLM	<i>Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).</i>
TKNI	<i>TKN result may be biased low due to Nitrate interference. Nitrate-N is &gt; 10x TKN.</i>



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					FR_STPSWSEE P_SEEP_2021- 10-04_NP	FR_STPWSEEP _SEEP_2021-10 -04_NP	FR_SPRWSEEP 1_SEEP_2021-1 0-04_NP	FR_09-04-A_QT R_2021-10-04_ N	FR_09-04-B_QT R_2021-10-04_ N
Client sampling date / time					02-Nov-2021 12:19	02-Nov-2021 11:37	02-Nov-2021 12:53	02-Nov-2021 10:31	02-Nov-2021 10:51
Analyte	CAS Number	Method	LOR	Unit	CG2105410-001	CG2105410-002	CG2105410-003	CG2105410-004	CG2105410-005
					Result	Result	Result	Result	Result
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	5.7	6.1
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	365	382	324	381	379
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	446	466	395	464	462
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	365	382	324	381	379
conductivity	----	E100	2.0	µS/cm	1150	1170	1240	1210	1240
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	667	683	724	701	718
oxidation-reduction potential [ORP]	----	E125	0.10	mV	448	455	447	437	410
pH	----	E108	0.10	pH units	8.01	8.04	8.01	7.43	7.44
solids, total dissolved [TDS]	----	E162	10	mg/L	824	816	934	870	886
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.2	<1.0	1.1	1.4
turbidity	----	E121	0.10	NTU	0.16	0.30	0.38	<0.10	<0.10
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0098	0.0143	0.0209	0.0219
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	9.46	7.92	3.61	9.69	9.99
fluoride	16984-48-8	E235.F	0.020	mg/L	0.388	0.369	0.157	0.367	0.352
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.220	0.074	0.512 <sup>TKNI</sup>	0.080	0.067
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0298	0.0272	12.2	0.257	0.0595
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0012	0.0014	0.0012	0.0044	0.0044
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	0.0042 <sup>DLM</sup>	0.0047 <sup>DLM</sup>
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	358	352	405	373	382
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.88	1.17	1.76	0.97	1.04
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.84	1.17	1.77	0.91	0.93



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_STPSWSEE P_SEEP_2021- 10-04_NP	FR_STPWSEEP _SEEP_2021-10 -04_NP	FR_SPRWSEEP 1_SEEP_2021-1 0-04_NP	FR_09-04-A_QT R_2021-10-04_ N	FR_09-04-B_QT R_2021-10-04_ N
Client sampling date / time					02-Nov-2021 12:19	02-Nov-2021 11:37	02-Nov-2021 12:53	02-Nov-2021 10:31	02-Nov-2021 10:51	
Analyte	CAS Number	Method	LOR	Unit	CG2105410-001	CG2105410-002	CG2105410-003	CG2105410-004	CG2105410-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	15.0	15.2	15.9	15.7	15.8	
cation sum	----	EC101	0.10	meq/L	13.8	14.1	14.8	14.5	14.8	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.0	92.8	93.1	92.4	93.7	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.17	3.75	3.58	3.97	3.27	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0042	0.0035	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0.00033	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0.00014	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0711	0.0604	0.0400	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.029	0.034	0.015	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.224	0.270	0.628	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	142	142	168	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.45	0.62	<0.10	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0.00057	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.017	0.014	<0.010	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0969	0.105	0.0240	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	83.9	88.9	78.6	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.417	0.0183	0.00021	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00184	0.00389	0.0101	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00460	0.00362	0.0110	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	5.93	6.32	2.28	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	0.171	34.5	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.92	3.25	3.41	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	6.76	6.95	5.88	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_STPSWSEE P_SEEP_2021- 10-04_NP	FR_STPWSEEP _SEEP_2021-10 -04_NP	FR_SPRWSEEP 1_SEEP_2021-1 0-04_NP	FR_09-04-A_QT R_2021-10-04_ N	FR_09-04-B_QT R_2021-10-04_ N
Client sampling date / time					02-Nov-2021 12:19	02-Nov-2021 11:37	02-Nov-2021 12:53	02-Nov-2021 10:31	02-Nov-2021 10:51	
Analyte	CAS Number	Method	LOR	Unit	CG2105410-001	CG2105410-002	CG2105410-003	CG2105410-004	CG2105410-005	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.241	0.235	0.267	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	119	119	133	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000020	0.000016	0.000122	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00622	0.00791	0.00228	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0.0272	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0011	0.0012	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0.00029	0.00010	0.00011	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0.00010	<0.00010	0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0646	0.0574	0.0381	0.0926	0.0905	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.027	0.033	0.015	0.029	0.028	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.208	0.258	0.596	0.686	0.647	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	137	136	168	150	153	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.45	0.57	<0.10	0.71	0.63	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00043	0.00052	0.00107	0.00081	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.012	<0.010	<0.010	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0905	0.101	0.0249	0.0902	0.0866	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	78.9	83.5	73.9	79.2	81.7	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.402	0.0159	0.00016	1.30	1.34	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00166	0.00363	0.00960	0.00189	0.00184	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00434	0.00340	0.0102	0.00732	0.00732	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.30	5.47	2.14	5.24	5.20	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_STPSWSEE P_SEEP_2021- 10-04_NP	FR_STPWSEEP _SEEP_2021-10 -04_NP	FR_SPRWSEEP 1_SEEP_2021-1 0-04_NP	FR_09-04-A_QT R_2021-10-04_ N	FR_09-04-B_QT R_2021-10-04_ N
Client sampling date / time					02-Nov-2021 12:19	02-Nov-2021 11:37	02-Nov-2021 12:53	02-Nov-2021 10:31	02-Nov-2021 10:51	
Analyte	CAS Number	Method	LOR	Unit	CG2105410-001 Result	CG2105410-002 Result	CG2105410-003 Result	CG2105410-004 Result	CG2105410-005 Result	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.054	0.152	38.1	0.098	0.104	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.69	3.03	3.17	2.58	2.59	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.57	6.66	5.47	6.86	6.85	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.216	0.218	0.253	0.227	0.233	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	105	110	122	117	117	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000021	0.000015	0.000122	0.000061	0.000062	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00580	0.00745	0.00216	0.00639	0.00619	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0033	0.0273	0.0052	0.0042	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	<0.40	<0.40	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	100	103	99.5	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_DC1_SEEP_	----	----	----	----
(Matrix: Water)					2021-10-04_N					
					Client sampling date / time	02-Nov-2021	----	----	----	----
					12:53	----	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105410-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	323	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	394	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	323	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	1230	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	717	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	468	----	----	----	----	----
pH	----	E108	0.10	pH units	8.05	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	910	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	----	----	----	----	----
turbidity	----	E121	0.10	NTU	0.56	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0155	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.55	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.157	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.066 <sup>TKNI</sup>	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	12.2	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0012	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	401	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.81	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.96	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	15.8	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_DC1_SEEP_2021-10-04_N	----	----	----	----
(Matrix: Water)					Client sampling date / time	02-Nov-2021 12:53	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2105410-006	-----	-----	-----	-----	
Result						---	---	---	---	
<b>Ion Balance</b>										
cation sum	----	EC101	0.10	meq/L	14.6	---	---	---	---	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.4	---	---	---	---	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.95	---	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0033	---	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00034	---	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00014	---	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0396	---	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	---	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	---	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	0.015	---	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.635	---	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	168	---	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	---	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	---	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00056	---	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	---	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	---	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0242	---	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	76.8	---	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00027	---	---	---	---	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	---	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0105	---	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0107	---	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	2.25	---	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	34.8	---	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	3.45	---	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	---	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	5.73	---	---	---	---	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.275	---	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	137	---	---	---	---	



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_DC1_SEEP_	----	----	----	----
(Matrix: Water)						2021-10-04_N				
					Client sampling date / time	02-Nov-2021 12:53	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2105410-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000134	---	---	---	---	---
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	---	---	---	---	---
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	---	---	---	---	---
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00231	---	---	---	---	---
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	---	---	---	---	---
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0263	---	---	---	---	---
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	---	---	---	---	---
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00030	---	---	---	---	---
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0384	---	---	---	---	---
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	---	---	---	---	---
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.015	---	---	---	---	---
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.585	---	---	---	---	---
calcium, dissolved	7440-70-2	E421	0.050	mg/L	165	---	---	---	---	---
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	---	---	---	---	---
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	---	---	---	---	---
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00053	---	---	---	---	---
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	---	---	---	---	---
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0240	---	---	---	---	---
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	74.0	---	---	---	---	---
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00017	---	---	---	---	---
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	---	---	---	---	---
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00982	---	---	---	---	---
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0102	---	---	---	---	---
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.14	---	---	---	---	---
selenium, dissolved	7782-49-2	E421	0.050	µg/L	37.6	---	---	---	---	---
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.16	---	---	---	---	---
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC1_SEEP_ 2021-10-04_N	----	----	----	----
					Client sampling date / time	02-Nov-2021 12:53	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105410-006	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.54	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.258	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	123	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000124	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00215	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0269	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105410</b>	Page	: 1 of 27
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 03-Nov-2021 09:00
PO	: VPO00741392	Issue Date	: 16-Nov-2021 17:35
C-O-C number	: 11/2/2021 WG SEEP		
Sampler	: Cruz Canlas		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.243 % TKND	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

**Result Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_09-04-A_QTR_2021-10-04_N	E298	02-Nov-2021	14-Nov-2021	----	----		14-Nov-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_09-04-B_QTR_2021-10-04_N	E298	02-Nov-2021	14-Nov-2021	----	----		14-Nov-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_DC1_SEEP_2021-10-04_N	E298	02-Nov-2021	14-Nov-2021	----	----		14-Nov-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E298	02-Nov-2021	14-Nov-2021	----	----		14-Nov-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E298	02-Nov-2021	14-Nov-2021	----	----		14-Nov-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E298	02-Nov-2021	14-Nov-2021	----	----		14-Nov-2021	28 days	12 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_09-04-A_QTR_2021-10-04_N	E235.Br-L	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-B_QTR_2021-10-04_N	E235.Br-L	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC1_SEEP_2021-10-04_N	E235.Br-L	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E235.Br-L	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E235.Br-L	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E235.Br-L	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-A_QTR_2021-10-04_N	E235.Cl-L	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-B_QTR_2021-10-04_N	E235.Cl-L	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC1_SEEP_2021-10-04_N	E235.Cl-L	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E235.Cl-L	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_STPSWSEEP_SEEP_2021-10-04_NP	E235.Cl-L	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_STPWSEEP_SEEP_2021-10-04_NP	E235.Cl-L	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_09-04-A_QTR_2021-10-04_N	E378-U	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_09-04-B_QTR_2021-10-04_N	E378-U	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_DC1_SEEP_2021-10-04_N	E378-U	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_SPRWSEEP1_SEEP_2021-10-04_NP	E378-U	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_STPSWSEEP_SEEP_2021-10-04_NP	E378-U	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_STPWSEEP_SEEP_2021-10-04_NP	E378-U	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_09-04-A_QTR_2021-10-04_N	E235.F	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_09-04-B_QTR_2021-10-04_N	E235.F	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_DC1_SEEP_2021-10-04_N	E235.F	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_SPRWSEEP1_SEEP_2021-10-04_NP	E235.F	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_STPSWSEEP_SEEP_2021-10-04_NP	E235.F	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_STPWSEEP_SEEP_2021-10-04_NP	E235.F	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_09-04-A_QTR_2021-10-04_N	E235.NO3-L	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_09-04-B_QTR_2021-10-04_N	E235.NO3-L	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_DC1_SEEP_2021-10-04_N	E235.NO3-L	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_SPRWSEEP1_SEEP_2021-10-04_NP	E235.NO3-L	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E235.NO3-L	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E235.NO3-L	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-A_QTR_2021-10-04_N	E235.NO2-L	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_09-04-B_QTR_2021-10-04_N	E235.NO2-L	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC1_SEEP_2021-10-04_N	E235.NO2-L	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E235.NO2-L	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E235.NO2-L	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E235.NO2-L	02-Nov-2021	----	----	----		03-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_09-04-A_QTR_2021-10-04_N	E235.SO4	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_09-04-B_QTR_2021-10-04_N	E235.SO4	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_DC1_SEEP_2021-10-04_N	E235.SO4	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E235.SO4	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E235.SO4	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E235.SO4	02-Nov-2021	----	----	----		03-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-04-A_QTR_2021-10-04_N	E318	02-Nov-2021	07-Nov-2021	----	----		15-Nov-2021	28 days	13 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-04-B_QTR_2021-10-04_N	E318	02-Nov-2021	07-Nov-2021	----	----		15-Nov-2021	28 days	13 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_SEEP_2021-10-04_N	E318	02-Nov-2021	07-Nov-2021	----	----		15-Nov-2021	28 days	13 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E318	02-Nov-2021	07-Nov-2021	----	----		15-Nov-2021	28 days	13 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E318	02-Nov-2021	07-Nov-2021	----	----		15-Nov-2021	28 days	13 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E318	02-Nov-2021	07-Nov-2021	----	----		15-Nov-2021	28 days	13 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_09-04-A_QTR_2021-10-04_N	E372-U	02-Nov-2021	06-Nov-2021	----	----		09-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_09-04-B_QTR_2021-10-04_N	E372-U	02-Nov-2021	06-Nov-2021	----	----		09-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_DC1_SEEP_2021-10-04_N	E372-U	02-Nov-2021	06-Nov-2021	----	----		09-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E372-U	02-Nov-2021	06-Nov-2021	----	----		09-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E372-U	02-Nov-2021	06-Nov-2021	----	----		09-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E372-U	02-Nov-2021	06-Nov-2021	----	----		09-Nov-2021	28 days	7 days	✓
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> FR_09-04-A_QTR_2021-10-04_N	E421.Cr-L	02-Nov-2021	07-Nov-2021	----	----		07-Nov-2021	180 days	5 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-04-B_QTR_2021-10-04_N	E421.Cr-L	02-Nov-2021	07-Nov-2021	----	----		07-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC1_SEEP_2021-10-04_N	E421.Cr-L	02-Nov-2021	07-Nov-2021	----	----		07-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E421.Cr-L	02-Nov-2021	07-Nov-2021	----	----		07-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E421.Cr-L	02-Nov-2021	07-Nov-2021	----	----		07-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E421.Cr-L	02-Nov-2021	07-Nov-2021	----	----		07-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_09-04-A_QTR_2021-10-04_N	E509	02-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_09-04-B_QTR_2021-10-04_N	E509	02-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_DC1_SEEP_2021-10-04_N	E509	02-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E509	02-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	7 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E509	02-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E509	02-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-04-A_QTR_2021-10-04_N	E421	02-Nov-2021	07-Nov-2021	----	----		07-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_09-04-B_QTR_2021-10-04_N	E421	02-Nov-2021	07-Nov-2021	----	----		07-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC1_SEEP_2021-10-04_N	E421	02-Nov-2021	07-Nov-2021	----	----		07-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E421	02-Nov-2021	07-Nov-2021	----	----		07-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E421	02-Nov-2021	07-Nov-2021	----	----		07-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E421	02-Nov-2021	07-Nov-2021	----	----		07-Nov-2021	180 days	5 days	✔	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E601A	02-Nov-2021	09-Nov-2021	14 days	7 days	✔	09-Nov-2021	40 days	0 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E601A	02-Nov-2021	09-Nov-2021	14 days	7 days	✓	09-Nov-2021	40 days	0 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E601A	02-Nov-2021	09-Nov-2021	14 days	7 days	✓	09-Nov-2021	40 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-04-A_QTR_2021-10-04_N	E358-L	02-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_09-04-B_QTR_2021-10-04_N	E358-L	02-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_DC1_SEEP_2021-10-04_N	E358-L	02-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E358-L	02-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E358-L	02-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E358-L	02-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-04-A_QTR_2021-10-04_N	E355-L	02-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	10 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_09-04-B_QTR_2021-10-04_N	E355-L	02-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_SEEP_2021-10-04_N	E355-L	02-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E355-L	02-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E355-L	02-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E355-L	02-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_09-04-A_QTR_2021-10-04_N	E283	02-Nov-2021	----	----	----		04-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_09-04-B_QTR_2021-10-04_N	E283	02-Nov-2021	----	----	----		04-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_DC1_SEEP_2021-10-04_N	E283	02-Nov-2021	----	----	----		04-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E283	02-Nov-2021	----	----	----		04-Nov-2021	14 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_STPSWSEEP_SEEP_2021-10-04_NP	E283	02-Nov-2021	----	----	----		04-Nov-2021	14 days	2 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE FR_STPWSEEP_SEEP_2021-10-04_NP	E283	02-Nov-2021	----	----	----		04-Nov-2021	14 days	2 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_09-04-A_QTR_2021-10-04_N	E290	02-Nov-2021	----	----	----		05-Nov-2021	14 days	3 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_09-04-B_QTR_2021-10-04_N	E290	02-Nov-2021	----	----	----		05-Nov-2021	14 days	3 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_DC1_SEEP_2021-10-04_N	E290	02-Nov-2021	----	----	----		05-Nov-2021	14 days	3 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_SPRWSEEP1_SEEP_2021-10-04_NP	E290	02-Nov-2021	----	----	----		05-Nov-2021	14 days	3 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_STPSWSEEP_SEEP_2021-10-04_NP	E290	02-Nov-2021	----	----	----		05-Nov-2021	14 days	3 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_STPWSEEP_SEEP_2021-10-04_NP	E290	02-Nov-2021	----	----	----		05-Nov-2021	14 days	3 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_09-04-A_QTR_2021-10-04_N	E100	02-Nov-2021	----	----	----		05-Nov-2021	28 days	3 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_09-04-B_QTR_2021-10-04_N	E100	02-Nov-2021	----	----	----		05-Nov-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_DC1_SEEP_2021-10-04_N	E100	02-Nov-2021	----	----	----		05-Nov-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_SPRWSEEP1_SEEP_2021-10-04_NP	E100	02-Nov-2021	----	----	----		05-Nov-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_STPSWSEEP_SEEP_2021-10-04_NP	E100	02-Nov-2021	----	----	----		05-Nov-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_STPWSEEP_SEEP_2021-10-04_NP	E100	02-Nov-2021	----	----	----		05-Nov-2021	28 days	3 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_DC1_SEEP_2021-10-04_N	E125	02-Nov-2021	----	----	----		09-Nov-2021	0.25 hrs	166 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_SPRWSEEP1_SEEP_2021-10-04_NP	E125	02-Nov-2021	----	----	----		09-Nov-2021	0.25 hrs	166 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_STPSWSEEP_SEEP_2021-10-04_NP	E125	02-Nov-2021	----	----	----		09-Nov-2021	0.25 hrs	167 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_STPWSEEP_SEEP_2021-10-04_NP	E125	02-Nov-2021	----	----	----		09-Nov-2021	0.25 hrs	167 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_09-04-A_QTR_2021-10-04_N	E125	02-Nov-2021	----	----	----		09-Nov-2021	0.25 hrs	168 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_09-04-B_QTR_2021-10-04_N	E125	02-Nov-2021	----	----	----		09-Nov-2021	0.25 hrs	168 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_DC1_SEEP_2021-10-04_N	E108	02-Nov-2021	----	----	----		05-Nov-2021	0.25 hrs	70 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_SPRWSEEP1_SEEP_2021-10-04_NP	E108	02-Nov-2021	----	----	----		05-Nov-2021	0.25 hrs	70 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_STPSWSEEP_SEEP_2021-10-04_NP	E108	02-Nov-2021	----	----	----		05-Nov-2021	0.25 hrs	71 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_STPWSEEP_SEEP_2021-10-04_NP	E108	02-Nov-2021	----	----	----		05-Nov-2021	0.25 hrs	71 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_09-04-A_QTR_2021-10-04_N	E108	02-Nov-2021	----	----	----		05-Nov-2021	0.25 hrs	72 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_09-04-B_QTR_2021-10-04_N	E108	02-Nov-2021	----	----	----		05-Nov-2021	0.25 hrs	72 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_09-04-A_QTR_2021-10-04_N	E162	02-Nov-2021	----	----	----		05-Nov-2021	7 days	3 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_09-04-B_QTR_2021-10-04_N	E162	02-Nov-2021	----	----	----		05-Nov-2021	7 days	3 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E162	02-Nov-2021	----	----	----		05-Nov-2021	7 days	3 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_DC1_SEEP_2021-10-04_N	E162	02-Nov-2021	----	----	----		08-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E162	02-Nov-2021	----	----	----		08-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E162	02-Nov-2021	----	----	----		08-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_09-04-A_QTR_2021-10-04_N	E160-L	02-Nov-2021	----	----	----		07-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_09-04-B_QTR_2021-10-04_N	E160-L	02-Nov-2021	----	----	----		07-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E160-L	02-Nov-2021	----	----	----		07-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_DC1_SEEP_2021-10-04_N	E160-L	02-Nov-2021	----	----	----		08-Nov-2021	7 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E160-L	02-Nov-2021	----	----	----		08-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E160-L	02-Nov-2021	----	----	----		08-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_09-04-A_QTR_2021-10-04_N	E121	02-Nov-2021	----	----	----		04-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_09-04-B_QTR_2021-10-04_N	E121	02-Nov-2021	----	----	----		04-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_DC1_SEEP_2021-10-04_N	E121	02-Nov-2021	----	----	----		04-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E121	02-Nov-2021	----	----	----		04-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E121	02-Nov-2021	----	----	----		04-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E121	02-Nov-2021	----	----	----		04-Nov-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_DC1_SEEP_2021-10-04_N	E420.Cr-L	02-Nov-2021	----	----	----		10-Nov-2021	180 days	8 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E420.Cr-L	02-Nov-2021	----	----	----		10-Nov-2021	180 days	8 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E420.Cr-L	02-Nov-2021	----	----	----		10-Nov-2021	180 days	8 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E420.Cr-L	02-Nov-2021	----	----	----		10-Nov-2021	180 days	8 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> FR_DC1_SEEP_2021-10-04_N	E508-L	02-Nov-2021	----	----	----		09-Nov-2021	28 days	7 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E508-L	02-Nov-2021	----	----	----		09-Nov-2021	28 days	7 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E508-L	02-Nov-2021	----	----	----		09-Nov-2021	28 days	7 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E508-L	02-Nov-2021	----	----	----		09-Nov-2021	28 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_DC1_SEEP_2021-10-04_N	E420	02-Nov-2021	----	----	----		10-Nov-2021	180 days	8 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_SPRWSEEP1_SEEP_2021-10-04_NP	E420	02-Nov-2021	----	----	----		10-Nov-2021	180 days	8 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_STPSWSEEP_SEEP_2021-10-04_NP	E420	02-Nov-2021	----	----	----		10-Nov-2021	180 days	8 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_STPWSEEP_SEEP_2021-10-04_NP	E420	02-Nov-2021	----	----	----		10-Nov-2021	180 days	8 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	337728	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	338654	0	38	0.0	5.0	✖
Ammonia by Fluorescence	E298	344610	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	337001	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	337002	1	20	5.0	5.0	✔
Conductivity in Water	E100	338655	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	339930	1	17	5.8	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	340962	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	339931	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	341378	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	336940	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	336999	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	337003	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	337004	1	20	5.0	5.0	✔
ORP by Electrode	E125	341202	1	20	5.0	5.0	✔
pH by Meter	E108	338656	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	337000	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	338491	2	40	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	340935	1	17	5.8	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	339994	1	17	5.8	5.0	✔
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	341718	1	15	6.6	5.0	✔
Total Metals in Water by CRC ICPMS	E420	340934	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	341391	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339290	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	337754	3	60	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	337728	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	338654	2	38	5.2	5.0	✔
Ammonia by Fluorescence	E298	344610	1	20	5.0	5.0	✔
BC PHC - EPH by GC-FID	E601A	341023	1	6	16.6	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	337001	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	337002	1	20	5.0	5.0	✔
Conductivity in Water	E100	338655	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	339930	1	17	5.8	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	340962	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	339931	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	341378	1	20	5.0	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	336940	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	336999	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	337003	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	337004	1	20	5.0	5.0	✓
ORP by Electrode	E125	341202	1	20	5.0	5.0	✓
pH by Meter	E108	338656	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	337000	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	338491	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	340935	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	339994	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	341718	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	340934	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	341391	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339290	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	338486	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	337754	3	60	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	337728	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	338654	2	38	5.2	5.0	✓
Ammonia by Fluorescence	E298	344610	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	341023	1	6	16.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	337001	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	337002	1	20	5.0	5.0	✓
Conductivity in Water	E100	338655	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	339930	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	340962	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	339931	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	341378	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	336940	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	336999	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	337003	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	337004	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	337000	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	338491	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	340935	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	339994	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	341718	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	340934	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	341391	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339290	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	338486	2	40	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
Method Blanks (MB) - Continued							
Turbidity by Nephelometry	E121	337754	3	60	5.0	5.0	✓
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	344610	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	337001	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	337002	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	339930	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	340962	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	339931	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	341378	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	336940	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	336999	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	337003	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	337004	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	337000	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	340935	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	339994	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	341718	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	340934	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	341391	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339290	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHC - EPH by GC-FID	E601A  Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
	Vancouver - Environmental			
PHCs and PAHs Hexane Extraction	EP601	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
	Calgary - Environmental			



## QUALITY CONTROL REPORT

**Work Order** : **CG2105410**

**Page** : 1 of 19

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 11/2/2021 WG SEEP  
**Sampler** : Cruz Canlas  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 03-Nov-2021 09:00  
**Date Analysis Commenced** : 03-Nov-2021  
**Issue Date** : 16-Nov-2021 17:35

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
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Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



Page : 3 of 19  
Work Order : CG2105410  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 337728)</b>											
CG2105408-001	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	<10.0	<10.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 337754)</b>											
CG2105408-002	Anonymous	turbidity	----	E121	0.10	NTU	1.87	1.76	5.96%	15%	----
<b>Physical Tests (QC Lot: 337852)</b>											
CG2105408-001	Anonymous	turbidity	----	E121	0.10	NTU	0.51	0.51	0.0002	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 337947)</b>											
CG2105408-007	Anonymous	turbidity	----	E121	0.10	NTU	3.10	3.04	1.89%	15%	----
<b>Physical Tests (QC Lot: 338491)</b>											
CG2105408-002	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1530	1540	0.845%	20%	----
<b>Physical Tests (QC Lot: 338655)</b>											
CG2105408-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2130	2160	1.40%	10%	----
<b>Physical Tests (QC Lot: 338656)</b>											
CG2105408-001	Anonymous	pH	----	E108	0.10	pH units	7.21	7.25	0.553%	4%	----
<b>Physical Tests (QC Lot: 340004)</b>											
CG2105408-001	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1790	1730	3.01%	20%	----
<b>Physical Tests (QC Lot: 341202)</b>											
CG2105408-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	451	445	1.29%	15%	----
<b>Anions and Nutrients (QC Lot: 336940)</b>											
CG2105408-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0014	0.0013	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 336999)</b>											
CG2105408-012	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337000)</b>											
CG2105408-012	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337001)</b>											
CG2105408-012	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337002)</b>											
CG2105408-012	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337003)</b>											
CG2105408-012	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337004)</b>											
CG2105408-012	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 339290)</b>											
CG2105408-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0025	<0.0020	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 339994)</b>											
CG2105414-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.080	# 0.323	0.243	Diff <2x LOR	TKND
<b>Anions and Nutrients (QC Lot: 344610)</b>											
CG2105408-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.201	0.196	2.46%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 341378)</b>											
CG2105408-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 341391)</b>											
CG2105410-001	FR_STPSWSEEP_SEEP_2021-10-04_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.84	0.86	0.02	Diff <2x LOR	----
<b>Total Metals (QC Lot: 340934)</b>											
CG2105408-012	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	<0.0050 µg/L	<0.000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 340934) - continued</b>											
CG2105408-012	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 340935)</b>											
CG2105408-012	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 341718)</b>											
CG2105410-001	FR_STPSWSEEP_SEEP_2021-10-04_NP	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 339930)</b>											
CG2105410-001	FR_STPSWSEEP_SEEP_2021-10-04_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 339931)</b>											
CG2105410-001	FR_STPSWSEEP_SEEP_2021-10-04_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0646	0.0662	2.35%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.027	0.028	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.208 µg/L	0.000205	1.81%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	137	135	0.880%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.45 µg/L	0.00043	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.012	0.012	0.000008	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0905	0.0887	2.04%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	78.9	77.5	1.72%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.402	0.398	0.938%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00166	0.00176	6.06%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00434	0.00431	0.00003	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.30	5.15	2.84%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.054 µg/L	0.000082	0.000028	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.69	2.62	2.56%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 339931) - continued</b>											
CG2105410-001	FR_STPSWSEEP_SEEP_2021-10-04_NP	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.57	6.56	0.0530%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.216	0.223	2.91%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	105	105	0.319%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000021	0.000019	0.000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00580	0.00587	1.14%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0012	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 340962)</b>											
CG2105408-008	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 337728)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 337754)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 337852)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 337947)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 338486)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 338491)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 338654)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 338655)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 338657)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 340001)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 340004)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 336940)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 336999)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 337000)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 337001)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 337002)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 337003)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 337004)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 339290)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 339994)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 344610)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 341378)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 341391)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 340934)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 340934) - continued</b>						
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 340935)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 341718)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 339930)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 339931)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 339931) - continued</b>						
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 340962)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Hydrocarbons (QCLot: 341023)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 337728)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	108	85.0	115	---
<b>Physical Tests (QCLot: 337754)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	106	85.0	115	---
<b>Physical Tests (QCLot: 337852)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	108	85.0	115	---
<b>Physical Tests (QCLot: 337947)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	105	85.0	115	---
<b>Physical Tests (QCLot: 338486)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.4	85.0	115	---
<b>Physical Tests (QCLot: 338491)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	97.8	85.0	115	---
<b>Physical Tests (QCLot: 338654)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 338655)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 338656)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 338657)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 340001)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	90.0	85.0	115	---
<b>Physical Tests (QCLot: 340004)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	92.7	85.0	115	---
<b>Physical Tests (QCLot: 341202)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 336940)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	105	80.0	120	---
<b>Anions and Nutrients (QCLot: 336999)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 337000)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 337001)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 337001) - continued</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 337002)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 337003)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 337004)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 339290)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	98.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 339994)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 344610)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.8	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 341378)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	118	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 341391)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 340934)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.4	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	91.0	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	94.7	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 340934) - continued</b>									
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.2	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.2	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	102	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	94.2	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.6	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	104	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	110	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	93.1	80.0	120	----
<b>Total Metals (QCLot: 340935)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 341718)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	90.2	80.0	120	----
<b>Dissolved Metals (QCLot: 339930)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	95.9	80.0	120	----
<b>Dissolved Metals (QCLot: 339931)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.0	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.1	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.5	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100.0	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.5	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.0	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	93.8	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 339931) - continued</b>									
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.8	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.1	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	89.6	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	97.8	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	94.5	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	82.0	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.0	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.0	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	97.3	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	94.4	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----
<b>Hydrocarbons (QCLot: 341023)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	99.2	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	108	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	102	70.0	130	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 336940)</b>										
CG2105408-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0567 mg/L	0.05 mg/L	113	70.0	130	----
<b>Anions and Nutrients (QCLot: 336999)</b>										
CG2105408-014	Anonymous	fluoride	16984-48-8	E235.F	1.08 mg/L	1 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 337000)</b>										
CG2105408-014	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 337001)</b>										
CG2105408-014	Anonymous	bromide	24959-67-9	E235.Br-L	0.514 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 337002)</b>										
CG2105408-014	Anonymous	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 337003)</b>										
CG2105408-014	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.66 mg/L	2.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 337004)</b>										
CG2105408-014	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.526 mg/L	0.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 339290)</b>										
CG2105408-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0561 mg/L	0.0676 mg/L	83.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 339994)</b>										
CG2105414-005	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.70 mg/L	2.5 mg/L	108	70.0	130	----
<b>Anions and Nutrients (QCLot: 344610)</b>										
CG2105408-014	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 341378)</b>										
CG2105408-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	29.2 mg/L	23.9 mg/L	122	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 341391)</b>										
CG2105410-001	FR_STPSWSEEP_SEEP_2 021-10-04_NP	carbon, total organic [TOC]	----	E355-L	23.0 mg/L	23.9 mg/L	96.3	70.0	130	----
<b>Total Metals (QCLot: 340934)</b>										
CG2105410-001	FR_STPSWSEEP_SEEP_2 021-10-04_NP	aluminum, total	7429-90-5	E420	0.185 mg/L	0.2 mg/L	92.6	70.0	130	----
		antimony, total	7440-36-0	E420	0.0213 mg/L	0.02 mg/L	106	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 340934) - continued</b>										
CG2105410-001	FR_STPSWSEEP_SEEP_2 021-10-04_NP	barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0380 mg/L	0.04 mg/L	95.1	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00906 mg/L	0.01 mg/L	90.6	70.0	130	----
		boron, total	7440-42-8	E420	0.087 mg/L	0.1 mg/L	87.1	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00388 mg/L	0.004 mg/L	96.9	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0180 mg/L	0.02 mg/L	89.8	70.0	130	----
		iron, total	7439-89-6	E420	1.86 mg/L	2 mg/L	93.0	70.0	130	----
		lead, total	7439-92-1	E420	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		lithium, total	7439-93-2	E420	0.0937 mg/L	0.1 mg/L	93.7	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		nickel, total	7440-02-0	E420	0.0354 mg/L	0.04 mg/L	88.6	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		silicon, total	7440-21-3	E420	9.21 mg/L	10 mg/L	92.1	70.0	130	----
		silver, total	7440-22-4	E420	0.00398 mg/L	0.004 mg/L	99.5	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----		
thallium, total	7440-28-0	E420	0.00370 mg/L	0.004 mg/L	92.6	70.0	130	----		
tin, total	7440-31-5	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----		
titanium, total	7440-32-6	E420	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----		
uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----		
vanadium, total	7440-62-2	E420	0.0971 mg/L	0.1 mg/L	97.1	70.0	130	----		
zinc, total	7440-66-6	E420	0.336 mg/L	0.4 mg/L	84.0	70.0	130	----		
<b>Total Metals (QCLot: 340935)</b>										
CG2105410-001	FR_STPSWSEEP_SEEP_2 021-10-04_NP	chromium, total	7440-47-3	E420.Cr-L	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
<b>Total Metals (QCLot: 341718)</b>										
CG2105410-002	FR_STPWSEEP_SEEP_202 1-10-04_NP	mercury, total	7439-97-6	E508-L	4.43 ng/L	5 ng/L	88.5	70.0	130	----
<b>Dissolved Metals (QCLot: 339930)</b>										
CG2105410-002	FR_STPWSEEP_SEEP_202 1-10-04_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0376 mg/L	0.04 mg/L	94.1	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 339931)</b>										
CG2105410-002	FR_STPWSEEP_SEEP_2021-10-04_NP	aluminum, dissolved	7429-90-5	E421	0.182 mg/L	0.2 mg/L	91.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00860 mg/L	0.01 mg/L	86.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	92.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00392 mg/L	0.004 mg/L	98.1	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0185 mg/L	0.02 mg/L	92.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0176 mg/L	0.02 mg/L	87.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.82 mg/L	2 mg/L	90.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0180 mg/L	0.02 mg/L	90.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0182 mg/L	0.02 mg/L	91.1	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0351 mg/L	0.04 mg/L	87.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.00 mg/L	10 mg/L	90.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00381 mg/L	0.004 mg/L	95.2	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00368 mg/L	0.004 mg/L	92.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0376 mg/L	0.04 mg/L	93.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0959 mg/L	0.1 mg/L	95.9	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.359 mg/L	0.4 mg/L	89.8	70.0	130	----
<b>Dissolved Metals (QCLot: 340962)</b>										
CG2105408-009	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000988 mg/L	0.0001 mg/L	98.8	70.0	130	----







**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105439**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 11/1/2021  
**Sampler** : Cruz Canlas  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 03-Nov-2021 09:00  
**Date Analysis Commenced** : 03-Nov-2021  
**Issue Date** : 16-Nov-2021 17:45

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
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Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-SK1B_ QTR_2021-10-0 4_N	FR_MW-SK1A_ QTR_2021-10-0 4_N	----	----	----
Client sampling date / time					01-Nov-2021 15:05	01-Nov-2021 14:50	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105439-001 Result	CG2105439-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	6.2	4.8	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	345	254	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	421	311	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	421	311	----	----	----	
conductivity	----	E100	2.0	µS/cm	1590	1030	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1040	621	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	456	463	----	----	----	
pH	----	E108	0.10	pH units	7.88	7.83	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	1290	777	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.2	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	<0.10	0.17	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.42	3.91	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLDS</sup>	<0.100 <sup>DLDS</sup>	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	0.103 <sup>TKNI</sup>	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	49.4	10.2	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0058	0.0611	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0035	0.0014	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0033	0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	424	295	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.14	0.84	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.03	0.94	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-SK1B_QTR_2021-10-04_N	FR_MW-SK1A_QTR_2021-10-04_N	---	---	---
Client sampling date / time					01-Nov-2021 15:05	01-Nov-2021 14:50	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2105439-001	CG2105439-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	20.8	13.2	---	---	---	
cation sum	----	EC101	0.10	meq/L	21.1	12.7	---	---	---	
ion balance (cations/anions ratio)	----	EC101	0.010	%	101	96.2	---	---	---	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.716	1.93	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0010	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00016	0.00041	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00011	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0851	0.0345	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.020	0.014	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0453	0.0339	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	243	166	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.10	1.24	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00403	<0.00020	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000113	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0895	0.0120	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	105	50.2	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.530	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	0.0000058	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000524	0.000386	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00446	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.02	1.24	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	192	12.3	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.84	3.30	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.82	4.80	---	---	---	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW-SK1B_ QTR_2021-10-0 4_N	FR_MW-SK1A_ QTR_2021-10-0 4_N	----	----	----
Client sampling date / time					01-Nov-2021 15:05	01-Nov-2021 14:50	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105439-001 Result	CG2105439-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.247	0.270	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	149	107	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000021	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00628	0.00492	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0019	0.0017	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105439</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 03-Nov-2021 09:00
PO	: VPO00741392	Issue Date	: 16-Nov-2021 17:45
C-O-C number	: 11/1/2021		
Sampler	: Cruz Canlas		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1A_QTR_2021-10-04_N	E298	01-Nov-2021	14-Nov-2021	----	----		14-Nov-2021	28 days	13 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1B_QTR_2021-10-04_N	E298	01-Nov-2021	14-Nov-2021	----	----		14-Nov-2021	28 days	13 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_MW-SK1A_QTR_2021-10-04_N	E235.Br-L	01-Nov-2021	----	----	----		03-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_MW-SK1B_QTR_2021-10-04_N	E235.Br-L	01-Nov-2021	----	----	----		03-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_MW-SK1A_QTR_2021-10-04_N	E235.Cl-L	01-Nov-2021	----	----	----		03-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_MW-SK1B_QTR_2021-10-04_N	E235.Cl-L	01-Nov-2021	----	----	----		03-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> FR_MW-SK1A_QTR_2021-10-04_N	E378-U	01-Nov-2021	----	----	----		03-Nov-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_MW-SK1B_QTR_2021-10-04_N	E378-U	01-Nov-2021	----	----	----		03-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_MW-SK1A_QTR_2021-10-04_N	E235.F	01-Nov-2021	----	----	----		03-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_MW-SK1B_QTR_2021-10-04_N	E235.F	01-Nov-2021	----	----	----		03-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_MW-SK1A_QTR_2021-10-04_N	E235.NO3-L	01-Nov-2021	----	----	----		03-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_MW-SK1B_QTR_2021-10-04_N	E235.NO3-L	01-Nov-2021	----	----	----		03-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_MW-SK1A_QTR_2021-10-04_N	E235.NO2-L	01-Nov-2021	----	----	----		03-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_MW-SK1B_QTR_2021-10-04_N	E235.NO2-L	01-Nov-2021	----	----	----		03-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_MW-SK1A_QTR_2021-10-04_N	E235.SO4	01-Nov-2021	----	----	----		03-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_MW-SK1B_QTR_2021-10-04_N	E235.SO4	01-Nov-2021	----	----	----		03-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1A_QTR_2021-10-04_N	E318	01-Nov-2021	08-Nov-2021	----	----		15-Nov-2021	28 days	14 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1B_QTR_2021-10-04_N	E318	01-Nov-2021	08-Nov-2021	----	----		15-Nov-2021	28 days	14 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1A_QTR_2021-10-04_N	E372-U	01-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1B_QTR_2021-10-04_N	E372-U	01-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-SK1A_QTR_2021-10-04_N	E421.Cr-L	01-Nov-2021	08-Nov-2021	----	----		08-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-SK1B_QTR_2021-10-04_N	E421.Cr-L	01-Nov-2021	08-Nov-2021	----	----		08-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_MW-SK1A_QTR_2021-10-04_N	E509	01-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_MW-SK1B_QTR_2021-10-04_N	E509	01-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-SK1A_QTR_2021-10-04_N	E421	01-Nov-2021	08-Nov-2021	----	----		08-Nov-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-SK1B_QTR_2021-10-04_N	E421	01-Nov-2021	08-Nov-2021	----	----		08-Nov-2021	180 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-SK1A_QTR_2021-10-04_N	E358-L	01-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-SK1B_QTR_2021-10-04_N	E358-L	01-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1A_QTR_2021-10-04_N	E355-L	01-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-SK1B_QTR_2021-10-04_N	E355-L	01-Nov-2021	09-Nov-2021	----	----		12-Nov-2021	28 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_MW-SK1A_QTR_2021-10-04_N	E283	01-Nov-2021	----	----	----		07-Nov-2021	14 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_MW-SK1B_QTR_2021-10-04_N	E283	01-Nov-2021	----	----	----		07-Nov-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_MW-SK1A_QTR_2021-10-04_N	E290	01-Nov-2021	----	----	----		07-Nov-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_MW-SK1B_QTR_2021-10-04_N	E290	01-Nov-2021	----	----	----		07-Nov-2021	14 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> FR_MW-SK1A_QTR_2021-10-04_N	E100	01-Nov-2021	----	----	----		07-Nov-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> FR_MW-SK1B_QTR_2021-10-04_N	E100	01-Nov-2021	----	----	----		07-Nov-2021	28 days	6 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> FR_MW-SK1A_QTR_2021-10-04_N	E125	01-Nov-2021	----	----	----		09-Nov-2021	0.25 hrs	188 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> FR_MW-SK1B_QTR_2021-10-04_N	E125	01-Nov-2021	----	----	----		09-Nov-2021	0.25 hrs	188 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> FR_MW-SK1A_QTR_2021-10-04_N	E108	01-Nov-2021	----	----	----		07-Nov-2021	0.25 hrs	138 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> FR_MW-SK1B_QTR_2021-10-04_N	E108	01-Nov-2021	----	----	----		07-Nov-2021	0.25 hrs	138 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_MW-SK1A_QTR_2021-10-04_N	E162	01-Nov-2021	----	----	----		06-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_MW-SK1B_QTR_2021-10-04_N	E162	01-Nov-2021	----	----	----		06-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_MW-SK1A_QTR_2021-10-04_N	E160-L	01-Nov-2021	----	----	----		06-Nov-2021	7 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_MW-SK1B_QTR_2021-10-04_N	E160-L	01-Nov-2021	----	----	----		06-Nov-2021	7 days	5 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_MW-SK1A_QTR_2021-10-04_N	E121	01-Nov-2021	----	----	----		03-Nov-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_MW-SK1B_QTR_2021-10-04_N	E121	01-Nov-2021	----	----	----		03-Nov-2021	3 days	2 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	339773	1	11	9.0	5.0	✓
Alkalinity Species by Titration	E290	339760	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	344658	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	337241	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	337242	1	14	7.1	5.0	✓
Conductivity in Water	E100	339761	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	340639	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	341434	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	340640	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	341382	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	337150	1	7	14.2	5.0	✓
Fluoride in Water by IC	E235.F	337239	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	337243	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	337244	1	14	7.1	5.0	✓
ORP by Electrode	E125	341206	1	20	5.0	5.0	✓
pH by Meter	E108	339759	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	337240	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	338431	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	340618	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	341394	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339712	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	337147	1	7	14.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	339773	1	11	9.0	5.0	✓
Alkalinity Species by Titration	E290	339760	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	344658	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	337241	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	337242	1	14	7.1	5.0	✓
Conductivity in Water	E100	339761	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	340639	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	341434	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	340640	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	341382	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	337150	1	7	14.2	5.0	✓
Fluoride in Water by IC	E235.F	337239	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	337243	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	337244	1	14	7.1	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	341206	1	20	5.0	5.0	✓
pH by Meter	E108	339759	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	337240	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	338431	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	340618	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	341394	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339712	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	338427	1	7	14.2	5.0	✓
Turbidity by Nephelometry	E121	337147	1	7	14.2	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	339773	1	11	9.0	5.0	✓
Alkalinity Species by Titration	E290	339760	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	344658	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	337241	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	337242	1	14	7.1	5.0	✓
Conductivity in Water	E100	339761	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	340639	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	341434	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	340640	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	341382	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	337150	1	7	14.2	5.0	✓
Fluoride in Water by IC	E235.F	337239	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	337243	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	337244	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	337240	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	338431	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	340618	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	341394	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339712	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	338427	1	7	14.2	5.0	✓
Turbidity by Nephelometry	E121	337147	1	7	14.2	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	344658	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	337241	1	14	7.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	337242	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	340639	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	341434	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	340640	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	341382	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	337150	1	7	14.2	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	337239	1	14	7.1	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	337243	1	14	7.1	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	337244	1	14	7.1	5.0	✔
Sulfate in Water by IC	E235.SO4	337240	1	14	7.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	340618	1	19	5.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	341394	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339712	1	19	5.2	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105439**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 11/1/2021  
**Sampler** : Cruz Canlas  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 03-Nov-2021 09:00  
**Date Analysis Commenced** : 03-Nov-2021  
**Issue Date** : 16-Nov-2021 17:45

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2105439  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 337147)</b>											
CG2105416-001	Anonymous	turbidity	----	E121	0.10	NTU	0.18	0.19	0.003	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 338431)</b>											
CG2105426-008	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	324	327	0.921%	20%	----
<b>Physical Tests (QC Lot: 339759)</b>											
CG2105431-001	Anonymous	pH	----	E108	0.10	pH units	7.56	7.46	1.33%	4%	----
<b>Physical Tests (QC Lot: 339760)</b>											
CG2105434-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	194	196	0.798%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	237	239	0.798%	20%	----
<b>Physical Tests (QC Lot: 339761)</b>											
CG2105434-001	Anonymous	conductivity	----	E100	2.0	µS/cm	867	870	0.345%	10%	----
<b>Physical Tests (QC Lot: 339773)</b>											
CG2105437-004	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	2.0	<2.0	0.02	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 341206)</b>											
CG2105429-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	455	460	1.12%	15%	----
<b>Anions and Nutrients (QC Lot: 337150)</b>											
CG2105434-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0018	0.0022	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337239)</b>											
CG2105423-005	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.158	0.161	0.003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337240)</b>											
CG2105423-005	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	224	223	0.410%	20%	----
<b>Anions and Nutrients (QC Lot: 337241)</b>											
CG2105423-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337242)</b>											
CG2105423-005	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.99	0.98	0.008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337243)</b>											
CG2105423-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.790	0.788	0.241%	20%	----
<b>Anions and Nutrients (QC Lot: 337244)</b>											
CG2105423-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 339712)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 339712) - continued</b>											
CG2105429-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0088	0.0087	0.00007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 340618)</b>											
CG2105426-010	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.065	0.084	0.019	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 344658)</b>											
CG2105429-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0081	0.0080	0.0001	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 341382)</b>											
CG2105434-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.36	1.30	0.07	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 341394)</b>											
CG2105428-021	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.35	2.39	0.04	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 340639)</b>											
CG2105423-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 340640)</b>											
CG2105423-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00011	0.000006	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00030	0.00027	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.108	0.109	0.845%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.032	0.032	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	97.9	98.0	0.133%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00040	0.00040	0.0000005	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0218	0.0218	0.170%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	31.5	31.2	0.888%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00088	0.00085	0.00003	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000608	0.000636	4.51%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00061	0.00051	0.00010	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.86	1.82	1.71%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	8.04 µg/L	0.00794	1.34%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.71	5.57	2.48%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.48	6.50	0.345%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 340640) - continued</b>											
CG2105423-001	Anonymous	strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.573	0.596	3.89%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	34.1	33.5	1.77%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000538	0.000542	0.731%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0046	0.0047	0.00004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 341434)</b>											
CG2105428-019	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 341435)</b>											
CG2105439-002	FR_MW-SK1A_QTR_2021-10-04_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	0.0000058	0.0000056	0.0000003	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 337147)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 338427)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 338431)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 339760)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 339761)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 339773)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 337150)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 337239)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 337240)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 337241)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 337242)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 337243)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 337244)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 339712)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 340618)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 344658)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 344658) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 341382)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 341394)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 340639)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 340640)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 340640) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 341434)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 341435)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 337147)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	106	85.0	115	---
<b>Physical Tests (QCLot: 338427)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 338431)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	95.7	85.0	115	---
<b>Physical Tests (QCLot: 339759)</b>									
pH	---	E108	---	pH units	7 pH units	99.7	98.6	101	---
<b>Physical Tests (QCLot: 339760)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	113	85.0	115	---
<b>Physical Tests (QCLot: 339761)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	---
<b>Physical Tests (QCLot: 339773)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 341206)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 337150)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	108	80.0	120	---
<b>Anions and Nutrients (QCLot: 337239)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	94.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 337240)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	96.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 337241)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	95.7	85.0	115	---
<b>Anions and Nutrients (QCLot: 337242)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	97.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 337243)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 337244)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	96.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 339712)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	103	80.0	120	---
<b>Anions and Nutrients (QCLot: 340618)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 340618) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	92.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 344658)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.8	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 341382)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	85.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 341394)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	90.5	80.0	120	----
<b>Dissolved Metals (QCLot: 340639)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 340640)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.3	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100.0	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	89.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	92.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	92.8	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	87.1	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 340640) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.4	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.9	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.1	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	89.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	93.5	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 337150)</b>										
CG2105439-001	FR_MW-SK1B_QTR_2021-1 0-04_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0607 mg/L	0.05 mg/L	121	70.0	130	----
<b>Anions and Nutrients (QCLot: 337239)</b>										
CG2105423-011	Anonymous	fluoride	16984-48-8	E235.F	0.944 mg/L	1 mg/L	94.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 337240)</b>										
CG2105423-011	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	96.3 mg/L	100 mg/L	96.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 337241)</b>										
CG2105423-011	Anonymous	bromide	24959-67-9	E235.Br-L	0.477 mg/L	0.5 mg/L	95.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 337242)</b>										
CG2105423-011	Anonymous	chloride	16887-00-6	E235.Cl-L	97.8 mg/L	100 mg/L	97.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 337243)</b>										
CG2105423-011	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.45 mg/L	2.5 mg/L	98.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 337244)</b>										
CG2105423-011	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.483 mg/L	0.5 mg/L	96.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 339712)</b>										
CG2105431-001	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 340618)</b>										
CG2105426-011	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.49 mg/L	2.5 mg/L	99.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 344658)</b>										
CG2105437-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0959 mg/L	0.1 mg/L	95.9	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 341382)</b>										
CG2105434-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	21.4 mg/L	23.9 mg/L	89.4	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 341394)</b>										
CG2105428-021	Anonymous	carbon, total organic [TOC]	----	E355-L	22.1 mg/L	23.9 mg/L	92.6	70.0	130	----
<b>Dissolved Metals (QCLot: 340639)</b>										
CG2105423-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----
<b>Dissolved Metals (QCLot: 340640)</b>										
CG2105423-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.191 mg/L	0.2 mg/L	95.4	70.0	130	----



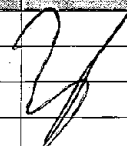
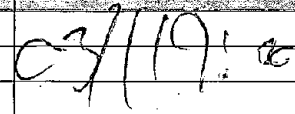
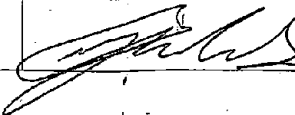
Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 340640) - continued</b>										
CG2105423-002	Anonymous	antimony, dissolved	7440-36-0	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00818 mg/L	0.01 mg/L	81.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.086 mg/L	0.1 mg/L	86.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00391 mg/L	0.004 mg/L	97.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0186 mg/L	0.02 mg/L	93.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.81 mg/L	2 mg/L	90.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0178 mg/L	0.02 mg/L	89.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0989 mg/L	0.1 mg/L	98.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.86 mg/L	4 mg/L	96.6	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.90 mg/L	10 mg/L	89.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00379 mg/L	0.004 mg/L	94.7	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00360 mg/L	0.004 mg/L	90.1	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00380 mg/L	0.004 mg/L	95.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.371 mg/L	0.4 mg/L	92.8	70.0	130	----
<b>Dissolved Metals (QCLot: 341434)</b>										
CG2105428-020	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000920 mg/L	0.0001 mg/L	92.0	70.0	130	----
<b>Dissolved Metals (QCLot: 341435)</b>										
CG2105440-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000915 mg/L	0.0001 mg/L	91.5	70.0	130	----



COC ID:		11/1/2021		TURNAROUND TIME:		RUSH:					
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job# Fording River Operation				Lab Name ALS Calgary				Report Format / Distribution			
Project Manager Scott Roughead				Lab Contact Lyudmyla Shvets				Email 1: david.burroughs@teck.com			
Email scott.roughead@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com				Email 2: scott.roughead@teck.com			
Address				Address 2559 29 Street NE				Email 3: teckcoal@equisonline.com			
City Elkford				Province BC		City Calgary		Province AB		Email 4: cruz.canlas@teck.com	
Postal Code				Country Canada		Postal Code T1Y 7B5		Country Canada		Email 5: jamie.walsh@teck.com	
Phone Number 1-250-433-6976				Phone Number 403 407 1794				PO number VPO00741392			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/NO)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	ALS Package-BOD	ALS Package-Colour	ALS Package-PAH	ALS Package-TSS/TURB	ALS Package-EPH
FR_MW-SK1B_QTR_2021-10-04_N	FR_MW-SK1B	WG	NO	1-Nov	3:05	G	5	1	1	1		1		1					
FR_MW-SK1A_QTR_2021-10-04_N	FR_MW-SK1A	WG	NO	1-Nov	2:50	G	5	1	1	1		1		1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS			RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION			DATE/TIME				
			Cruz Canlas		November 1, 2021									
SERVICE REQUEST (rush - subject to availability)														
Regular (default) x			Sampler's Name			Cruz Canlas			Mobile #			2504336166		
Priority (2-3 business days) - 50% surcharge			Sampler's Signature						Date/Time			November 1, 2021		
Emergency (1 Business Day) - 100% surcharge														
For Emergency <1 Day, ASAP or Weekend - Contact ALS														

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2105439**



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105553**  
**Client** : **Teck Coal Limited**  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00742840  
**C-O-C number** : COC\_FR\_Swift\_Seepage\_WG\_2021\_Q  
**Sampler** : Evan Warner  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Nov-2021 09:00  
**Date Analysis Commenced** : 09-Nov-2021  
**Issue Date** : 22-Nov-2021 09:35

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW18-03_ WG_2021_11_0 8_NP	FR_MW18-04_ WG_2021_11_0 8_NP	FR_MW18-05_ WG_2021_11_0 8_NP	----	----
Client sampling date / time					08-Nov-2021 15:05	08-Nov-2021 13:45	08-Nov-2021 12:25	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105553-001	CG2105553-002	CG2105553-003	-----	-----	
					Result	Result	Result	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	9.3	<2.0	<2.0	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	250	198	215	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	305	242	263	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	305	242	263	----	----	
conductivity	----	E100	2.0	µS/cm	2320	527	927	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1680	271	395	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	441	423	458	----	----	
pH	----	E108	0.10	pH units	7.54	7.84	7.78	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	2030	313	642	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.1	2.4	3.0	----	----	
turbidity	----	E121	0.10	NTU	0.30	2.63	1.24	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0052	0.0380	<0.0050	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.050	<0.250 <sup>DLDS</sup>	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.78	1.25	3.12	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.105	0.315	0.334	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.135 <sup>TKNI</sup>	0.084	0.064	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.74	0.0058	0.169	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0077	<0.0010	<0.0050 <sup>DLDS</sup>	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0.0020	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0207	0.0114	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1270	61.6	273	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.95	1.33	1.71	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.89	1.15	1.72	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW18-03_ WG_2021_11_0 8_NP	FR_MW18-04_ WG_2021_11_0 8_NP	FR_MW18-05_ WG_2021_11_0 8_NP	----	----
Client sampling date / time					08-Nov-2021 15:05	08-Nov-2021 13:45	08-Nov-2021 12:25	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105553-001	CG2105553-002	CG2105553-003	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	32.8	6.17	11.0	----	----	
cation sum	----	EC101	0.10	meq/L	34.1	6.32	11.4	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	104	102	104	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.94	1.20	1.78	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0020 <sup>DLA</sup>	0.0012	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00020	0.00046	0.00096	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00020	0.00108	0.00030	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0270	0.102	0.0393	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.029	0.025	0.027	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0800	0.0101	0.0112	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	358	75.1	115	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	0.00027	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.24	0.15	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	<0.00020	0.00073	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.020 <sup>DLA</sup>	0.093	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0501	0.0131	0.0435	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	190	20.2	26.2	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.417	0.393	0.00180	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00205	0.00389	0.00444	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00334	0.00114	0.00064	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.50	2.06	3.51	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	7.25	<0.050	1.00	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.90	5.74	6.77	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	13.2	19.2	78.4	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_MW18-03_WG_2021_11_08_NP	FR_MW18-04_WG_2021_11_08_NP	FR_MW18-05_WG_2021_11_08_NP	----	----
Client sampling date / time					08-Nov-2021 15:05	08-Nov-2021 13:45	08-Nov-2021 12:25	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105553-001	CG2105553-002	CG2105553-003	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.64	0.183	0.258	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	472	22.0	88.1	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000120	0.000013	0.000056	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	0.00011	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00666	0.00209	0.00748	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0020 <sup>DLA</sup>	0.0017	0.0083	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105553</b>	Page	: 1 of 16
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 09-Nov-2021 09:00
PO	: VPO00742840	Issue Date	: 22-Nov-2021 09:35
C-O-C number	: COC_FR_Swift_Seepage_WG_2021_Q		
Sampler	: Evan Warner		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.142 % <sup>TKND</sup>	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

**Result Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW18-03_WG_2021_11_08_NP	E298	08-Nov-2021	20-Nov-2021	----	----		20-Nov-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW18-04_WG_2021_11_08_NP	E298	08-Nov-2021	20-Nov-2021	----	----		20-Nov-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_MW18-05_WG_2021_11_08_NP	E298	08-Nov-2021	20-Nov-2021	----	----		20-Nov-2021	28 days	12 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_MW18-03_WG_2021_11_08_NP	E235.Br-L	08-Nov-2021	----	----	----		09-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_MW18-04_WG_2021_11_08_NP	E235.Br-L	08-Nov-2021	----	----	----		09-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_MW18-05_WG_2021_11_08_NP	E235.Br-L	08-Nov-2021	----	----	----		09-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_MW18-03_WG_2021_11_08_NP	E235.Cl-L	08-Nov-2021	----	----	----		09-Nov-2021	28 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_MW18-04_WG_2021_11_08_NP	E235.Cl-L	08-Nov-2021	----	----	----		09-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_MW18-05_WG_2021_11_08_NP	E235.Cl-L	08-Nov-2021	----	----	----		09-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_MW18-03_WG_2021_11_08_NP	E378-U	08-Nov-2021	----	----	----		09-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_MW18-04_WG_2021_11_08_NP	E378-U	08-Nov-2021	----	----	----		09-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_MW18-05_WG_2021_11_08_NP	E378-U	08-Nov-2021	----	----	----		09-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_MW18-03_WG_2021_11_08_NP	E235.F	08-Nov-2021	----	----	----		09-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_MW18-04_WG_2021_11_08_NP	E235.F	08-Nov-2021	----	----	----		09-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_MW18-05_WG_2021_11_08_NP	E235.F	08-Nov-2021	----	----	----		09-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_MW18-03_WG_2021_11_08_NP	E235.NO3-L	08-Nov-2021	----	----	----		09-Nov-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW18-04_WG_2021_11_08_NP	E235.NO3-L	08-Nov-2021	----	----	----		09-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW18-05_WG_2021_11_08_NP	E235.NO3-L	08-Nov-2021	----	----	----		09-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW18-03_WG_2021_11_08_NP	E235.NO2-L	08-Nov-2021	----	----	----		09-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW18-04_WG_2021_11_08_NP	E235.NO2-L	08-Nov-2021	----	----	----		09-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW18-05_WG_2021_11_08_NP	E235.NO2-L	08-Nov-2021	----	----	----		09-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW18-03_WG_2021_11_08_NP	E235.SO4	08-Nov-2021	----	----	----		09-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW18-04_WG_2021_11_08_NP	E235.SO4	08-Nov-2021	----	----	----		09-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_MW18-05_WG_2021_11_08_NP	E235.SO4	08-Nov-2021	----	----	----		09-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW18-03_WG_2021_11_08_NP	E318	08-Nov-2021	16-Nov-2021	----	----		18-Nov-2021	28 days	10 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW18-04_WG_2021_11_08_NP	E318	08-Nov-2021	16-Nov-2021	----	----		18-Nov-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW18-05_WG_2021_11_08_NP	E318	08-Nov-2021	16-Nov-2021	----	----		18-Nov-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW18-03_WG_2021_11_08_NP	E372-U	08-Nov-2021	13-Nov-2021	----	----		13-Nov-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW18-04_WG_2021_11_08_NP	E372-U	08-Nov-2021	13-Nov-2021	----	----		13-Nov-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW18-05_WG_2021_11_08_NP	E372-U	08-Nov-2021	13-Nov-2021	----	----		13-Nov-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW18-03_WG_2021_11_08_NP	E421.Cr-L	08-Nov-2021	15-Nov-2021	----	----		15-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW18-04_WG_2021_11_08_NP	E421.Cr-L	08-Nov-2021	15-Nov-2021	----	----		15-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW18-05_WG_2021_11_08_NP	E421.Cr-L	08-Nov-2021	15-Nov-2021	----	----		15-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_MW18-03_WG_2021_11_08_NP	E509	08-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	28 days	8 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_MW18-04_WG_2021_11_08_NP	E509	08-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_MW18-05_WG_2021_11_08_NP	E509	08-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW18-03_WG_2021_11_08_NP	E421	08-Nov-2021	15-Nov-2021	----	----		15-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW18-04_WG_2021_11_08_NP	E421	08-Nov-2021	15-Nov-2021	----	----		15-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW18-05_WG_2021_11_08_NP	E421	08-Nov-2021	15-Nov-2021	----	----		15-Nov-2021	180 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW18-03_WG_2021_11_08_NP	E358-L	08-Nov-2021	14-Nov-2021	----	----		17-Nov-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW18-04_WG_2021_11_08_NP	E358-L	08-Nov-2021	14-Nov-2021	----	----		17-Nov-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW18-05_WG_2021_11_08_NP	E358-L	08-Nov-2021	14-Nov-2021	----	----		17-Nov-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW18-03_WG_2021_11_08_NP	E355-L	08-Nov-2021	14-Nov-2021	----	----		17-Nov-2021	28 days	10 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW18-04_WG_2021_11_08_NP	E355-L	08-Nov-2021	14-Nov-2021	----	----		17-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW18-05_WG_2021_11_08_NP	E355-L	08-Nov-2021	14-Nov-2021	----	----		17-Nov-2021	28 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_MW18-03_WG_2021_11_08_NP	E283	08-Nov-2021	----	----	----		10-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_MW18-04_WG_2021_11_08_NP	E283	08-Nov-2021	----	----	----		10-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_MW18-05_WG_2021_11_08_NP	E283	08-Nov-2021	----	----	----		10-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_MW18-03_WG_2021_11_08_NP	E290	08-Nov-2021	----	----	----		10-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_MW18-04_WG_2021_11_08_NP	E290	08-Nov-2021	----	----	----		10-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_MW18-05_WG_2021_11_08_NP	E290	08-Nov-2021	----	----	----		10-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> FR_MW18-03_WG_2021_11_08_NP	E100	08-Nov-2021	----	----	----		10-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW18-04_WG_2021_11_08_NP	E100	08-Nov-2021	----	----	----		10-Nov-2021	28 days	2 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW18-05_WG_2021_11_08_NP	E100	08-Nov-2021	----	----	----		10-Nov-2021	28 days	2 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW18-03_WG_2021_11_08_NP	E125	08-Nov-2021	----	----	----		16-Nov-2021	0.25 hrs	187 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW18-04_WG_2021_11_08_NP	E125	08-Nov-2021	----	----	----		16-Nov-2021	0.25 hrs	188 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW18-05_WG_2021_11_08_NP	E125	08-Nov-2021	----	----	----		16-Nov-2021	0.25 hrs	189 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW18-03_WG_2021_11_08_NP	E108	08-Nov-2021	----	----	----		10-Nov-2021	0.25 hrs	47 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW18-04_WG_2021_11_08_NP	E108	08-Nov-2021	----	----	----		10-Nov-2021	0.25 hrs	49 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW18-05_WG_2021_11_08_NP	E108	08-Nov-2021	----	----	----		10-Nov-2021	0.25 hrs	50 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_MW18-03_WG_2021_11_08_NP	E162	08-Nov-2021	----	----	----		15-Nov-2021	7 days	7 days		✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
	Rec	Actual		Rec	Actual					
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> FR_MW18-04_WG_2021_11_08_NP	E162	08-Nov-2021	----	----	----		15-Nov-2021	7 days	7 days	✔
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> FR_MW18-05_WG_2021_11_08_NP	E162	08-Nov-2021	----	----	----		15-Nov-2021	7 days	7 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_MW18-03_WG_2021_11_08_NP	E160-L	08-Nov-2021	----	----	----		15-Nov-2021	7 days	7 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_MW18-04_WG_2021_11_08_NP	E160-L	08-Nov-2021	----	----	----		15-Nov-2021	7 days	7 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_MW18-05_WG_2021_11_08_NP	E160-L	08-Nov-2021	----	----	----		15-Nov-2021	7 days	7 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_MW18-05_WG_2021_11_08_NP	E121	08-Nov-2021	----	----	----		09-Nov-2021	3 days	1 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_MW18-03_WG_2021_11_08_NP	E121	08-Nov-2021	----	----	----		10-Nov-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_MW18-04_WG_2021_11_08_NP	E121	08-Nov-2021	----	----	----		10-Nov-2021	3 days	2 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	342484	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	342489	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	349205	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	341580	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	341581	1	20	5.0	5.0	✓
Conductivity in Water	E100	342487	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	345072	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	345420	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	345071	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	344536	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	341559	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	341578	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	341582	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	341583	1	20	5.0	5.0	✓
ORP by Electrode	E125	345617	1	20	5.0	5.0	✓
pH by Meter	E108	342488	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	341579	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	345195	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	345884	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	344542	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	343256	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	341668	2	40	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	342484	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	342489	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	349205	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	341580	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	341581	1	20	5.0	5.0	✓
Conductivity in Water	E100	342487	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	345072	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	345420	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	345071	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	344536	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	341559	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	341578	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	341582	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	341583	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	345617	1	20	5.0	5.0	✓
pH by Meter	E108	342488	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	341579	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	345195	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	345884	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	344542	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	343256	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	344451	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	341668	2	40	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	342484	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	342489	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	349205	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	341580	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	341581	1	20	5.0	5.0	✓
Conductivity in Water	E100	342487	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	345072	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	345420	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	345071	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	344536	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	341559	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	341578	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	341582	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	341583	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	341579	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	345195	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	345884	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	344542	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	343256	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	344451	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	341668	2	40	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	349205	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	341580	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	341581	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	345072	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	345420	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	345071	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	344536	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	341559	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	341578	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	341582	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	341583	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	341579	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	345884	1	19	5.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	344542	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	343256	1	20	5.0	5.0	✔





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: CG2105553</b>	<b>Page</b>	<b>: 1 of 13</b>
<b>Client</b>	: Teck Coal Limited	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Cam Jaeger	<b>Account Manager</b>	: Lyudmyla Shvets
<b>Address</b>	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	<b>Address</b>	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
<b>Telephone</b>	: ----	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: FORDING RIVER OPERATION	<b>Date Samples Received</b>	: 09-Nov-2021 09:00
<b>PO</b>	: VPO00742840	<b>Date Analysis Commenced</b>	: 09-Nov-2021
<b>C-O-C number</b>	: COC_FR_Swift_Seepage_WG_2021_Q	<b>Issue Date</b>	: 22-Nov-2021 09:35
<b>Sampler</b>	: Evan Warner		
<b>Site</b>	: ----		
<b>Quote number</b>	: Teck Coal Master Quote		
<b>No. of samples received</b>	: 3		
<b>No. of samples analysed</b>	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 13  
Work Order : CG2105553  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 341668)</b>											
CG2105552-001	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 342115)</b>											
CG2105549-003	Anonymous	turbidity	----	E121	0.10	NTU	0.68	0.68	0.0006	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 342484)</b>											
CG2105379-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.7	2.2	0.5	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 342487)</b>											
CG2105379-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2030	2040	0.491%	10%	----
<b>Physical Tests (QC Lot: 342488)</b>											
CG2105379-001	Anonymous	pH	----	E108	0.10	pH units	7.94	7.94	0.00%	4%	----
<b>Physical Tests (QC Lot: 342489)</b>											
CG2105379-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	197	204	3.11%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	241	248	3.11%	20%	----
<b>Physical Tests (QC Lot: 345195)</b>											
CG2105553-001	FR_MW18-03_WG_2021_11_08_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	2030	2060	1.25%	20%	----
<b>Physical Tests (QC Lot: 345617)</b>											
CG2105552-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	438	438	0.183%	15%	----
<b>Anions and Nutrients (QC Lot: 341559)</b>											
CG2105549-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 341578)</b>											
CG2105553-001	FR_MW18-03_WG_2021_11_08_NP	fluoride	16984-48-8	E235.F	0.100	mg/L	0.105	<0.100	0.005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 341579)</b>											
CG2105553-001	FR_MW18-03_WG_2021_11_08_NP	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	1270	1270	0.107%	20%	----
<b>Anions and Nutrients (QC Lot: 341580)</b>											
CG2105553-001	FR_MW18-03_WG_2021_11_08_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 341581)</b>											
CG2105553-001	FR_MW18-03_WG_2021_11_08_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	3.78	3.65	0.12	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 341582)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 341582) - continued</b>											
CG2105553-001	FR_MW18-03_WG_2021_11_08_NP	nitrate (as N)	14797-55-8	E235.N03-L	0.0250	mg/L	1.74	1.74	0.201%	20%	----
<b>Anions and Nutrients (QC Lot: 341583)</b>											
CG2105553-001	FR_MW18-03_WG_2021_11_08_NP	nitrite (as N)	14797-65-0	E235.N02-L	0.0050	mg/L	0.0077	0.0082	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 343256)</b>											
CG2105379-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 345884)</b>											
CG2105561-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.278	# 0.419	0.142	Diff <2x LOR	TKND
<b>Anions and Nutrients (QC Lot: 349205)</b>											
CG2105553-001	FR_MW18-03_WG_2021_11_08_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0052	0.0112	0.0060	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 344536)</b>											
CG2105552-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.99	1.07	0.08	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 344542)</b>											
CG2105552-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.16	1.13	0.03	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 345071)</b>											
CG2105553-001	FR_MW18-03_WG_2021_11_08_NP	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00020	0.00024	0.00004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00020	<0.00020	0.000001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0270	0.0273	1.35%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.029	0.030	0.0004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.0800 µg/L	0.0000838	0.0000038	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	358	366	2.34%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	0.24 µg/L	0.00025	0.00001	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.0501	0.0550	9.36%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	190	196	3.07%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.417	0.424	1.72%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00205	0.00212	3.39%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.00334	0.00340	0.00006	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	2.50	2.56	2.59%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 345071) - continued</b>											
CG2105553-001	FR_MW18-03_WG_2021_11_08_NP	selenium, dissolved	7782-49-2	E421	0.100	mg/L	7.25 µg/L	0.00727	0.203%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	5.90	6.16	4.27%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	13.2	13.6	3.02%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	1.64	1.72	4.19%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	472	487	3.29%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000120	0.000134	0.000014	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.00666	0.00715	7.10%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 345072)</b>											
CG2105553-001	FR_MW18-03_WG_2021_11_08_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 345420)</b>											
CG2105553-001	FR_MW18-03_WG_2021_11_08_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 341668)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 342115)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 342484)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 342487)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 342489)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 344451)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 345195)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 341559)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 341578)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 341579)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 341580)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 341581)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 341582)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 341583)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 343256)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 345884)</b>						





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 345884) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 349205)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 344536)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 344542)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 345071)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---

Page : 8 of 13  
 Work Order : CG2105553  
 Client : Teck Coal Limited  
 Project : FORDING RIVER OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 345071) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 345072)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 345420)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 341668)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	107	85.0	115	----
<b>Physical Tests (QCLot: 342115)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	92.0	85.0	115	----
<b>Physical Tests (QCLot: 342484)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	113	85.0	115	----
<b>Physical Tests (QCLot: 342487)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	----
<b>Physical Tests (QCLot: 342488)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 342489)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	105	85.0	115	----
<b>Physical Tests (QCLot: 344451)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	95.3	85.0	115	----
<b>Physical Tests (QCLot: 345195)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.4	85.0	115	----
<b>Physical Tests (QCLot: 345617)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	103	95.4	104	----
<b>Anions and Nutrients (QCLot: 341559)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	96.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 341578)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 341579)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 341580)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	101	85.0	115	----
<b>Anions and Nutrients (QCLot: 341581)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 341582)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 341583)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 343256)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 343256) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	97.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 345884)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	93.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 349205)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 344536)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 344542)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Dissolved Metals (QCLot: 345071)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	112	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.9	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.5	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.6	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	113	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.3	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	100	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 345071) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	106	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	108	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	110	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	111	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	109	80.0	120	----
<b>Dissolved Metals (QCLot: 345072)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.3	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 341559)</b>										
CG2105549-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0619 mg/L	0.05 mg/L	124	70.0	130	----
<b>Anions and Nutrients (QCLot: 341578)</b>										
CG2105556-014	Anonymous	fluoride	16984-48-8	E235.F	0.987 mg/L	1 mg/L	98.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 341579)</b>										
CG2105556-014	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	94.8 mg/L	100 mg/L	94.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 341580)</b>										
CG2105556-014	Anonymous	bromide	24959-67-9	E235.Br-L	0.509 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 341581)</b>										
CG2105556-014	Anonymous	chloride	16887-00-6	E235.Cl-L	100 mg/L	100 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 341582)</b>										
CG2105556-014	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.51 mg/L	2.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 341583)</b>										
CG2105556-014	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.516 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 343256)</b>										
CG2105379-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0623 mg/L	0.0676 mg/L	92.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 345884)</b>										
CG2105569-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.40 mg/L	2.5 mg/L	95.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 349205)</b>										
CG2105556-014	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0904 mg/L	0.1 mg/L	90.4	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 344536)</b>										
CG2105552-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.4 mg/L	23.9 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 344542)</b>										
CG2105552-001	Anonymous	carbon, total organic [TOC]	----	E355-L	26.7 mg/L	23.9 mg/L	112	70.0	130	----
<b>Dissolved Metals (QCLot: 345071)</b>										
CG2105553-002	FR_MW18-04_WG_2021_1_08_NP	aluminum, dissolved	7429-90-5	E421	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0224 mg/L	0.02 mg/L	112	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 345071) - continued</b>										
CG2105553-002	FR_MW18-04_WG_2021_1_08_NP	beryllium, dissolved	7440-41-7	E421	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00866 mg/L	0.01 mg/L	86.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.094 mg/L	0.1 mg/L	94.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00437 mg/L	0.004 mg/L	109	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.03 mg/L	2 mg/L	102	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.30 mg/L	4 mg/L	108	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0458 mg/L	0.04 mg/L	114	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.05 mg/L	10 mg/L	90.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00324 mg/L	0.004 mg/L	81.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00374 mg/L	0.004 mg/L	93.5	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00443 mg/L	0.004 mg/L	111	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.110 mg/L	0.1 mg/L	110	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.440 mg/L	0.4 mg/L	110	70.0	130	----		
<b>Dissolved Metals (QCLot: 345072)</b>										
CG2105553-002	FR_MW18-04_WG_2021_1_08_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0422 mg/L	0.04 mg/L	106	70.0	130	----
<b>Dissolved Metals (QCLot: 345420)</b>										
CG2105553-002	FR_MW18-04_WG_2021_1_08_NP	mercury, dissolved	7439-97-6	E509	0.0000975 mg/L	0.0001 mg/L	97.5	70.0	130	----

Teck

COC ID:		COC_FR_Swift_Seepage_WG_2021_Q4		TURNAROUND TIME:			RUSH:								
PROJECT/CLIENT INFO				LABORATORY			OTHER/INFO								
Facility Name / Job#		Fording River Operation		Lab Name		ALS Calgary		Report Format / Distribution	Excel	PDF	EDD				
Project Manager		Cam Jaeger		Lab Contact		Lyudmyla Shvets		Email 1:	cam.jaeger@teck.com	X	X	X			
Email		cam.jaeger@teck.com		Email		Lyudmyla.Shvets@ALSGlobal.com		Email 2:	kayla.richter@teck.com	X	X	X			
Address		421 Pine Ave		Address		2559 29 Street NE		Email 3:	teckcoal@equisonline.com	X	X	X			
City		Sparwood	Province	BC	City		Calgary	Province	AB	Email 4:	teck.lab.results@sharepoint.teck.com	X	X		
Postal Code		V0B 2G0		Country	Canada	Postal Code		T1Y 7B5	Country	Canada	Email 5:	evan.warner@teck.com	X	X	X
Phone Number		250-425-8463		Phone Number		403 407 1794		PO number		PO 742840					

Environmental Division  
Calgary  
Work Order Reference  
**CG2105553**



Telephone: +1 403 407 1800

SAMPLE DETAILS							ANALYSIS REQUESTED					
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA
FR_MW20-01S_WG_2021-11	[REDACTED]	WG		[REDACTED]		G	5	1	1	1	1	1
FR_MW20-01D_WG_2021-11	[REDACTED]	WG		[REDACTED]		G	5	1	1	1	1	1
FR_MW20-02S_WG_2021-11	[REDACTED]	WG		[REDACTED]		G	5	1	1	1	1	1
FR_MW20-02D_WG_2021-11	[REDACTED]	WG		[REDACTED]		G	5	1	1	1	1	1
FR_MW20-03S_WG_2021-11	[REDACTED]	WG		[REDACTED]		G	5	1	1	1	1	1
FR_MW20-03D_WG_2021-11	[REDACTED]	WG		[REDACTED]		G	5	1	1	1	1	1
FR_MW20-04S_WG_2021-11	[REDACTED]	WG		[REDACTED]		G	5	1	1	1	1	1
FR_MW20-04D_WG_2021-11	[REDACTED]	WG		[REDACTED]		G	5	1	1	1	1	1
FR_MW18-03_WG_2021-11 NP	FR_MW18-03	WG		2021-11-08	1505	G	5	1	1	1	1	1
FR_MW18-04_WG_2021-11 NP	FR_MW18-04	WG		2021-11-08	1345	G	5	1	1	1	1	1
FR_MW18-05_WG_2021-11 NP	FR_MW18-05	WG		2021-11-08	1225	G	5	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	11/09/2021
			9:00 am	6°C

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Evan Warner		Mobile #	250 433 6399
Sampler's Signature	<i>[Signature]</i>		Date/Time	2021-11-08 1700





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105898**  
**Client** : **Teck Coal Limited**  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-11  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Nov-2021 08:50  
**Date Analysis Commenced** : 23-Nov-2021  
**Issue Date** : 30-Nov-2021 16:30

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-17MW_ WG_2021-11_N P	FR_KB-18MW_ WG_2021-11_N P	FR_KB-19MW_ WG_2021-11_N P	FR_KB-20MW_ WG_2021-11_N P	FR_KB-13MW_ WG_2021-11_N P
Client sampling date / time					22-Nov-2021 10:00	22-Nov-2021 13:27	22-Nov-2021 09:08	22-Nov-2021 11:28	22-Nov-2021 15:28	
Analyte	CAS Number	Method	LOR	Unit	CG2105898-001 Result	CG2105898-002 Result	CG2105898-003 Result	CG2105898-004 Result	CG2105898-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	15.0	18.7	17.8	16.7	22.7	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	498	492	483	453	489	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	607	600	590	552	596	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	498	492	483	453	489	
conductivity	----	E100	2.0	µS/cm	2280	2260	2170	1820	2250	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1400	1380	1290	1070	1390	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	463	504	490	490	492	
pH	----	E108	0.10	pH units	7.63	7.48	7.36	7.32	7.67	
solids, total dissolved [TDS]	----	E162	10	mg/L	2000	1870	1750	1490	1900	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.3	1.8	3.4	3.0	2.3	
turbidity	----	E121	0.10	NTU	0.12	<0.10	1.54	1.04	0.26	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0074	<0.0050	<0.0050	0.0252	<0.0050	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.22	1.18	1.13	0.88	1.21	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.129	0.139	0.129	0.126	0.130	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	0.239 <sup>TKNI</sup>	0.659 <sup>TKNI</sup>	0.240 <sup>TKNI</sup>	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	88.3	86.1	79.7	60.7	84.2	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0026	0.0022	0.0049	0.0022	0.0030	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0023	0.0059	0.0051	0.0034	0.0035	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	713	691	643	494	691	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0.52	0.91	0.57	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	<0.50	0.70	0.64	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-17MW_ WG_2021-11_N P	FR_KB-18MW_ WG_2021-11_N P	FR_KB-19MW_ WG_2021-11_N P	FR_KB-20MW_ WG_2021-11_N P	FR_KB-13MW_ WG_2021-11_N P
Client sampling date / time					22-Nov-2021 10:00	22-Nov-2021 13:27	22-Nov-2021 09:08	22-Nov-2021 11:28	22-Nov-2021 15:28	
Analyte	CAS Number	Method	LOR	Unit	CG2105898-001 Result	CG2105898-002 Result	CG2105898-003 Result	CG2105898-004 Result	CG2105898-005 Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	31.1	30.4	28.8	23.7	30.2	
cation sum	----	EC101	0.10	meq/L	28.3	28.1	26.2	21.7	28.3	
ion balance (cations/anions ratio)	----	EC101	0.010	%	91.0	92.4	91.0	91.6	93.7	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.71	3.93	4.73	4.40	3.25	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0060 <sup>DLA</sup>	<0.0060 <sup>DLA</sup>	0.0123	0.0035	<0.0060 <sup>DLA</sup>	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00055	0.00050	0.00036	0.00033	0.00052	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0388	0.0488	0.0587	0.130	0.0492	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	<0.020	<0.040 <sup>DLA</sup>	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	
boron, total	7440-42-8	E420	0.010	mg/L	0.032	0.032	0.033	0.027	0.034	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.833	0.686	0.246	0.200	0.591	
calcium, total	7440-70-2	E420	0.050	mg/L	306	307	298	242	313	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	0.00011	<0.00020 <sup>DLA</sup>	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.20 <sup>DLA</sup>	<0.20 <sup>DLA</sup>	<0.10	<0.20 <sup>DLA</sup>	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	0.00141	<0.00100 <sup>DLA</sup>	
iron, total	7439-89-6	E420	0.010	mg/L	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	<0.010	<0.020 <sup>DLA</sup>	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	0.000106	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.169	0.162	0.159	0.112	0.162	
magnesium, total	7439-95-4	E420	0.0050	mg/L	147	147	143	112	147	
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	0.00090	0.00081	0.00060	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00152	0.00156	0.00112	0.000995	0.00172	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0423	0.0296	0.00908	0.00723	0.0248	
potassium, total	7440-09-7	E420	0.050	mg/L	5.06	5.15	4.96	4.18	5.15	
selenium, total	7782-49-2	E420	0.050	µg/L	259	260	244	188	258	
silicon, total	7440-21-3	E420	0.10	mg/L	2.20	2.25	2.43	2.74	2.25	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	
sodium, total	17341-25-2	E420	0.050	mg/L	7.42	7.38	7.48	5.91	7.37	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.294	0.287	0.275	0.251	0.299	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-17MW_ WG_2021-11_N P	FR_KB-18MW_ WG_2021-11_N P	FR_KB-19MW_ WG_2021-11_N P	FR_KB-20MW_ WG_2021-11_N P	FR_KB-13MW_ WG_2021-11_N P
Client sampling date / time					22-Nov-2021 10:00	22-Nov-2021 13:27	22-Nov-2021 09:08	22-Nov-2021 11:28	22-Nov-2021 15:28	
Analyte	CAS Number	Method	LOR	Unit	CG2105898-001 Result	CG2105898-002 Result	CG2105898-003 Result	CG2105898-004 Result	CG2105898-005 Result	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	246	244	233	182	251	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000024	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00090 <sup>DLM</sup>	<0.00030	<0.00060 <sup>DLA</sup>	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.0132	0.0130	0.0124	0.00916	0.0130	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	<0.00050	<0.00100 <sup>DLA</sup>	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0169	0.0138	0.0079	0.0060	0.0142	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0020 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>	0.0020	0.0011	<0.0020 <sup>DLA</sup>	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00052	0.00048	0.00034	0.00031	0.00048	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0432	0.0514	0.0617	0.137	0.0520	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	<0.020	<0.040 <sup>DLA</sup>	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.032	0.035	0.031	0.025	0.033	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.818	0.708	0.231	0.196	0.560	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	320	311	291	246	320	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.20 <sup>DLA</sup>	<0.20 <sup>DLA</sup>	<0.10	<0.20 <sup>DLA</sup>	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	<0.00040 <sup>DLA</sup>	<0.00040 <sup>DLA</sup>	0.00045	<0.00040 <sup>DLA</sup>	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	<0.010	<0.020 <sup>DLA</sup>	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.158	0.161	0.151	0.112	0.167	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	145	147	137	110	144	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	0.00022	0.00032	<0.00020 <sup>DLA</sup>	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00153	0.00154	0.00111	0.000989	0.00166	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0428	0.0298	0.00758	0.00689	0.0245	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.32	5.30	5.01	4.20	5.26	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	275	269	258	223	264	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.19	2.20	2.36	2.66	2.18	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-17MW_ WG_2021-11_N P	FR_KB-18MW_ WG_2021-11_N P	FR_KB-19MW_ WG_2021-11_N P	FR_KB-20MW_ WG_2021-11_N P	FR_KB-13MW_ WG_2021-11_N P
Client sampling date / time					22-Nov-2021 10:00	22-Nov-2021 13:27	22-Nov-2021 09:08	22-Nov-2021 11:28	22-Nov-2021 15:28	
Analyte	CAS Number	Method	LOR	Unit	CG2105898-001 Result	CG2105898-002 Result	CG2105898-003 Result	CG2105898-004 Result	CG2105898-005 Result	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.22	7.43	7.16	5.73	7.37	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.299	0.288	0.274	0.256	0.290	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	232	235	230	168	240	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000024	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00030	<0.00060 <sup>DLA</sup>	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0131	0.0132	0.0124	0.00911	0.0130	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	<0.00050	<0.00100 <sup>DLA</sup>	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0141	0.0124	0.0068	0.0054	0.0105	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105898</b>	Page	: 1 of 22
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Paul Dore	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 23-Nov-2021 08:50
PO	: VPO00765458	Issue Date	: 30-Nov-2021 16:30
C-O-C number	: QTR_KC_GW_2021-11		
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Laboratory Control Sample (LCS) Recoveries</b>								
Total Metals	QC-MRG2-3537310 02	----	potassium, total	7440-09-7	E420	122 % <sup>MES</sup>	80.0-120%	Recovery greater than upper control limit
Total Metals	QC-MRG2-3537310 02	----	sodium, total	17341-25-2	E420	122 % <sup>MES</sup>	80.0-120%	Recovery greater than upper control limit

**Result Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-13MW_WG_2021-11_NP	E298	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-17MW_WG_2021-11_NP	E298	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-18MW_WG_2021-11_NP	E298	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-19MW_WG_2021-11_NP	E298	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-20MW_WG_2021-11_NP	E298	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_KB-13MW_WG_2021-11_NP	E235.Br-L	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_KB-17MW_WG_2021-11_NP	E235.Br-L	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_KB-18MW_WG_2021-11_NP	E235.Br-L	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_KB-19MW_WG_2021-11_NP	E235.Br-L	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_KB-20MW_WG_2021-11_NP	E235.Br-L	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_KB-13MW_WG_2021-11_NP	E235.Cl-L	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_KB-17MW_WG_2021-11_NP	E235.Cl-L	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_KB-18MW_WG_2021-11_NP	E235.Cl-L	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_KB-19MW_WG_2021-11_NP	E235.Cl-L	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_KB-20MW_WG_2021-11_NP	E235.Cl-L	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-13MW_WG_2021-11_NP	E378-U	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-17MW_WG_2021-11_NP	E378-U	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-18MW_WG_2021-11_NP	E378-U	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-19MW_WG_2021-11_NP	E378-U	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_KB-20MW_WG_2021-11_NP	E378-U	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-13MW_WG_2021-11_NP	E235.F	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-17MW_WG_2021-11_NP	E235.F	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-18MW_WG_2021-11_NP	E235.F	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-19MW_WG_2021-11_NP	E235.F	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-20MW_WG_2021-11_NP	E235.F	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_KB-13MW_WG_2021-11_NP	E235.NO3-L	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_KB-17MW_WG_2021-11_NP	E235.NO3-L	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_KB-18MW_WG_2021-11_NP	E235.NO3-L	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_KB-19MW_WG_2021-11_NP	E235.NO3-L	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_KB-20MW_WG_2021-11_NP	E235.NO3-L	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_KB-13MW_WG_2021-11_NP	E235.NO2-L	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_KB-17MW_WG_2021-11_NP	E235.NO2-L	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_KB-18MW_WG_2021-11_NP	E235.NO2-L	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_KB-19MW_WG_2021-11_NP	E235.NO2-L	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_KB-20MW_WG_2021-11_NP	E235.NO2-L	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_KB-13MW_WG_2021-11_NP	E235.SO4	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_KB-17MW_WG_2021-11_NP	E235.SO4	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_KB-18MW_WG_2021-11_NP	E235.SO4	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_KB-19MW_WG_2021-11_NP	E235.SO4	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_KB-20MW_WG_2021-11_NP	E235.SO4	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-13MW_WG_2021-11_NP	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-17MW_WG_2021-11_NP	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-18MW_WG_2021-11_NP	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-19MW_WG_2021-11_NP	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-20MW_WG_2021-11_NP	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-13MW_WG_2021-11_NP	E372-U	22-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-17MW_WG_2021-11_NP	E372-U	22-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-18MW_WG_2021-11_NP	E372-U	22-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-19MW_WG_2021-11_NP	E372-U	22-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-20MW_WG_2021-11_NP	E372-U	22-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-13MW_WG_2021-11_NP	E421.Cr-L	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-17MW_WG_2021-11_NP	E421.Cr-L	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-18MW_WG_2021-11_NP	E421.Cr-L	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-19MW_WG_2021-11_NP	E421.Cr-L	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-20MW_WG_2021-11_NP	E421.Cr-L	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-13MW_WG_2021-11_NP	E421	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-17MW_WG_2021-11_NP	E421	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-18MW_WG_2021-11_NP	E421	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-19MW_WG_2021-11_NP	E421	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-20MW_WG_2021-11_NP	E421	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-13MW_WG_2021-11_NP	E358-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-17MW_WG_2021-11_NP	E358-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-18MW_WG_2021-11_NP	E358-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-19MW_WG_2021-11_NP	E358-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-20MW_WG_2021-11_NP	E358-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-13MW_WG_2021-11_NP	E355-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-17MW_WG_2021-11_NP	E355-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-18MW_WG_2021-11_NP	E355-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-19MW_WG_2021-11_NP	E355-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-20MW_WG_2021-11_NP	E355-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_KB-13MW_WG_2021-11_NP	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_KB-17MW_WG_2021-11_NP	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_KB-18MW_WG_2021-11_NP	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_KB-19MW_WG_2021-11_NP	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_KB-20MW_WG_2021-11_NP	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-13MW_WG_2021-11_NP	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-17MW_WG_2021-11_NP	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-18MW_WG_2021-11_NP	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-19MW_WG_2021-11_NP	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-20MW_WG_2021-11_NP	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-13MW_WG_2021-11_NP	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-17MW_WG_2021-11_NP	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-18MW_WG_2021-11_NP	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-19MW_WG_2021-11_NP	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-20MW_WG_2021-11_NP	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-13MW_WG_2021-11_NP	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	144 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-18MW_WG_2021-11_NP	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	146 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-20MW_WG_2021-11_NP	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	148 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_KB-17MW_WG_2021-11_NP	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	149 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_KB-19MW_WG_2021-11_NP	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	150 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_KB-13MW_WG_2021-11_NP	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	23 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_KB-18MW_WG_2021-11_NP	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	25 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_KB-20MW_WG_2021-11_NP	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	27 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_KB-17MW_WG_2021-11_NP	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	28 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_KB-19MW_WG_2021-11_NP	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	29 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_KB-17MW_WG_2021-11_NP	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_KB-18MW_WG_2021-11_NP	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-19MW_WG_2021-11_NP	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-20MW_WG_2021-11_NP	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-13MW_WG_2021-11_NP	E162	22-Nov-2021	----	----	----		28-Nov-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-13MW_WG_2021-11_NP	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-17MW_WG_2021-11_NP	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-18MW_WG_2021-11_NP	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-19MW_WG_2021-11_NP	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-20MW_WG_2021-11_NP	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-13MW_WG_2021-11_NP	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-17MW_WG_2021-11_NP	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-18MW_WG_2021-11_NP	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-19MW_WG_2021-11_NP	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-20MW_WG_2021-11_NP	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_KB-13MW_WG_2021-11_NP	E420.Cr-L	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_KB-17MW_WG_2021-11_NP	E420.Cr-L	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_KB-18MW_WG_2021-11_NP	E420.Cr-L	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_KB-19MW_WG_2021-11_NP	E420.Cr-L	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_KB-20MW_WG_2021-11_NP	E420.Cr-L	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_KB-13MW_WG_2021-11_NP	E420	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_KB-17MW_WG_2021-11_NP	E420	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_KB-18MW_WG_2021-11_NP	E420	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_KB-19MW_WG_2021-11_NP	E420	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_KB-20MW_WG_2021-11_NP	E420	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	350927	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	350922	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	352991	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	350739	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	350740	1	20	5.0	5.0	✓
Conductivity in Water	E100	350920	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353904	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353905	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350984	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	350764	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	350743	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	350741	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	350742	1	20	5.0	5.0	✓
ORP by Electrode	E125	354752	1	20	5.0	5.0	✓
pH by Meter	E108	350921	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	350744	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352773	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353731	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353876	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353732	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350985	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	350782	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	351613	2	40	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	350927	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	350922	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	352991	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	350739	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	350740	1	20	5.0	5.0	✓
Conductivity in Water	E100	350920	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353904	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353905	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350984	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	350764	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	350743	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	350741	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	350742	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	354752	1	20	5.0	5.0	✓
pH by Meter	E108	350921	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	350744	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352773	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353731	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353876	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353732	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350985	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	350782	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352770	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	351613	2	40	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	350927	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	350922	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	352991	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	350739	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	350740	1	20	5.0	5.0	✓
Conductivity in Water	E100	350920	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353904	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353905	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350984	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	350764	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	350743	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	350741	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	350742	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	350744	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352773	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353731	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353876	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353732	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350985	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	350782	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352770	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	351613	2	40	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	352991	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	350739	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	350740	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353904	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353905	1	20	5.0	5.0	✓





Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350984	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	350764	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	350743	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	350741	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	350742	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	350744	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353731	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353876	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353732	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350985	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	350782	1	19	5.2	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2105898**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-11  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Nov-2021 08:50  
**Date Analysis Commenced** : 23-Nov-2021  
**Issue Date** : 30-Nov-2021 16:30

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2105898  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 350920)</b>											
CG2105890-005	Anonymous	conductivity	----	E100	2.0	µS/cm	367	366	0.273%	10%	----
<b>Physical Tests (QC Lot: 350921)</b>											
CG2105890-005	Anonymous	pH	----	E108	0.10	pH units	7.84	7.77	0.897%	4%	----
<b>Physical Tests (QC Lot: 350922)</b>											
CG2105890-005	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	142	139	2.00%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	142	139	2.00%	20%	----
<b>Physical Tests (QC Lot: 350927)</b>											
CG2105890-005	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 351613)</b>											
CG2105887-002	Anonymous	turbidity	----	E121	0.10	NTU	1.91	1.85	3.40%	15%	----
<b>Physical Tests (QC Lot: 351856)</b>											
CG2105886-001	Anonymous	turbidity	----	E121	0.10	NTU	0.12	0.12	0.006	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352773)</b>											
CG2105890-006	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	220	202	8.55%	20%	----
<b>Physical Tests (QC Lot: 352934)</b>											
CG2105898-005	FR_KB-13MW_WG_2021-11_NP	solids, total dissolved [TDS]	----	E162	40	mg/L	1900	1880	0.846%	20%	----
<b>Physical Tests (QC Lot: 354752)</b>											
CG2105890-006	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	498	488	1.93%	15%	----
<b>Anions and Nutrients (QC Lot: 350739)</b>											
CG2105890-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	0.556	0.554	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 350740)</b>											
CG2105890-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	6.80	6.59	3.18%	20%	----
<b>Anions and Nutrients (QC Lot: 350741)</b>											
CG2105890-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	2.63	2.65	0.762%	20%	----
<b>Anions and Nutrients (QC Lot: 350742)</b>											
CG2105890-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 350743)</b>											
CG2105890-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.172	0.169	0.003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 350744)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 350744) - continued</b>											
CG2105890-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	824	823	0.186%	20%	----
<b>Anions and Nutrients (QC Lot: 350764)</b>											
CG2105890-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0131	0.0129	1.65%	20%	----
<b>Anions and Nutrients (QC Lot: 350782)</b>											
CG2105890-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0078	0.0070	0.0008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352991)</b>											
CG2105887-012	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.193	0.195	0.722%	20%	----
<b>Anions and Nutrients (QC Lot: 353876)</b>											
CG2105887-009	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.279	0.269	0.010	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 350984)</b>											
CG2105898-001	FR_KB-17MW_WG_2021-11_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 350985)</b>											
CG2105898-001	FR_KB-17MW_WG_2021-11_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 353731)</b>											
CG2105898-001	FR_KB-17MW_WG_2021-11_NP	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 353732)</b>											
CG2105898-001	FR_KB-17MW_WG_2021-11_NP	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00055	0.00052	0.00003	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0388	0.0406	4.40%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.032	0.033	0.002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	0.833 µg/L	0.000846	1.60%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	306	310	1.47%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.169	0.165	2.47%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	147	150	1.90%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00152	0.00151	0.975%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 353732) - continued</b>											
CG2105898-001	FR_KB-17MW_WG_2021-11_NP	nickel, total	7440-02-0	E420	0.00100	mg/L	0.0423	0.0427	1.03%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	5.06	5.17	2.09%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	259 µg/L	0.263	1.29%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	2.20	2.24	1.55%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	7.42	7.38	0.556%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.294	0.288	2.07%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	246	251	2.22%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.000024	0.000027	0.000003	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0132	0.0132	0.368%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.0169	0.0164	0.0005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353904)</b>											
CG2105886-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353905)</b>											
CG2105886-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00067	0.00071	0.00004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	<0.00010	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0246	0.0247	0.189%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.062	0.061	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.328 µg/L	0.000310	5.63%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	188	186	0.821%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.24 µg/L	0.00023	0.000008	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00035	0.00032	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0662	0.0646	2.43%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	111	109	1.82%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00014	0.00014	0.0000008	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00211	0.00217	2.84%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0246	0.0244	0.482%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 353905) - continued</b>											
CG2105886-001	Anonymous	potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.85	3.90	1.29%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	26.6 µg/L	0.0284	6.67%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.21	2.25	1.79%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	15.0	15.3	2.15%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.156	0.163	4.22%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	231	229	0.900%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000010	0.000010	0.00000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00560	0.00557	0.534%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0212	0.0215	1.35%	20%	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 350920)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 350922)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 350927)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 351613)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 351856)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 352770)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 352773)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 352934)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 350739)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 350740)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 350741)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 350742)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 350743)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 350744)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 350764)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 350782)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 350782) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 352991)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 353876)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 350984)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 350985)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 353731)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 353732)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 353732) - continued</b>						
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 353904)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 353905)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 353905) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 350920)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.1	90.0	110	---
<b>Physical Tests (QCLot: 350921)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 350922)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	108	85.0	115	---
<b>Physical Tests (QCLot: 350927)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 351613)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	104	85.0	115	---
<b>Physical Tests (QCLot: 351856)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	106	85.0	115	---
<b>Physical Tests (QCLot: 352770)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 352773)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	93.0	85.0	115	---
<b>Physical Tests (QCLot: 352934)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	95.4	85.0	115	---
<b>Physical Tests (QCLot: 354752)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 350739)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	94.6	85.0	115	---
<b>Anions and Nutrients (QCLot: 350740)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	91.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 350741)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	92.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 350742)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	96.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 350743)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	91.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 350744)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	91.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 350764)</b>									



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 350764) - continued</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	94.4	80.0	120	----
<b>Anions and Nutrients (QCLot: 350782)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 352991)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Anions and Nutrients (QCLot: 353876)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	109	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 350984)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	115	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 350985)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	115	80.0	120	----
<b>Total Metals (QCLot: 353731)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	115	80.0	120	----
<b>Total Metals (QCLot: 353732)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	117	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	119	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	116	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	118	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	108	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	116	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	118	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	111	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	114	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	113	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	118	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	112	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	112	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	119	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	117	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	112	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	117	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	# 122	80.0	120	MES
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	119	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	113	80.0	120	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 353732) - continued</b>									
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	# 122	80.0	120	MES
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	114	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	116	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	112	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	112	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	116	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	118	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	116	80.0	120	----
<b>Dissolved Metals (QCLot: 353904)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.5	80.0	120	----
<b>Dissolved Metals (QCLot: 353905)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	93.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.9	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.9	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.9	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.8	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.9	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 353905) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.3	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	92.7	80.0	120	----

### Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 350739)</b>										
CG2105890-007	Anonymous	bromide	24959-67-9	E235.Br-L	0.566 mg/L	0.5 mg/L	113	75.0	125	----
<b>Anions and Nutrients (QCLot: 350740)</b>										
CG2105890-007	Anonymous	chloride	16887-00-6	E235.Cl-L	112 mg/L	100 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 350741)</b>										
CG2105890-007	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.81 mg/L	2.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 350742)</b>										
CG2105890-007	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.561 mg/L	0.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 350743)</b>										
CG2105890-007	Anonymous	fluoride	16984-48-8	E235.F	1.11 mg/L	1 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 350744)</b>										
CG2105890-007	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	112 mg/L	100 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 350764)</b>										
CG2105890-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0499 mg/L	0.05 mg/L	99.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 350782)</b>										
CG2105890-005	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0685 mg/L	0.0676 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 352991)</b>										
CG2105887-014	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 353876)</b>										
CG2105887-011	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.02 mg/L	2.5 mg/L	80.9	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 350984)</b>										
CG2105898-001	FR_KB-17MW_WG_2021-1_1_NP	carbon, dissolved organic [DOC]	----	E358-L	29.6 mg/L	23.9 mg/L	124	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 350985)</b>										
CG2105898-001	FR_KB-17MW_WG_2021-1_1_NP	carbon, total organic [TOC]	----	E355-L	29.6 mg/L	23.9 mg/L	124	70.0	130	----
<b>Total Metals (QCLot: 353731)</b>										
CG2105898-002	FR_KB-18MW_WG_2021-1_1_NP	chromium, total	7440-47-3	E420.Cr-L	0.0785 mg/L	0.08 mg/L	98.2	70.0	130	----
<b>Total Metals (QCLot: 353732)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 353732) - continued</b>										
CG2105898-002	FR_KB-18MW_WG_2021-1 1_NP	aluminum, total	7429-90-5	E420	0.401 mg/L	0.4 mg/L	100	70.0	130	----
		antimony, total	7440-36-0	E420	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0748 mg/L	0.08 mg/L	93.4	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0184 mg/L	0.02 mg/L	92.2	70.0	130	----
		boron, total	7440-42-8	E420	0.203 mg/L	0.2 mg/L	102	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00781 mg/L	0.008 mg/L	97.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0379 mg/L	0.04 mg/L	94.7	70.0	130	----
		copper, total	7440-50-8	E420	0.0364 mg/L	0.04 mg/L	91.0	70.0	130	----
		iron, total	7439-89-6	E420	3.74 mg/L	4 mg/L	93.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0368 mg/L	0.04 mg/L	92.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.180 mg/L	0.2 mg/L	90.1	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
		nickel, total	7440-02-0	E420	0.0730 mg/L	0.08 mg/L	91.3	70.0	130	----
		potassium, total	7440-09-7	E420	7.70 mg/L	8 mg/L	96.3	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	19.3 mg/L	20 mg/L	96.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00735 mg/L	0.008 mg/L	91.9	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00736 mg/L	0.008 mg/L	92.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		titanium, total	7440-32-6	E420	0.0766 mg/L	0.08 mg/L	95.8	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.713 mg/L	0.8 mg/L	89.1	70.0	130	----
<b>Dissolved Metals (QCLot: 353904)</b>										
CG2105898-001	FR_KB-17MW_WG_2021-1 1_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0755 mg/L	0.08 mg/L	94.4	70.0	130	----
<b>Dissolved Metals (QCLot: 353905)</b>										
CG2105898-001	FR_KB-17MW_WG_2021-1 1_NP	aluminum, dissolved	7429-90-5	E421	0.394 mg/L	0.4 mg/L	98.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 353905) - continued</b>										
CG2105898-001	FR_KB-17MW_WG_2021-1 1_NP	antimony, dissolved	7440-36-0	E421	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0727 mg/L	0.08 mg/L	90.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0173 mg/L	0.02 mg/L	86.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.196 mg/L	0.2 mg/L	97.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00752 mg/L	0.008 mg/L	94.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0370 mg/L	0.04 mg/L	92.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0357 mg/L	0.04 mg/L	89.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.74 mg/L	4 mg/L	93.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0361 mg/L	0.04 mg/L	90.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.177 mg/L	0.2 mg/L	88.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0385 mg/L	0.04 mg/L	96.2	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0709 mg/L	0.08 mg/L	88.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	7.60 mg/L	8 mg/L	94.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.3 mg/L	20 mg/L	91.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00741 mg/L	0.008 mg/L	92.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00721 mg/L	0.008 mg/L	90.1	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0378 mg/L	0.04 mg/L	94.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0734 mg/L	0.08 mg/L	91.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.200 mg/L	0.2 mg/L	100	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.694 mg/L	0.8 mg/L	86.7	70.0	130	----





CERTIFICATE OF ANALYSIS

Work Order : CG2105949
Client : Teck Coal Limited
Contact : Paul Dore
Address : Fording River Operations PO BOX 100
Elkford BC Canada V0B 1H0
Telephone : ---
Project : FORDING RIVER OPERATIONS
PO : VPO00765458
C-O-C number : QTR\_KC\_GW\_2021-11
Sampler : ---
Site : ---
Quote number : Teck Coal Master Quote
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 10
Laboratory : Calgary - Environmental
Account Manager : Justine Buma-a
Address : 2559 29th Street NE
Calgary AB Canada T1Y 7B5
Telephone : +1 403 407 1800
Date Samples Received : 24-Nov-2021 08:40
Date Analysis Commenced : 24-Nov-2021
Issue Date : 01-Dec-2021 15:09

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Lists names like Anthony Calero, Erin Sanchez, Kevin Duarte, etc., along with their roles and lab locations.



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-2_WG_2 021-11_NP	FR_KB-14MW_ WG_2021-11_N P	FR_KB-15MW_ WG_2021-11_N P	FR_KB-16MW_ WG_2021-11_N P	FR_DC1_WG_2 021-11_NP
Client sampling date / time					23-Nov-2021 13:35	23-Nov-2021 15:05	23-Nov-2021 12:00	23-Nov-2021 10:20	23-Nov-2021 13:40	
Analyte	CAS Number	Method	LOR	Unit	CG2105949-001	CG2105949-002	CG2105949-003	CG2105949-004	CG2105949-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	17.9	16.4	16.9	10.2	16.3	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	459	469	481	383	459	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	560	572	587	467	560	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	459	469	481	383	459	
conductivity	----	E100	2.0	µS/cm	2180	2140	2160	1130	2170	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1320	1260	1340	689	1330	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	511	493	396	473	483	
pH	----	E108	0.10	pH units	7.48	7.55	7.44	7.68	7.58	
solids, total dissolved [TDS]	----	E162	10	mg/L	1780	1700	1840	838	1780	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
turbidity	----	E121	0.10	NTU	0.44	0.14	0.17	1.00	0.75	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	<0.0050	0.0075	<0.0050	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.78	1.54	1.77	0.83	1.64	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.184	0.169	0.176	<0.100 <sup>DLDS</sup>	0.171	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	84.8	81.8	83.6	11.7	84.0	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	0.0150	<0.0050 <sup>DLDS</sup>	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0022	0.0019	0.0022	0.0018	0.0020	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0034	0.0023	0.0028	0.0030	0.0050	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	664	641	656	273	658	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.62	0.68	0.59	0.96	<0.50	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0.64	0.88	<0.50	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-2_WG_2 021-11_NP	FR_KB-14MW_ WG_2021-11_N P	FR_KB-15MW_ WG_2021-11_N P	FR_KB-16MW_ WG_2021-11_N P	FR_DC1_WG_2 021-11_NP
Client sampling date / time					23-Nov-2021 13:35	23-Nov-2021 15:05	23-Nov-2021 12:00	23-Nov-2021 10:20	23-Nov-2021 13:40	
Analyte	CAS Number	Method	LOR	Unit	CG2105949-001	CG2105949-002	CG2105949-003	CG2105949-004	CG2105949-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	29.1	28.6	29.3	14.2	28.9	
cation sum	----	EC101	0.10	meq/L	26.9	25.5	27.1	14.0	27.0	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.4	89.2	92.5	98.6	93.4	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.93	5.73	3.90	0.709	3.40	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0300	0.0031	<0.0030	0.0217	0.0257	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00042	0.00038	0.00044	0.00011	0.00042	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00011	0.00011	0.00012	<0.00020 <sup>DLA</sup>	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0624	0.0652	0.0623	0.174	0.0618	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	<0.020	<0.020	<0.040 <sup>DLA</sup>	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	
boron, total	7440-42-8	E420	0.010	mg/L	0.028	0.028	0.028	0.010	0.028	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.203	0.123	0.259	0.0506	0.221	
calcium, total	7440-70-2	E420	0.050	mg/L	305	303	301	180	303	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00010	<0.00010	0.00013	<0.00020 <sup>DLA</sup>	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.10	<0.10	<0.10	<0.20 <sup>DLA</sup>	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	0.00059	<0.00100 <sup>DLA</sup>	
iron, total	7439-89-6	E420	0.010	mg/L	0.029	<0.010	<0.010	0.027	0.025	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	0.000070	<0.000100 <sup>DLA</sup>	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.153	0.153	0.152	0.0072	0.150	
magnesium, total	7439-95-4	E420	0.0050	mg/L	146	134	137	51.2	140	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00209	0.00032	0.00024	0.0154	0.00161	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00152	0.00145	0.00152	0.000633	0.00150	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00895	0.00506	0.0104	0.00056	0.00912	
potassium, total	7440-09-7	E420	0.050	mg/L	4.87	4.62	4.86	1.09	4.84	
selenium, total	7782-49-2	E420	0.050	µg/L	257	257	261	21.4	253	
silicon, total	7440-21-3	E420	0.10	mg/L	2.12	2.10	2.13	4.85	2.06	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>	
sodium, total	17341-25-2	E420	0.050	mg/L	6.86	7.07	7.01	5.00	7.04	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.296	0.291	0.299	0.276	0.293	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-2_WG_2 021-11_NP	FR_KB-14MW_ WG_2021-11_N P	FR_KB-15MW_ WG_2021-11_N P	FR_KB-16MW_ WG_2021-11_N P	FR_DC1_WG_2 021-11_NP
Client sampling date / time					23-Nov-2021 13:35	23-Nov-2021 15:05	23-Nov-2021 12:00	23-Nov-2021 10:20	23-Nov-2021 13:40	
Analyte	CAS Number	Method	LOR	Unit	CG2105949-001 Result	CG2105949-002 Result	CG2105949-003 Result	CG2105949-004 Result	CG2105949-005 Result	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	228	225	233	91.6	224	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	0.000011	<0.000020 <sup>DLA</sup>	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	0.00016	<0.00020 <sup>DLA</sup>	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00076	<0.00030	<0.00030	<0.00090 <sup>DLM</sup>	0.00092	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.0127	0.0133	0.0133	0.00176	0.0126	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0060 <sup>DLA</sup>	0.0032	0.0082	0.0215	<0.0060 <sup>DLA</sup>	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0027	0.0014	0.0024	0.0013	0.0049	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00040	0.00037	0.00042	<0.00010	0.00040	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0609	0.0663	0.0630	0.179	0.0607	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	<0.040 <sup>DLA</sup>	<0.020	<0.040 <sup>DLA</sup>	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.027	0.027	0.027	0.010	0.026	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.194	0.120	0.264	0.0541	0.211	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	305	284	306	193	303	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.10	<0.20 <sup>DLA</sup>	<0.10	<0.20 <sup>DLA</sup>	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	0.00021	<0.00040 <sup>DLA</sup>	0.00034	<0.00040 <sup>DLA</sup>	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.020 <sup>DLA</sup>	<0.010	<0.020 <sup>DLA</sup>	<0.010	<0.020 <sup>DLA</sup>	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.148	0.138	0.150	0.0074	0.145	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	137	133	139	50.2	140	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00021	<0.00020 <sup>DLA</sup>	0.0133	<0.00020 <sup>DLA</sup>	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00147	0.00137	0.00144	0.000622	0.00144	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00863	0.00502	0.0101	<0.00050	0.00858	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.66	4.57	4.80	1.07	4.63	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	255	246	252	23.7	258	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.94	2.06	2.01	4.70	1.98	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-2_WG_2 021-11_NP	FR_KB-14MW_ WG_2021-11_N P	FR_KB-15MW_ WG_2021-11_N P	FR_KB-16MW_ WG_2021-11_N P	FR_DC1_WG_2 021-11_NP
Client sampling date / time					23-Nov-2021 13:35	23-Nov-2021 15:05	23-Nov-2021 12:00	23-Nov-2021 10:20	23-Nov-2021 13:40	
Analyte	CAS Number	Method	LOR	Unit	CG2105949-001 Result	CG2105949-002 Result	CG2105949-003 Result	CG2105949-004 Result	CG2105949-005 Result	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.80	6.68	6.72	4.86	6.82	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.296	0.274	0.299	0.286	0.295	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	214	216	216	87.2	215	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	0.000010	<0.000020 <sup>DLA</sup>	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	<0.00060 <sup>DLA</sup>	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0125	0.0119	0.0121	0.00175	0.0120	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	<0.00100 <sup>DLA</sup>	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0044	0.0034	0.0061	0.0153	0.0045	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_FLD1_WG_2	----	----	----	----
(Matrix: Water)						021-11_NP				
					Client sampling date / time	23-Nov-2021 13:45	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2105949-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	2.2	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	<2.0	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	<0.50	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	551	----	----	----	----	----
pH	----	E108	0.10	pH units	6.53	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	----	----	----	----	----
turbidity	----	E121	0.10	NTU	<0.10	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_FLD1_WG_2	----	----	----	----
(Matrix: Water)						021-11_NP				
Client sampling date / time					23-Nov-2021 13:45	---	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2105949-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Ion Balance</b>										
cation sum	----	EC101	0.10	meq/L	<0.10	---	---	---	---	---
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	---	---	---	---	---
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	---	---	---	---	---
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	---	---	---	---	---
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	---	---	---	---	---
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	---	---	---	---	---
barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	---	---	---	---	---
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	---	---	---	---	---
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	---	---	---	---	---
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	---	---	---	---	---
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	---	---	---	---	---
calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	---	---	---	---	---
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	---	---	---	---	---
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	---	---	---	---	---
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	---	---	---	---	---
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	---	---	---	---	---
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	---	---	---	---	---
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	---	---	---	---	---
magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	---	---	---	---	---
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	---	---	---	---	---
molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	---	---	---	---	---
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	---	---	---	---	---
potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	---	---	---	---	---
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	---	---	---	---	---
silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	---	---	---	---	---
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	---	---	---	---	---
sodium, total	17341-25-2	E420	0.050	mg/L	<0.050	---	---	---	---	---
strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	---	---	---	---	---
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	---	---	---	---	---
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_FLD1_WG_2	----	----	----	----
(Matrix: Water)						021-11_NP				
Client sampling date / time					23-Nov-2021 13:45	----	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105949-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Total Metals</b>										
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	----	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	----	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	----	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	----	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	----	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	----	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	----	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	----	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	----	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	----	----	----	----	----



**Analytical Results**

Sub-Matrix: <b>Water</b>					Client sample ID	FR_FLD1_WG_2	----	----	----	----
(Matrix: <b>Water</b> )						021-11_NP				
					Client sampling date / time	23-Nov-2021 13:45	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105949-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	----	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105949</b>	Page	: 1 of 24
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Paul Dore	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 24-Nov-2021 08:40
PO	: VPO00765458	Issue Date	: 01-Dec-2021 15:09
C-O-C number	: QTR_KC_GW_2021-11		
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_DC1_WG_2021-11_NP	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_WG_2021-11_NP	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-14MW_WG_2021-11_NP	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-15MW_WG_2021-11_NP	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-16MW_WG_2021-11_NP	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-2_WG_2021-11_NP	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_DC1_WG_2021-11_NP	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_FLD1_WG_2021-11_NP	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_KB-14MW_WG_2021-11_NP	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_KB-15MW_WG_2021-11_NP	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_KB-16MW_WG_2021-11_NP	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE FR_KB-2_WG_2021-11_NP	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_DC1_WG_2021-11_NP	E235.Cl-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_FLD1_WG_2021-11_NP	E235.Cl-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_KB-14MW_WG_2021-11_NP	E235.Cl-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE FR_KB-15MW_WG_2021-11_NP	E235.Cl-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-16MW_WG_2021-11_NP	E235.CI-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-2_WG_2021-11_NP	E235.CI-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_DC1_WG_2021-11_NP	E378-U	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_FLD1_WG_2021-11_NP	E378-U	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-14MW_WG_2021-11_NP	E378-U	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-15MW_WG_2021-11_NP	E378-U	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-16MW_WG_2021-11_NP	E378-U	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-2_WG_2021-11_NP	E378-U	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_DC1_WG_2021-11_NP	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_FLD1_WG_2021-11_NP	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-14MW_WG_2021-11_NP	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-15MW_WG_2021-11_NP	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-16MW_WG_2021-11_NP	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-2_WG_2021-11_NP	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_DC1_WG_2021-11_NP	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_FLD1_WG_2021-11_NP	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-14MW_WG_2021-11_NP	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-15MW_WG_2021-11_NP	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-16MW_WG_2021-11_NP	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-2_WG_2021-11_NP	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_DC1_WG_2021-11_NP	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_FLD1_WG_2021-11_NP	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-14MW_WG_2021-11_NP	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-15MW_WG_2021-11_NP	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-16MW_WG_2021-11_NP	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-2_WG_2021-11_NP	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_DC1_WG_2021-11_NP	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_FLD1_WG_2021-11_NP	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-14MW_WG_2021-11_NP	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-15MW_WG_2021-11_NP	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-16MW_WG_2021-11_NP	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-2_WG_2021-11_NP	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_WG_2021-11_NP	E318	23-Nov-2021	29-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_WG_2021-11_NP	E318	23-Nov-2021	29-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-14MW_WG_2021-11_NP	E318	23-Nov-2021	29-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-15MW_WG_2021-11_NP	E318	23-Nov-2021	29-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-16MW_WG_2021-11_NP	E318	23-Nov-2021	29-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-2_WG_2021-11_NP	E318	23-Nov-2021	29-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_WG_2021-11_NP	E372-U	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_WG_2021-11_NP	E372-U	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-14MW_WG_2021-11_NP	E372-U	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-15MW_WG_2021-11_NP	E372-U	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-16MW_WG_2021-11_NP	E372-U	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-2_WG_2021-11_NP	E372-U	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC1_WG_2021-11_NP	E421.Cr-L	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FLD1_WG_2021-11_NP	E421.Cr-L	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-14MW_WG_2021-11_NP	E421.Cr-L	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-15MW_WG_2021-11_NP	E421.Cr-L	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-16MW_WG_2021-11_NP	E421.Cr-L	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-2_WG_2021-11_NP	E421.Cr-L	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC1_WG_2021-11_NP	E421	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FLD1_WG_2021-11_NP	E421	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-14MW_WG_2021-11_NP	E421	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-15MW_WG_2021-11_NP	E421	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-16MW_WG_2021-11_NP	E421	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-2_WG_2021-11_NP	E421	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_DC1_WG_2021-11_NP	E358-L	23-Nov-2021	24-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_FLD1_WG_2021-11_NP	E358-L	23-Nov-2021	24-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-14MW_WG_2021-11_NP	E358-L	23-Nov-2021	24-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-15MW_WG_2021-11_NP	E358-L	23-Nov-2021	24-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-16MW_WG_2021-11_NP	E358-L	23-Nov-2021	24-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-2_WG_2021-11_NP	E358-L	23-Nov-2021	24-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC1_WG_2021-11_NP	E355-L	23-Nov-2021	24-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FLD1_WG_2021-11_NP	E355-L	23-Nov-2021	24-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-14MW_WG_2021-11_NP	E355-L	23-Nov-2021	24-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-15MW_WG_2021-11_NP	E355-L	23-Nov-2021	24-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-16MW_WG_2021-11_NP	E355-L	23-Nov-2021	24-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-2_WG_2021-11_NP	E355-L	23-Nov-2021	24-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_DC1_WG_2021-11_NP	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_FLD1_WG_2021-11_NP	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-14MW_WG_2021-11_NP	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-15MW_WG_2021-11_NP	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_KB-16MW_WG_2021-11_NP	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
HDPE FR_KB-2_WG_2021-11_NP	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_DC1_WG_2021-11_NP	E290	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_FLD1_WG_2021-11_NP	E290	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-14MW_WG_2021-11_NP	E290	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-15MW_WG_2021-11_NP	E290	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-16MW_WG_2021-11_NP	E290	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-2_WG_2021-11_NP	E290	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_DC1_WG_2021-11_NP	E100	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_FLD1_WG_2021-11_NP	E100	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-14MW_WG_2021-11_NP	E100	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-15MW_WG_2021-11_NP	E100	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-16MW_WG_2021-11_NP	E100	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-2_WG_2021-11_NP	E100	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-14MW_WG_2021-11_NP	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	163 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_DC1_WG_2021-11_NP	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	164 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_FLD1_WG_2021-11_NP	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	164 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-2_WG_2021-11_NP	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	164 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-15MW_WG_2021-11_NP	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	166 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-16MW_WG_2021-11_NP	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	168 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-14MW_WG_2021-11_NP	E108	23-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	43 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_DC1_WG_2021-11_NP	E108	23-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	44 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_FLD1_WG_2021-11_NP	E108	23-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	44 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-2_WG_2021-11_NP	E108	23-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	44 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-15MW_WG_2021-11_NP	E108	23-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	46 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-16MW_WG_2021-11_NP	E108	23-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	48 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_DC1_WG_2021-11_NP	E162	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_FLD1_WG_2021-11_NP	E162	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-14MW_WG_2021-11_NP	E162	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-15MW_WG_2021-11_NP	E162	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-16MW_WG_2021-11_NP	E162	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_KB-2_WG_2021-11_NP	E162	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_DC1_WG_2021-11_NP	E160-L	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_FLD1_WG_2021-11_NP	E160-L	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-14MW_WG_2021-11_NP	E160-L	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_KB-15MW_WG_2021-11_NP	E160-L	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_KB-16MW_WG_2021-11_NP	E160-L	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_KB-2_WG_2021-11_NP	E160-L	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_DC1_WG_2021-11_NP	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_FLD1_WG_2021-11_NP	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_KB-14MW_WG_2021-11_NP	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_KB-15MW_WG_2021-11_NP	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_KB-16MW_WG_2021-11_NP	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_KB-2_WG_2021-11_NP	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_DC1_WG_2021-11_NP	E420.Cr-L	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_FLD1_WG_2021-11_NP	E420.Cr-L	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-14MW_WG_2021-11_NP	E420.Cr-L	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-15MW_WG_2021-11_NP	E420.Cr-L	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-16MW_WG_2021-11_NP	E420.Cr-L	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-2_WG_2021-11_NP	E420.Cr-L	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_DC1_WG_2021-11_NP	E420	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_FLD1_WG_2021-11_NP	E420	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-14MW_WG_2021-11_NP	E420	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-15MW_WG_2021-11_NP	E420	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-16MW_WG_2021-11_NP	E420	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-2_WG_2021-11_NP	E420	23-Nov-2021	----	----	----		26-Nov-2021	180 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	352509	2	40	5.0	5.0	✓
Alkalinity Species by Titration	E290	352505	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352254	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352255	1	20	5.0	5.0	✓
Conductivity in Water	E100	352504	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353196	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353197	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352124	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351968	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	352252	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352256	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352257	1	20	5.0	5.0	✓
ORP by Electrode	E125	355391	1	20	5.0	5.0	✓
pH by Meter	E108	352503	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352253	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352935	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353188	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353189	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352125	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352040	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	352528	2	40	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	352509	2	40	5.0	5.0	✓
Alkalinity Species by Titration	E290	352505	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352254	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352255	1	20	5.0	5.0	✓
Conductivity in Water	E100	352504	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353196	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353197	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352124	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351968	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	352252	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352256	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352257	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	355391	1	20	5.0	5.0	✓
pH by Meter	E108	352503	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352253	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352935	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353188	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353189	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352125	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352040	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352939	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	352528	2	40	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	352509	2	40	5.0	5.0	✓
Alkalinity Species by Titration	E290	352505	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352254	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352255	1	20	5.0	5.0	✓
Conductivity in Water	E100	352504	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353196	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353197	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352124	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351968	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	352252	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352256	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352257	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352253	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352935	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353188	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353189	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352125	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352040	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352939	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	352528	2	40	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352254	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352255	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353196	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353197	1	19	5.2	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352124	1	14	7.1	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351968	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	352252	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	352256	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	352257	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	352253	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353188	1	14	7.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	19	5.2	5.0	✔
Total Metals in Water by CRC ICPMS	E420	353189	1	17	5.8	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352125	1	14	7.1	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352040	2	40	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.  Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



## QUALITY CONTROL REPORT

**Work Order** : **CG2105949**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-11  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 24-Nov-2021 08:40  
**Date Analysis Commenced** : 24-Nov-2021  
**Issue Date** : 01-Dec-2021 15:09

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2105949  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 352503)</b>											
CG2105918-001	Anonymous	pH	----	E108	0.10	pH units	8.31	8.32	0.120%	4%	----
<b>Physical Tests (QC Lot: 352504)</b>											
CG2105918-001	Anonymous	conductivity	----	E100	2.0	µS/cm	344	335	2.65%	10%	----
<b>Physical Tests (QC Lot: 352505)</b>											
CG2105918-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	123	126	2.41%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	1.6	0.6	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	123	128	3.67%	20%	----
<b>Physical Tests (QC Lot: 352506)</b>											
CG2105949-006	FR_FLD1_WG_2021-11_N P	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352507)</b>											
CG2105949-006	FR_FLD1_WG_2021-11_N P	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352508)</b>											
CG2105949-006	FR_FLD1_WG_2021-11_N P	pH	----	E108	0.10	pH units	6.53	6.58	0.763%	4%	----
<b>Physical Tests (QC Lot: 352509)</b>											
CG2105918-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352510)</b>											
CG2105949-006	FR_FLD1_WG_2021-11_N P	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	2.2	2.1	0.04	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352528)</b>											
CG2105923-006	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352593)</b>											
CG2105941-001	Anonymous	turbidity	----	E121	0.10	NTU	3110	3100	0.271%	15%	----
<b>Physical Tests (QC Lot: 352935)</b>											
CG2105939-004	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1420	1410	0.919%	20%	----
<b>Physical Tests (QC Lot: 355391)</b>											
CG2105939-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	465	476	2.46%	15%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 351968)</b>											
CG2105945-010	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352040)</b>											
CG2105937-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0023	<0.0020	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352041)</b>											
CG2105949-003	FR_KB-15MW_WG_2021-11_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0028	0.0029	0.00007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352252)</b>											
CG2105949-001	FR_KB-2_WG_2021-11_NP	fluoride	16984-48-8	E235.F	0.100	mg/L	0.184	0.177	0.006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352253)</b>											
CG2105949-001	FR_KB-2_WG_2021-11_NP	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	664	659	0.750%	20%	----
<b>Anions and Nutrients (QC Lot: 352254)</b>											
CG2105949-001	FR_KB-2_WG_2021-11_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352255)</b>											
CG2105949-001	FR_KB-2_WG_2021-11_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.78	1.66	0.13	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352256)</b>											
CG2105949-001	FR_KB-2_WG_2021-11_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	84.8	84.2	0.633%	20%	----
<b>Anions and Nutrients (QC Lot: 352257)</b>											
CG2105949-001	FR_KB-2_WG_2021-11_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354675)</b>											
CG2105941-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.0848	0.0927	0.0079	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354833)</b>											
CG2105939-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352124)</b>											
CG2105939-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.53	1.60	0.06	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352125)</b>											
CG2105939-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.45	1.47	0.02	Diff <2x LOR	----
<b>Total Metals (QC Lot: 353188)</b>											
CG2105923-006	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 353189)</b>											
CG2105923-006	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 353189) - continued</b>											
CG2105923-006	Anonymous	beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353196)</b>											
CG2105887-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353197)</b>											
CG2105887-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	<0.0010	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00046	0.00046	0.000006	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00043	0.00048	0.00005	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0493	0.0508	3.08%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 353197) - continued</b>											
CG2105887-008	Anonymous	bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.018	0.018	0.00002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0336 µg/L	0.0000374	0.0000038	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	245	252	2.72%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	1.45 µg/L	0.00145	0.0104%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.072	0.072	0.0009	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0471	0.0495	4.98%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	151	152	1.03%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0364	0.0375	2.90%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00282	0.00283	0.185%	20%	----
		nickel, dissolved	7440-02-0	E421	0.000050	mg/L	0.0136	0.0137	0.246%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.34	3.46	3.36%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	137 µg/L	0.150	8.70%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.29	3.26	0.943%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.28	4.29	0.302%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.336	0.348	3.41%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	273	266	2.56%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00946	0.00964	1.88%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0034	0.0037	0.0003	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 352504)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 352505)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 352506)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 352507)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 352509)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	2.1	----
<b>Physical Tests (QCLot: 352510)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 352528)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 352593)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 352935)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 352939)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 352940)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 351968)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 352040)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 352041)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 352252)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 352253)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 352254)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 352255)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 352256)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 352257)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 354675)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 354833)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Organic / Inorganic Carbon (QCLot: 352124)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 352125)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Total Metals (QCLot: 353188)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 353189)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 353189) - continued</b>						
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 353196)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 353197)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 353197) - continued</b>						
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 352503)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 352504)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.7	90.0	110	---
<b>Physical Tests (QCLot: 352505)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	112	85.0	115	---
<b>Physical Tests (QCLot: 352506)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	112	85.0	115	---
<b>Physical Tests (QCLot: 352507)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	96.8	90.0	110	---
<b>Physical Tests (QCLot: 352508)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 352509)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 352510)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 352528)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	105	85.0	115	---
<b>Physical Tests (QCLot: 352593)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.9	85.0	115	---
<b>Physical Tests (QCLot: 352935)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	91.5	85.0	115	---
<b>Physical Tests (QCLot: 352939)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.4	85.0	115	---
<b>Physical Tests (QCLot: 352940)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.0	85.0	115	---
<b>Physical Tests (QCLot: 355391)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 351968)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	94.3	80.0	120	---
<b>Anions and Nutrients (QCLot: 352040)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	93.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 352041)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 352041) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	93.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 352252)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 352253)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 352254)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 352255)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 352256)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 352257)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 354675)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Anions and Nutrients (QCLot: 354833)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 352124)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	91.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 352125)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	92.9	80.0	120	----
<b>Total Metals (QCLot: 353188)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
<b>Total Metals (QCLot: 353189)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	99.2	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	93.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	89.0	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.2	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.3	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 353189) - continued</b>									
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.1	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.9	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	95.1	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.9	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	100.0	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.0	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	95.0	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	92.2	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	97.6	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.0	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100.0	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	96.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	95.6	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	92.4	80.0	120	----
<b>Dissolved Metals (QCLot: 353196)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
<b>Dissolved Metals (QCLot: 353197)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.0	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	91.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	88.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.0	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.8	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.7	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.3	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 353197) - continued</b>									
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.7	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	92.6	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	89.9	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	85.3	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.1	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.2	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.5	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.9	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 351968)</b>										
CG2105945-011	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0519 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 352040)</b>										
CG2105937-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0598 mg/L	0.0676 mg/L	88.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 352041)</b>										
CG2105949-004	FR_KB-16MW_WG_2021-11_NP	phosphorus, total	7723-14-0	E372-U	0.0522 mg/L	0.0676 mg/L	77.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 352252)</b>										
CG2105965-003	Anonymous	fluoride	16984-48-8	E235.F	1.08 mg/L	1 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 352253)</b>										
CG2105965-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 352254)</b>										
CG2105965-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.484 mg/L	0.5 mg/L	96.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 352255)</b>										
CG2105965-003	Anonymous	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 352256)</b>										
CG2105965-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.69 mg/L	2.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 352257)</b>										
CG2105965-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.531 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 354675)</b>										
CG2105941-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 354833)</b>										
CG2105939-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.12 mg/L	2.5 mg/L	84.6	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352124)</b>										
CG2105939-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.0 mg/L	23.9 mg/L	100	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352125)</b>										
CG2105939-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.3 mg/L	23.9 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 353188)</b>										
CG2105949-001	FR_KB-2_WG_2021-11_NP	chromium, total	7440-47-3	E420.Cr-L	0.0776 mg/L	0.08 mg/L	97.0	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 353189)</b>										
CG2105949-001	FR_KB-2_WG_2021-11_NP	aluminum, total	7429-90-5	E420	0.397 mg/L	0.4 mg/L	99.3	70.0	130	----
		antimony, total	7440-36-0	E420	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0729 mg/L	0.08 mg/L	91.1	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0187 mg/L	0.02 mg/L	93.5	70.0	130	----
		boron, total	7440-42-8	E420	0.183 mg/L	0.2 mg/L	91.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00806 mg/L	0.008 mg/L	101	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0363 mg/L	0.04 mg/L	90.8	70.0	130	----
		copper, total	7440-50-8	E420	0.0364 mg/L	0.04 mg/L	91.0	70.0	130	----
		iron, total	7439-89-6	E420	3.83 mg/L	4 mg/L	95.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0361 mg/L	0.04 mg/L	90.2	70.0	130	----
		lithium, total	7439-93-2	E420	0.176 mg/L	0.2 mg/L	88.0	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		nickel, total	7440-02-0	E420	0.0725 mg/L	0.08 mg/L	90.6	70.0	130	----
		potassium, total	7440-09-7	E420	7.44 mg/L	8 mg/L	93.0	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	18.3 mg/L	20 mg/L	91.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00744 mg/L	0.008 mg/L	93.0	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00705 mg/L	0.008 mg/L	88.2	70.0	130	----
		tin, total	7440-31-5	E420	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
		titanium, total	7440-32-6	E420	0.0784 mg/L	0.08 mg/L	98.0	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.200 mg/L	0.2 mg/L	99.8	70.0	130	----
		zinc, total	7440-66-6	E420	0.704 mg/L	0.8 mg/L	88.1	70.0	130	----
<b>Dissolved Metals (QCLot: 353196)</b>										
CG2105887-009	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
<b>Dissolved Metals (QCLot: 353197)</b>										
CG2105887-009	Anonymous	aluminum, dissolved	7429-90-5	E421	0.188 mg/L	0.2 mg/L	94.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 353197) - continued</b>										
CG2105887-009	Anonymous	arsenic, dissolved	7440-38-2	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0360 mg/L	0.04 mg/L	89.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00836 mg/L	0.01 mg/L	83.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00377 mg/L	0.004 mg/L	94.3	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0177 mg/L	0.02 mg/L	88.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0175 mg/L	0.02 mg/L	87.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0898 mg/L	0.1 mg/L	89.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0435 mg/L	0.04 mg/L	109	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.27 mg/L	10 mg/L	92.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00360 mg/L	0.004 mg/L	90.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00346 mg/L	0.004 mg/L	86.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0987 mg/L	0.1 mg/L	98.7	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.366 mg/L	0.4 mg/L	91.5	70.0	130	----



COC ID:

QTR\_KC\_GW\_2021-11

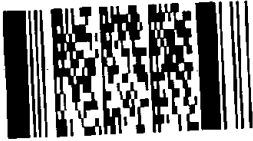
TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operations ✓			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Paul Dore ✓			Lab Contact	Lyudmyla Shvets			Email 1:	teckcoal@equisonline.com	X	X	X
Email	Paul.Dore@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	paul.dore@teck.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	leslie.harker@enclavalin.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	David.Burnoughs@teck.com	X	X	X
	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Stefen.Humphries@enclavalin.com	X	X	X
	1-250-433-6716			Phone Number	403 407 1794			PO number	VPO00765458			

Environmental Division  
Calgary

Work Order Reference  
CG2105949



Telephone : +1 403 407 1800

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, EL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p 1	# Of Cont.	ANALYSIS REQUESTED					TECK COAL ROUTINE CL	TECK COAL DOC	TECK COAL TOC/TKN/Nutrients	TECKCOAL-MET-T- VA	TECKCOAL-MET-D- VA
								FILE	N	F	N	N					
<del>FR_KB-10MW_WG_2021-11_NP</del>	<del>FR_KB-10MW</del>	<del>WG</del>	<del>N</del>	<del>2021/23/11</del>	<del>13:35</del>	<del>G</del>	<del>5</del>	1	1	1	1	1					
<del>FR_KB-11MW_WG_2021-11_NP</del>	<del>FR_KB-11MW</del>	<del>WG</del>	<del>N</del>	<del>2021/23/11</del>	<del>15:05</del>	<del>G</del>	<del>5</del>	1	1	1	1	1					
<del>FR_KB-14MW_WG_2021-11_NP</del>	<del>FR_KB-14MW</del>	<del>WG</del>	<del>N</del>	<del>2021/23/11</del>	<del>12:00</del>	<del>G</del>	<del>5</del>	1	1	1	1	1					
<del>FR_KB-15MW_WG_2021-11_NP</del>	<del>FR_KB-15MW</del>	<del>WG</del>	<del>N</del>	<del>2021/23/11</del>	<del>10:20</del>	<del>G</del>	<del>5</del>	1	1	1	1	1					
1 FR_KB-2 WG_2021-11_NP	FR_KB-2	WG	N	2021/23/11	13:35	G	5	1	1	1	1	1					
2 FR_KB-14MW_WG_2021-11_NP	FR_KB-14MW	WG	N	2021/23/11	15:05	G	5	1	1	1	1	1					
3 FR_KB-15MW_WG_2021-11_NP	FR_KB-15MW	WG	N	2021/23/11	12:00	G	5	1	1	1	1	1					
4 FR_KB-16MW_WG_2021-11_NP	FR_KB-16MW	WG	N	2021/23/11	10:20	G	5	1	1	1	1	1					
<del>FR_KB-11MW_WG_2021-11_NP</del>	<del>FR_KB-11MW</del>	<del>WG</del>	<del>N</del>	<del>2021/23/11</del>	<del>13:40</del>	<del>G</del>	<del>5</del>	1	1	1	1	1					
5 FR_DC1 WG_2021-11_NP	FR_DC1	WG	N	2021/23/11	13:40	G	5	1	1	1	1	1					
6 FR_FLD1 WG_2021-11_NP	FR_FLD1	WG	N	2021/23/11	13:45	G	5	1	1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

\*All samples field filtered and preserved as required.

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

*[Handwritten signature]*  
24/11 8:40

SERVICE REQUEST (rush - subject to availability)

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

Mobile #

Sampler's Signature

Date/Time



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105953**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 11/23/2021  
**Sampler** : Cruz Canlas  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 24-Nov-2021 08:40  
**Date Analysis Commenced** : 24-Nov-2021  
**Issue Date** : 01-Dec-2021 15:07

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maqsood Ul Hassan	Laboratory Analyst	Organics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

Sample	Client Id	Comment
CG2105953-002	FR_CIL_MON_2021-11-01_N	Routine for sample 002 came in 100ml Amber glass and preserved. Cancel analysis.

## Qualifiers

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_FRABCH_W S_2021-11-22_ N	FR_CIL_MON_2 021-11-01_N	FR_GH_WELL4 _QTR_2021-10- 04_N	----	----
Client sampling date / time					23-Nov-2021 11:15	23-Nov-2021 12:50	23-Nov-2021 12:17	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105953-001 Result	CG2105953-002 Result	CG2105953-003 Result	----- ---	----- ---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	5.9	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	270	----	323	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	330	----	394	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	<1.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	----	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	270	----	323	----	----	
conductivity	----	E100	2.0	µS/cm	1170	----	1290	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	668	----	721	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	471	----	468	----	----	
pH	----	E108	0.10	pH units	8.22	----	7.81	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	926	----	964	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	----	<1.0	----	----	
turbidity	----	E121	0.10	NTU	0.19	----	1.21	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0557	1.53	0.194	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	----	<0.250 <sup>DLDS</sup>	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.46	----	2.47	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.149	----	0.109	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	2.18	<0.050 <sup>TKNI</sup>	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	25.3	----	39.4	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0230	----	0.0477	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0026	----	0.0015	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0024	0.0169	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	368	----	330	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.52	----	1.04	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.51	0.83	0.91	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_FRABCH_W S_2021-11-22_ N	FR_CIL_MON_2 021-11-01_N	FR_GH_WELL4 _QTR_2021-10- 04_N	----	----
Client sampling date / time					23-Nov-2021 11:15	23-Nov-2021 12:50	23-Nov-2021 12:17	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105953-001	CG2105953-002	CG2105953-003	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	14.9	----	16.2	----	----	
cation sum	----	EC101	0.10	meq/L	13.6	----	14.6	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	91.3	----	90.1	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.56	----	5.19	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0037	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00026	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00012	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0955	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.013	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0500	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	147	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.12	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.021	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0504	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	71.7	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00693	----	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00176	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00287	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.17	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	92.0	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.14	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	3.00	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_FRABCH_W S_2021-11-22_ N	FR_CIL_MON_2 021-11-01_N	FR_GH_WELL4 _QTR_2021-10- 04_N	----	----
Client sampling date / time					23-Nov-2021 11:15	23-Nov-2021 12:50	23-Nov-2021 12:17	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105953-001 Result	CG2105953-002 Result	CG2105953-003 Result	----- ----	----- ----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.196	----	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	118	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00401	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00028	----	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.112	----	0.0758	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	----	0.012	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0508	----	0.0443	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	152	----	171	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.12	----	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	0.00172	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.010	----	0.029	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0534	----	0.0382	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	70.1	----	71.4	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00809	----	0.00711	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00183	----	0.000342	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00305	----	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.40	----	1.75	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_FRABCH_W S_2021-11-22_ N	FR_CIL_MON_2 021-11-01_N	FR_GH_WELL4 _QTR_2021-10- 04_N	----	----
Client sampling date / time					23-Nov-2021 11:15	23-Nov-2021 12:50	23-Nov-2021 12:17	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105953-001 Result	CG2105953-002 Result	CG2105953-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	108	----	142	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.36	----	2.70	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.09	----	3.48	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.199	----	0.212	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	117	----	101	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00410	----	0.00422	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0019	----	0.0384	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	Field	----	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	----	<0.25	----	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	----	0.72	----	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	----	0.72	----	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	----	0.76	----	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	----	94.0	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105953</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 24-Nov-2021 08:40
PO	: VPO00741392	Issue Date	: 01-Dec-2021 15:07
C-O-C number	: 11/23/2021		
Sampler	: Cruz Canlas		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_CIL_MON_2021-11-01_N	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FRABCH_WS_2021-11-22_N	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GH_WELL4_QTR_2021-10-04_N	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_FRABCH_WS_2021-11-22_N	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-10-04_N	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_FRABCH_WS_2021-11-22_N	E235.Cl-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-10-04_N	E235.Cl-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_FRABCH_WS_2021-11-22_N	E378-U	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_GH_WELL4_QTR_2021-10-04_N	E378-U	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_FRABCH_WS_2021-11-22_N	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_GH_WELL4_QTR_2021-10-04_N	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_FRABCH_WS_2021-11-22_N	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_GH_WELL4_QTR_2021-10-04_N	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_FRABCH_WS_2021-11-22_N	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_GH_WELL4_QTR_2021-10-04_N	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_FRABCH_WS_2021-11-22_N	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-10-04_N	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_CIL_MON_2021-11-01_N	E318	23-Nov-2021	29-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FRABCH_WS_2021-11-22_N	E318	23-Nov-2021	29-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GH_WELL4_QTR_2021-10-04_N	E318	23-Nov-2021	29-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_CIL_MON_2021-11-01_N	E372-U	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FRABCH_WS_2021-11-22_N	E372-U	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GH_WELL4_QTR_2021-10-04_N	E372-U	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FRABCH_WS_2021-11-22_N	E421.Cr-L	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_GH_WELL4_QTR_2021-10-04_N	E421.Cr-L	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_FRABCH_WS_2021-11-22_N	E509	23-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_GH_WELL4_QTR_2021-10-04_N	E509	23-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_FRABCH_WS_2021-11-22_N	E421	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_GH_WELL4_QTR_2021-10-04_N	E421	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✓	
<b>Hydrocarbons : BC PHCs - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> FR_CIL_MON_2021-11-01_N	E601A	23-Nov-2021	28-Nov-2021	14 days	5 days	✓	28-Nov-2021	40 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_FRABCH_WS_2021-11-22_N	E358-L	23-Nov-2021	24-Nov-2021	----	----		27-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_GH_WELL4_QTR_2021-10-04_N	E358-L	23-Nov-2021	24-Nov-2021	----	----		27-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_CIL_MON_2021-11-01_N	E355-L	23-Nov-2021	24-Nov-2021	----	----		27-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_FRABCH_WS_2021-11-22_N	E355-L	23-Nov-2021	24-Nov-2021	----	----		27-Nov-2021	28 days	4 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GH_WELL4_QTR_2021-10-04_N	E355-L	23-Nov-2021	24-Nov-2021	----	----		27-Nov-2021	28 days	4 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_FRABCH_WS_2021-11-22_N	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-10-04_N	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_FRABCH_WS_2021-11-22_N	E290	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-10-04_N	E290	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> FR_FRABCH_WS_2021-11-22_N	E100	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-10-04_N	E100	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-10-04_N	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	166 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> FR_FRABCH_WS_2021-11-22_N	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	167 hrs	* EHTR-FM	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-10-04_N	E108	23-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	46 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> FR_FRABCH_WS_2021-11-22_N	E108	23-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	47 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_FRABCH_WS_2021-11-22_N	E162	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-10-04_N	E162	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_FRABCH_WS_2021-11-22_N	E160-L	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_GH_WELL4_QTR_2021-10-04_N	E160-L	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_FRABCH_WS_2021-11-22_N	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_GH_WELL4_QTR_2021-10-04_N	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_FRABCH_WS_2021-11-22_N	E420.Cr-L	23-Nov-2021	----	----	----		27-Nov-2021	180 days	4 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> FR_FRABCH_WS_2021-11-22_N	E508-L	23-Nov-2021	----	----	----		28-Nov-2021	28 days	5 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_FRABCH_WS_2021-11-22_N	E420	23-Nov-2021	----	----	----		27-Nov-2021	180 days	4 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	352510	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	352506	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352254	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352255	1	20	5.0	5.0	✓
Conductivity in Water	E100	352507	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353202	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355061	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353203	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352126	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351968	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	352252	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352256	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352257	1	20	5.0	5.0	✓
ORP by Electrode	E125	355391	1	20	5.0	5.0	✓
pH by Meter	E108	352508	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352253	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352935	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353476	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	354616	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353477	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352127	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352041	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	352528	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	352510	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	352506	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
BC PHCs - EPH by GC-FID	E601A	354442	1	2	50.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352254	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352255	1	20	5.0	5.0	✓
Conductivity in Water	E100	352507	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353202	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355061	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353203	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352126	1	13	7.6	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351968	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	352252	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352256	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352257	1	20	5.0	5.0	✓
ORP by Electrode	E125	355391	1	20	5.0	5.0	✓
pH by Meter	E108	352508	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352253	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352935	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353476	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	354616	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353477	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352127	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352041	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352940	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	352528	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	352510	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	352506	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
BC PHCs - EPH by GC-FID	E601A	354442	1	2	50.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352254	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352255	1	20	5.0	5.0	✓
Conductivity in Water	E100	352507	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353202	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355061	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353203	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352126	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351968	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	352252	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352256	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352257	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352253	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352935	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353476	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	354616	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353477	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352127	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352041	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352940	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
Method Blanks (MB) - Continued							
Turbidity by Nephelometry	E121	352528	1	20	5.0	5.0	✓
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352254	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352255	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353202	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355061	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353203	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352126	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351968	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	352252	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352256	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352257	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352253	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353476	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	354616	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353477	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352127	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352041	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHCs - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
	Vancouver - Environmental			
PHCs and PAHs Hexane Extraction	EP601	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
	Calgary - Environmental			



## QUALITY CONTROL REPORT

**Work Order** : **CG2105953**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : 11/23/2021  
**Sampler** : Cruz Canlas  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 24-Nov-2021 08:40  
**Date Analysis Commenced** : 24-Nov-2021  
**Issue Date** : 01-Dec-2021 15:07

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
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Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 18  
Work Order : CG2105953  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 352506)</b>											
CG2105949-006	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352507)</b>											
CG2105949-006	Anonymous	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352508)</b>											
CG2105949-006	Anonymous	pH	----	E108	0.10	pH units	6.53	6.58	0.763%	4%	----
<b>Physical Tests (QC Lot: 352510)</b>											
CG2105949-006	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.2	2.1	0.04	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352528)</b>											
CG2105923-006	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352935)</b>											
CG2105939-004	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1420	1410	0.919%	20%	----
<b>Physical Tests (QC Lot: 355391)</b>											
CG2105939-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	465	476	2.46%	15%	----
<b>Anions and Nutrients (QC Lot: 351968)</b>											
CG2105945-010	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352041)</b>											
CG2105949-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0028	0.0029	0.00007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352252)</b>											
CG2105949-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.184	0.177	0.006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352253)</b>											
CG2105949-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	664	659	0.750%	20%	----
<b>Anions and Nutrients (QC Lot: 352254)</b>											
CG2105949-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352255)</b>											
CG2105949-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.78	1.66	0.13	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352256)</b>											
CG2105949-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	84.8	84.2	0.633%	20%	----
<b>Anions and Nutrients (QC Lot: 352257)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 352257) - continued</b>											
CG2105949-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354675)</b>											
CG2105941-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.0848	0.0927	0.0079	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354833)</b>											
CG2105939-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352126)</b>											
CG2105953-001	FR_FRABCH_WS_2021-1 1-22_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.52	0.58	0.06	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352127)</b>											
CG2105953-001	FR_FRABCH_WS_2021-1 1-22_N	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.51	0.52	0.01	Diff <2x LOR	----
<b>Total Metals (QC Lot: 353476)</b>											
CG2105941-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	0.0383	0.0385	0.679%	20%	----
<b>Total Metals (QC Lot: 353477)</b>											
CG2105941-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	23.3	23.8	1.78%	20%	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00051	0.00051	0.000003	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00937	0.00940	0.361%	20%	----
		barium, total	7440-39-3	E420	0.00020	mg/L	1.19	1.24	4.02%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	1.50 µg/L	0.00151	0.815%	20%	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	0.000490	0.000508	0.000018	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.045	0.046	0.001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	4.14 µg/L	0.00423	2.11%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	187	188	0.852%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	16.2 µg/L	0.0165	2.24%	20%	----
		copper, total	7440-50-8	E420	0.00100	mg/L	0.119	0.124	4.00%	20%	----
		iron, total	7439-89-6	E420	0.020	mg/L	35.5	35.9	1.24%	20%	----
		lead, total	7439-92-1	E420	0.000100	mg/L	0.0233	0.0237	1.62%	20%	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.0421	0.0447	6.05%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	41.9	42.3	1.03%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	1.78	1.81	1.53%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00736	0.00715	2.88%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.0622	0.0642	3.09%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	6.55	6.61	0.848%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	8.38 µg/L	0.00838	0.0222%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	34.9	34.1	2.42%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	0.00158	0.00165	4.53%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 353477) - continued</b>											
CG2105941-001	Anonymous	sodium, total	17341-25-2	E420	0.100	mg/L	19.5	20.4	4.59%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.426	0.429	0.706%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	1.08	1.14	0.06	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.00152	0.00152	0.334%	20%	----
		tin, total	7440-31-5	E420	0.00020	mg/L	0.00065	0.00066	0.00001	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	0.0442	0.0444	0.296%	20%	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.00448	0.00452	0.808%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	0.0605	0.0615	1.51%	20%	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.274	0.283	3.08%	20%	----
<b>Total Metals (QC Lot: 354616)</b>											
CG2105937-008	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353202)</b>											
CG2105937-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353203)</b>											
CG2105937-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00052	0.00052	0.000008	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00046	0.00045	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0515	0.0528	2.45%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.020	0.020	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0108 µg/L	0.0000106	0.0000002	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	251	247	1.41%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	1.65 µg/L	0.00166	0.577%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.024	0.024	0.0002	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0575	0.0570	0.891%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	154	153	0.811%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0363	0.0362	0.234%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00304	0.00315	3.40%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0167	0.0167	0.118%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.80	3.85	1.22%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	166 µg/L	0.167	0.479%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.48	3.51	1.06%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 353203) - continued</b>											
CG2105937-008	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.74	4.74	0.0599%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.352	0.362	2.83%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	264	264	0.0428%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000011	0.000012	0.0000007	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00929	0.00904	2.74%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0043	0.0028	0.0016	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 355061)</b>											
CG2105887-008	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 352506)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 352507)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 352510)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 352528)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 352935)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 352940)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 351968)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 352041)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 352252)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 352253)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 352254)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 352255)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 352256)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 352257)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 354675)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 354833)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 354833) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 352126)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 352127)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 353476)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 353477)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 353477) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 354616)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 353202)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 353203)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 353203) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 355061)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Hydrocarbons (QCLot: 354442)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 352506)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	112	85.0	115	----
<b>Physical Tests (QCLot: 352507)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	96.8	90.0	110	----
<b>Physical Tests (QCLot: 352508)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 352510)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	105	85.0	115	----
<b>Physical Tests (QCLot: 352528)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	105	85.0	115	----
<b>Physical Tests (QCLot: 352935)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	91.5	85.0	115	----
<b>Physical Tests (QCLot: 352940)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	93.0	85.0	115	----
<b>Physical Tests (QCLot: 355391)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	102	95.4	104	----
<b>Anions and Nutrients (QCLot: 351968)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	94.3	80.0	120	----
<b>Anions and Nutrients (QCLot: 352041)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	93.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 352252)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 352253)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 352254)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 352255)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 352256)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 352257)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 354675)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 354675) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Anions and Nutrients (QCLot: 354833)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 352126)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	109	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 352127)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	114	80.0	120	----
<b>Total Metals (QCLot: 353476)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.6	80.0	120	----
<b>Total Metals (QCLot: 353477)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.3	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	95.9	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.0	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	93.8	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	90.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	96.9	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	95.6	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.1	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	96.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	96.4	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	94.4	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	95.0	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	96.3	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.7	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	95.8	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	91.2	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	87.3	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	98.8	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.1	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	87.9	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 353477) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	98.8	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	92.3	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.0	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	97.8	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	98.4	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	93.3	80.0	120	----
<b>Total Metals (QCLot: 354616)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	94.0	80.0	120	----
<b>Dissolved Metals (QCLot: 353202)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
<b>Dissolved Metals (QCLot: 353203)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	111	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	111	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	114	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	106	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	108	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	106	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	110	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	106	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.9	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	113	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 353203) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	109	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----
<b>Hydrocarbons (QCLot: 354442)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	7719.3 µg/L	99.2	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3536.8 µg/L	101	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	10414 µg/L	100	70.0	130	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 351968)</b>										
CG2105945-011	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0519 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 352041)</b>										
CG2105949-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0522 mg/L	0.0676 mg/L	77.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 352252)</b>										
CG2105965-003	Anonymous	fluoride	16984-48-8	E235.F	1.08 mg/L	1 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 352253)</b>										
CG2105965-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 352254)</b>										
CG2105965-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.484 mg/L	0.5 mg/L	96.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 352255)</b>										
CG2105965-003	Anonymous	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 352256)</b>										
CG2105965-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.69 mg/L	2.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 352257)</b>										
CG2105965-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.531 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 354675)</b>										
CG2105941-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 354833)</b>										
CG2105939-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.12 mg/L	2.5 mg/L	84.6	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352126)</b>										
CG2105953-001	FR_FRABCH_WS_2021-11-22_N	carbon, dissolved organic [DOC]	----	E358-L	28.4 mg/L	23.9 mg/L	119	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352127)</b>										
CG2105953-001	FR_FRABCH_WS_2021-11-22_N	carbon, total organic [TOC]	----	E355-L	30.1 mg/L	23.9 mg/L	126	70.0	130	----
<b>Total Metals (QCLot: 353476)</b>										
CG2105941-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
<b>Total Metals (QCLot: 353477)</b>										
CG2105941-002	Anonymous	aluminum, total	7429-90-5	E420	0.185 mg/L	0.2 mg/L	92.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 353477) - continued</b>										
CG2105941-002	Anonymous	antimony, total	7440-36-0	E420	0.0184 mg/L	0.02 mg/L	92.1	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		barium, total	7440-39-3	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0371 mg/L	0.04 mg/L	92.7	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00972 mg/L	0.01 mg/L	97.2	70.0	130	----
		boron, total	7440-42-8	E420	0.089 mg/L	0.1 mg/L	88.9	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00381 mg/L	0.004 mg/L	95.2	70.0	130	----
		calcium, total	7440-70-2	E420	3.80 mg/L	4 mg/L	94.9	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		copper, total	7440-50-8	E420	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		lithium, total	7439-93-2	E420	0.0931 mg/L	0.1 mg/L	93.1	70.0	130	----
		magnesium, total	7439-95-4	E420	0.925 mg/L	1 mg/L	92.5	70.0	130	----
		manganese, total	7439-96-5	E420	0.0192 mg/L	0.02 mg/L	96.3	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		nickel, total	7440-02-0	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		potassium, total	7440-09-7	E420	3.85 mg/L	4 mg/L	96.2	70.0	130	----
		selenium, total	7782-49-2	E420	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		silicon, total	7440-21-3	E420	8.85 mg/L	10 mg/L	88.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00376 mg/L	0.004 mg/L	94.1	70.0	130	----
		sodium, total	17341-25-2	E420	1.97 mg/L	2 mg/L	98.4	70.0	130	----
		strontium, total	7440-24-6	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		sulfur, total	7704-34-9	E420	18.1 mg/L	20 mg/L	90.5	70.0	130	----
		thallium, total	7440-28-0	E420	0.00360 mg/L	0.004 mg/L	90.1	70.0	130	----
		tin, total	7440-31-5	E420	0.0184 mg/L	0.02 mg/L	92.1	70.0	130	----
		titanium, total	7440-32-6	E420	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		uranium, total	7440-61-1	E420	0.00386 mg/L	0.004 mg/L	96.5	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0946 mg/L	0.1 mg/L	94.6	70.0	130	----
		zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	96.0	70.0	130	----
<b>Total Metals (QCLot: 354616)</b>										
CG2105937-009	Anonymous	mercury, total	7439-97-6	E508-L	4.23 ng/L	5 ng/L	84.6	70.0	130	----
<b>Dissolved Metals (QCLot: 353202)</b>										
CG2105937-009	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
<b>Dissolved Metals (QCLot: 353203)</b>										
CG2105937-009	Anonymous	aluminum, dissolved	7429-90-5	E421	0.206 mg/L	0.2 mg/L	103	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 353203) - continued</b>										
CG2105937-009	Anonymous	antimony, dissolved	7440-36-0	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0215 mg/L	0.02 mg/L	108	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0180 mg/L	0.02 mg/L	90.0	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00835 mg/L	0.01 mg/L	83.5	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.091 mg/L	0.1 mg/L	91.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0181 mg/L	0.02 mg/L	90.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0181 mg/L	0.02 mg/L	90.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	94.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0953 mg/L	0.1 mg/L	95.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0452 mg/L	0.04 mg/L	113	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.31 mg/L	10 mg/L	93.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00366 mg/L	0.004 mg/L	91.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00367 mg/L	0.004 mg/L	91.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.358 mg/L	0.4 mg/L	89.6	70.0	130	----
<b>Dissolved Metals (QCLot: 355061)</b>										
CG2105887-009	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000960 mg/L	0.0001 mg/L	96.0	70.0	130	----

Page : 18 of 18  
Work Order : CG2105953  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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COC ID:		11/23/2021		TURNAROUND TIME:				RUSH:					
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#		Fording River Operation		Lab Name		ALS Calgary		Report Format / Distribution		Excel	PDF	EDD	
Project Manager		Scott Roughead		Lab Contact		Lyudmyla Shvets		Email 1:		David.burroughs@teck.com	X	X	X
Email		scott.roughead@teck.com		Email		Lyudmyla.Shvets@ALSGlobal.com		Email 2:		scott.roughead@teck.com	X	X	X
Address				Address		2559 29 Street NE		Email 3:		teckcoal@equisonline.com			X
City		Elkford		Province		BC		Email 4:		cruz.canlas@teck.com	X	X	X
Postal Code				Country		Canada		Email 5:		jamie.walsh@teck.com	X	X	X
Phone Number		1-250-433-6976		Phone Number		403 407 1794		PO number		VPO00741392			

SAMPLE DETAILS								ANALYSIS REQUESTED								Filtered: F: Field, L: Lab, FL: Field & Lab, N: None			
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	ALS Package-BOD	ALS Package-Colour	ALS Package-PAH	ALS Package-TSS/TURB	ALS Package-EPH
FR_FRABCH_WS_2021-11-22_N	FR_FRABCH	WS	NO	23-Nov	11:15	G	7	1	1	1	1	1	1	1					
FR_CIL_MON_2021-11-01_N	FR_CIL	WN	No	23-Nov	12:50	G	4		1					1					2
FR_GH_WELL4_QTR_2021-10-04_N	FR_GH_WELL4	WG	NO	23-Nov	12:17	G	5	1	1	1		1		1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Cruz Canlas	November 23, 2021	<i>[Signature]</i>	11/29/2021

SERVICE REQUEST (rush - subject to availability)				
Regular (default) x	Sampler's Name	Cruz Canlas	Mobile #	2504336166
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	November 23, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2105953**





## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2106015**  
**Client** : **Teck Coal Limited**  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-11  
**Sampler** : Katie Peterson  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 25-Nov-2021 09:15  
**Date Analysis Commenced** : 25-Nov-2021  
**Issue Date** : 10-Dec-2021 12:16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_KB-3B_WG_2021-11_NP	FR_KB-6PW_WG_2021-11_NP	----	----	----
(Matrix: Water)					Client sampling date / time	24-Nov-2021 13:05	24-Nov-2021 10:30	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106015-001	CG2106015-002	-----	-----	-----	
					Result	Result	----	----	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	16.2	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	422	496	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	515	605	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	77.8	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	46.7	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	422	574	----	----	----	
conductivity	----	E100	2.0	µS/cm	1810	981	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1090	15.8	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	269	359	----	----	----	
pH	----	E108	0.10	pH units	7.72	8.98	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	1660	646	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.6	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	1.12	0.17	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.351	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.92	1.56	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100	3.78	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKN</sup>	0.340	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	62.4	0.0164 <sup>HTD</sup>	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050	<0.0010 <sup>HTD</sup>	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0016	0.0243	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0034	0.0231 <sup>DLM</sup>	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	523	0.98	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	----	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-3B_WG_2021-11_NP	FR_KB-6PW_WG_2021-11_NP	---	---	---
Client sampling date / time					24-Nov-2021 13:05	24-Nov-2021 10:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2106015-001	CG2106015-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	23.8	11.7	---	---	---	
cation sum	---	EC101	0.10	meq/L	22.0	11.0	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	92.4	94.0	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	3.93	3.08	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0259	0.0105	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00016	<0.00010	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	0.00016	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0611	0.270	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	0.021	0.866	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0284	<0.0050	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	260	1.89	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00026	<0.00010	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	0.038	<0.010	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0860	0.348	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	118	2.90	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00267	0.00742	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000453	0.000625	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	3.13	0.820	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	208	<0.050	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	2.61	3.20	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	5.35	268	---	---	---	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.252	0.151	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	189	0.64	---	---	---	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-3B_WG_2021-11_NP	FR_KB-6PW_WG_2021-11_NP	----	----	----
Client sampling date / time					24-Nov-2021 13:05	24-Nov-2021 10:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106015-001	CG2106015-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00087	<0.00030	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00843	0.000028	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0019	0.0032	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00012	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00014	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0583	0.262	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.021	0.855	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0250	<0.0050	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	255	1.76	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00018	<0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00022	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0825	0.332	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	110	2.76	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00023	0.00694	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000444	0.000584	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.89	0.737	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	225	<0.050	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.53	3.07	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.92	246	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-3B_WG_2021-11_NP	FR_KB-6PW_WG_2021-11_NP	----	----	----
Client sampling date / time					24-Nov-2021 13:05	24-Nov-2021 10:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106015-001	CG2106015-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.238	0.144	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	179	0.56	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00816	0.000019	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	<0.0010	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106015</b>	Page	: 1 of 14
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Paul Dore	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 25-Nov-2021 09:15
PO	: VPO00765458	Issue Date	: 10-Dec-2021 12:17
C-O-C number	: QTR_KC_GW_2021-11		
Sampler	: Katie Peterson		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.300 % TKND	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

**Result Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-3B_WG_2021-11_NP	E298	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-6PW_WG_2021-11_NP	E298	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_KB-3B_WG_2021-11_NP	E235.Br-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_KB-6PW_WG_2021-11_NP	E235.Br-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_KB-3B_WG_2021-11_NP	E235.Cl-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_KB-6PW_WG_2021-11_NP	E235.Cl-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> FR_KB-3B_WG_2021-11_NP	E378-U	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-6PW_WG_2021-11_NP	E378-U	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_KB-3B_WG_2021-11_NP	E235.F	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_KB-6PW_WG_2021-11_NP	E235.F	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_KB-3B_WG_2021-11_NP	E235.NO3-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_KB-6PW_WG_2021-11_NP	E235.NO3-L	24-Nov-2021	----	----	----		29-Nov-2021	3 days	5 days	* EHT
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_KB-3B_WG_2021-11_NP	E235.NO2-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_KB-6PW_WG_2021-11_NP	E235.NO2-L	24-Nov-2021	----	----	----		29-Nov-2021	3 days	5 days	* EHT
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_KB-3B_WG_2021-11_NP	E235.SO4	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_KB-6PW_WG_2021-11_NP	E235.SO4	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-3B_WG_2021-11_NP	E318	24-Nov-2021	30-Nov-2021	----	----		01-Dec-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-6PW_WG_2021-11_NP	E318	24-Nov-2021	30-Nov-2021	----	----		01-Dec-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-3B_WG_2021-11_NP	E372-U	24-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-6PW_WG_2021-11_NP	E372-U	24-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-3B_WG_2021-11_NP	E421.Cr-L	24-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-6PW_WG_2021-11_NP	E421.Cr-L	24-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-3B_WG_2021-11_NP	E421	24-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-6PW_WG_2021-11_NP	E421	24-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	180 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-3B_WG_2021-11_NP	E358-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-6PW_WG_2021-11_NP	E358-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-3B_WG_2021-11_NP	E355-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-6PW_WG_2021-11_NP	E355-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-3B_WG_2021-11_NP	E283	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-6PW_WG_2021-11_NP	E283	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_KB-3B_WG_2021-11_NP	E290	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_KB-6PW_WG_2021-11_NP	E290	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> FR_KB-3B_WG_2021-11_NP	E100	24-Nov-2021	----	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> FR_KB-6PW_WG_2021-11_NP	E100	24-Nov-2021	----	----	----		29-Nov-2021	28 days	5 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-3B_WG_2021-11_NP	E125	24-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	145 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-6PW_WG_2021-11_NP	E125	24-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	148 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-3B_WG_2021-11_NP	E108	24-Nov-2021	----	----	----		29-Nov-2021	0.25 hrs	119 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-6PW_WG_2021-11_NP	E108	24-Nov-2021	----	----	----		29-Nov-2021	0.25 hrs	122 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_KB-3B_WG_2021-11_NP	E162	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_KB-6PW_WG_2021-11_NP	E162	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] FR_KB-3B_WG_2021-11_NP	E160-L	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] FR_KB-6PW_WG_2021-11_NP	E160-L	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE FR_KB-3B_WG_2021-11_NP	E121	24-Nov-2021	----	----	----		27-Nov-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_KB-6PW_WG_2021-11_NP	E121	24-Nov-2021	----	----	----		27-Nov-2021	3 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_KB-3B_WG_2021-11_NP	E420.Cr-L	24-Nov-2021	----	----	----		30-Nov-2021	180 days	6 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_KB-6PW_WG_2021-11_NP	E420.Cr-L	24-Nov-2021	----	----	----		30-Nov-2021	180 days	6 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_KB-3B_WG_2021-11_NP	E420	24-Nov-2021	----	----	----		30-Nov-2021	180 days	6 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_KB-6PW_WG_2021-11_NP	E420	24-Nov-2021	----	----	----		30-Nov-2021	180 days	6 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 EHT: Exceeded ALS recommended hold time prior to analysis.  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	355096	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355095	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	355297	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353744	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353745	1	17	5.8	5.0	✓
Conductivity in Water	E100	355093	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	355591	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	355590	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352871	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352920	2	28	7.1	5.0	✓
Fluoride in Water by IC	E235.F	353742	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353746	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353747	1	17	5.8	5.0	✓
ORP by Electrode	E125	356180	1	18	5.5	5.0	✓
pH by Meter	E108	355094	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	353743	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	354287	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	355513	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	355620	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	355512	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352872	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	353017	1	17	5.8	5.0	✓
Turbidity by Nephelometry	E121	354101	2	40	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	355096	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355095	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	355297	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353744	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353745	1	17	5.8	5.0	✓
Conductivity in Water	E100	355093	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	355591	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	355590	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352871	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352920	2	28	7.1	5.0	✓
Fluoride in Water by IC	E235.F	353742	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353746	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353747	1	17	5.8	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	356180	1	18	5.5	5.0	✓
pH by Meter	E108	355094	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	353743	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	354287	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	355513	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	355620	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	355512	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352872	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	353017	1	17	5.8	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	354282	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	354101	2	40	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	355096	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355095	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	355297	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353744	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353745	1	17	5.8	5.0	✓
Conductivity in Water	E100	355093	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	355591	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	355590	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352871	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352920	2	28	7.1	5.0	✓
Fluoride in Water by IC	E235.F	353742	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353746	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353747	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	353743	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	354287	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	355513	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	355620	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	355512	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352872	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	353017	1	17	5.8	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	354282	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	354101	2	40	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	355297	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353744	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353745	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	355591	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	355590	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352871	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352920	2	28	7.1	5.0	✓
Fluoride in Water by IC	E235.F	353742	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353746	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353747	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	353743	1	17	5.8	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	355513	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	355620	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	355512	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352872	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	353017	1	17	5.8	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



## QUALITY CONTROL REPORT

**Work Order** : **CG2106015**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-11  
**Sampler** : Katie Peterson  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 25-Nov-2021 09:15  
**Date Analysis Commenced** : 25-Nov-2021  
**Issue Date** : 10-Dec-2021 12:16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
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Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
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Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 354101)</b>											
CG2105987-011	Anonymous	turbidity	----	E121	0.10	NTU	2.68	2.63	1.96%	15%	----
<b>Physical Tests (QC Lot: 354193)</b>											
CG2105987-016	Anonymous	turbidity	----	E121	0.10	NTU	1.75	1.75	0.229%	15%	----
<b>Physical Tests (QC Lot: 354287)</b>											
CG2106011-002	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	702	718	2.39%	20%	----
<b>Physical Tests (QC Lot: 355093)</b>											
CG2106014-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2270	2280	0.440%	10%	----
<b>Physical Tests (QC Lot: 355094)</b>											
CG2106014-001	Anonymous	pH	----	E108	0.10	pH units	8.03	8.03	0.00%	4%	----
<b>Physical Tests (QC Lot: 355095)</b>											
CG2106014-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	258	260	0.732%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	258	260	0.732%	20%	----
<b>Physical Tests (QC Lot: 355096)</b>											
CG2106013-003	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	6.0	5.5	0.6	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 356180)</b>											
CG2106011-005	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	453	458	1.27%	15%	----
<b>Anions and Nutrients (QC Lot: 352920)</b>											
CG2106000-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352921)</b>											
CG2106015-002	FR_KB-6PW_WG_2021-11_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0243	0.0245	0.622%	20%	----
<b>Anions and Nutrients (QC Lot: 353017)</b>											
CG2105992-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0022	<0.0020	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353742)</b>											
CG2106013-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353743)</b>											
CG2106013-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	904	912	0.828%	20%	----
<b>Anions and Nutrients (QC Lot: 353744)</b>											
CG2106013-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353745)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 353745) - continued</b>											
CG2106013-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.40	1.29	0.12	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353746)</b>											
CG2106013-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	7.37	7.44	0.854%	20%	----
<b>Anions and Nutrients (QC Lot: 353747)</b>											
CG2106013-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 355297)</b>											
CG2106015-001	FR_KB-3B_WG_2021-11_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 355620)</b>											
CG2105995-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	# 0.350	0.300	Diff <2x LOR	TKND
<b>Organic / Inorganic Carbon (QC Lot: 352871)</b>											
CG2106008-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.12	0.92	0.20	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352872)</b>											
CG2106008-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 355512)</b>											
CG2106013-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00056	0.00056	0.000006	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00022	0.00021	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0294	0.0298	1.42%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	<0.0100 µg/L	0.0000158	0.0000058	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.100	mg/L	213	214	0.570%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.0142	0.0140	0.0002	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	175	179	2.02%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	0.00163	0.00166	0.00004	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00175	0.00174	0.724%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.0145	0.0147	1.62%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	2.43	2.46	1.40%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	210 µg/L	0.214	2.16%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	3.40	3.40	0.0376%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 355512) - continued</b>											
CG2106013-001	Anonymous	silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	2.11	2.15	1.97%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.160	0.158	0.626%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	326	337	3.32%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0110	0.0112	1.65%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 355513)</b>											
CG2106013-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 355590)</b>											
CG2106013-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0011	0.00008	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00051	0.00054	0.00002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00018	0.00019	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0292	0.0294	0.763%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0093 µg/L	0.0000071	0.0000022	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	214	213	0.387%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00024	0.00023	0.000004	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0157	0.0145	7.63%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	170	168	1.09%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00158	0.00142	10.5%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00159	0.00166	4.17%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0136	0.0136	0.210%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.31	2.29	0.694%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	227 µg/L	0.242	6.42%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.48	3.48	0.244%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 355590) - continued</b>											
CG2106013-001	Anonymous	sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.11	2.13	0.854%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.150	0.157	4.28%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	320	318	0.552%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0105	0.0107	1.54%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 355591)</b>											
CG2106013-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00011	<0.00010	0.00001	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 354101)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 354193)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 354282)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 354287)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 355093)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 355095)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 355096)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	2.0	----
<b>Anions and Nutrients (QCLot: 352920)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 352921)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 353017)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 353742)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 353743)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 353744)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 353745)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 353746)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 353747)</b>						





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 353747) - continued</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 355297)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 355620)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 352871)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 352872)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 355512)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 355512) - continued</b>						
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 355513)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 355590)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Page : 10 of 17  
Work Order : CG2106015  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 355590) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 355591)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 354101)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100.0	85.0	115	---
<b>Physical Tests (QCLot: 354193)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.5	85.0	115	---
<b>Physical Tests (QCLot: 354282)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 354287)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	95.8	85.0	115	---
<b>Physical Tests (QCLot: 355093)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.6	90.0	110	---
<b>Physical Tests (QCLot: 355094)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 355095)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 355096)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 356180)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 352920)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	96.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 352921)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	96.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 353017)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 353742)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 353743)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.7	90.0	110	---
<b>Anions and Nutrients (QCLot: 353744)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.0	85.0	115	---
<b>Anions and Nutrients (QCLot: 353745)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 353746)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 353746) - continued</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 353747)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.7	90.0	110	----
<b>Anions and Nutrients (QCLot: 355297)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	108	85.0	115	----
<b>Anions and Nutrients (QCLot: 355620)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	99.3	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 352871)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	117	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 352872)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	96.7	80.0	120	----
<b>Total Metals (QCLot: 355512)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	98.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	96.2	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	92.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	107	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	95.1	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	105	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	110	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	102	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 355512) - continued</b>									
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	110	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.5	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	116	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 355513)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 355590)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	88.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	92.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.3	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	96.5	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.4	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.7	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	100	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 355590) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.3	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	92.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	89.0	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	93.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 355591)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.6	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 352920)</b>										
CG2106003-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0536 mg/L	0.05 mg/L	107	70.0	130	----
<b>Anions and Nutrients (QCLot: 352921)</b>										
CG2106016-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0541 mg/L	0.05 mg/L	108	70.0	130	----
<b>Anions and Nutrients (QCLot: 353017)</b>										
CG2105992-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0481 mg/L	0.0676 mg/L	71.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 353742)</b>										
CG2106034-014	Anonymous	fluoride	16984-48-8	E235.F	1.08 mg/L	1 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 353743)</b>										
CG2106034-014	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 353744)</b>										
CG2106034-014	Anonymous	bromide	24959-67-9	E235.Br-L	0.535 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 353745)</b>										
CG2106034-014	Anonymous	chloride	16887-00-6	E235.Cl-L	110 mg/L	100 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 353746)</b>										
CG2106034-014	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.74 mg/L	2.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 353747)</b>										
CG2106034-014	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.539 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 355297)</b>										
CG2106015-002	FR_KB-6PW_WG_2021-11_NP	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 355620)</b>										
CG2105995-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.51 mg/L	2.5 mg/L	100	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352871)</b>										
CG2106008-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	26.6 mg/L	23.9 mg/L	111	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352872)</b>										
CG2106008-001	Anonymous	carbon, total organic [TOC]	----	E355-L	27.7 mg/L	23.9 mg/L	116	70.0	130	----
<b>Total Metals (QCLot: 355512)</b>										
CG2106013-002	Anonymous	aluminum, total	7429-90-5	E420	0.199 mg/L	0.2 mg/L	99.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 355512) - continued</b>										
CG2106013-002	Anonymous	antimony, total	7440-36-0	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00995 mg/L	0.01 mg/L	99.5	70.0	130	----
		boron, total	7440-42-8	E420	0.091 mg/L	0.1 mg/L	91.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00397 mg/L	0.004 mg/L	99.3	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0188 mg/L	0.02 mg/L	94.3	70.0	130	----
		copper, total	7440-50-8	E420	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		iron, total	7439-89-6	E420	1.92 mg/L	2 mg/L	96.1	70.0	130	----
		lead, total	7439-92-1	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		lithium, total	7439-93-2	E420	0.0950 mg/L	0.1 mg/L	95.0	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0367 mg/L	0.04 mg/L	91.8	70.0	130	----
		potassium, total	7440-09-7	E420	3.96 mg/L	4 mg/L	98.9	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.01 mg/L	10 mg/L	90.1	70.0	130	----
		silver, total	7440-22-4	E420	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00367 mg/L	0.004 mg/L	91.7	70.0	130	----
		tin, total	7440-31-5	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		titanium, total	7440-32-6	E420	0.0398 mg/L	0.04 mg/L	99.4	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, total	7440-66-6	E420	0.364 mg/L	0.4 mg/L	91.1	70.0	130	----
<b>Total Metals (QCLot: 355513)</b>										
CG2106013-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
<b>Dissolved Metals (QCLot: 355590)</b>										
CG2106013-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.198 mg/L	0.2 mg/L	99.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0217 mg/L	0.02 mg/L	108	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 355590) - continued</b>										
CG2106013-002	Anonymous	barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0337 mg/L	0.04 mg/L	84.4	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00838 mg/L	0.01 mg/L	83.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.087 mg/L	0.1 mg/L	86.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00395 mg/L	0.004 mg/L	98.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0183 mg/L	0.02 mg/L	91.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.01 mg/L	2 mg/L	100	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0181 mg/L	0.02 mg/L	90.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0957 mg/L	0.1 mg/L	95.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0200 mg/L	0.02 mg/L	100.0	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0370 mg/L	0.04 mg/L	92.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.94 mg/L	4 mg/L	98.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.41 mg/L	10 mg/L	94.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00374 mg/L	0.004 mg/L	93.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00356 mg/L	0.004 mg/L	88.9	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0184 mg/L	0.02 mg/L	92.2	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0376 mg/L	0.04 mg/L	94.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.382 mg/L	0.4 mg/L	95.6	70.0	130	----
<b>Dissolved Metals (QCLot: 355591)</b>										
CG2106013-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----





CERTIFICATE OF ANALYSIS

Work Order : CG2106065
Client : Teck Coal Limited
Contact : Paul Dore
Address : Fording River Operations PO BOX 100
Elkford BC Canada V0B 1H0
Telephone : ---
Project : FORDING RIVER OPERATIONS
PO : VPO00765458
C-O-C number : QTR\_KC\_GW\_2021-11
Sampler : KP
Site : ---
Quote number : Teck Coal Master Quote
No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 6
Laboratory : Calgary - Environmental
Account Manager : Justine Buma-a
Address : 2559 29th Street NE
Calgary AB Canada T1Y 7B5
Telephone : +1 403 407 1800
Date Samples Received : 26-Nov-2021 09:10
Date Analysis Commenced : 26-Nov-2021
Issue Date : 17-Dec-2021 09:13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Lists names like Elke Tabora, Erin Sanchez, Hannah Phung, etc., along with their roles and departments.



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_KB-3A_WG_2021-11_NP	FR_TRP1_WG_2021-11_NP	----	----	----
(Matrix: Water)					Client sampling date / time	25-Nov-2021 11:50	25-Nov-2021 16:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106065-001	CG2106065-002	-----	-----	-----	
					Result	Result	----	----	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	13.9	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	338	<1.0	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	412	<1.0	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	412	<1.0	----	----	----	
conductivity	----	E100	2.0	µS/cm	1920	<2.0	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1130	<0.50	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	468	514	----	----	----	
pH	----	E108	0.10	pH units	7.60	5.53	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	1420	<10	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	0.28	<0.10	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0075	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.48	<0.10	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLDS</sup>	<0.020	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKN</sup>	<0.050	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	64.5	<0.0050	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0142	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0014	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0022	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	554	<0.30	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	----	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	----	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-3A_WG_ 2021-11_NP	FR_TRP1_WG_ 2021-11_NP	----	----	----
Client sampling date / time					25-Nov-2021 11:50	25-Nov-2021 16:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106065-001	CG2106065-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	24.4	<0.10	----	----	----	
cation sum	----	EC101	0.10	meq/L	22.9	<0.10	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.8	100	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.17	<0.010	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0106	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00014	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0483	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.017	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0345	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	292	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00024	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.65	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00066	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.026	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0440	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	115	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00144	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000274	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.91	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	193	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	3.14	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	7440-23-5	E420	0.050	mg/L	4.49	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.319	----	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	193	----	----	----	----	



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_KB-3A_WG_2021-11_NP	FR_TRP1_WG_2021-11_NP	---	---	---
(Matrix: Water)					Client sampling date / time	25-Nov-2021 11:50	25-Nov-2021 16:00	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2106065-001	CG2106065-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	---	---	---	---	---
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	---	---	---	---	---
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00090 <sup>DLM</sup>	---	---	---	---	---
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00576	---	---	---	---	---
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	---	---	---	---	---
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0038	---	---	---	---	---
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	---	---	---	---
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	<0.00010	---	---	---	---
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	---
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0490	<0.00010	---	---	---	---
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	---
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000250 <sup>DLM</sup>	---	---	---	---
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.017	<0.010	---	---	---	---
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0327	<0.0050	---	---	---	---
calcium, dissolved	7440-70-2	E421	0.050	mg/L	273	<0.050	---	---	---	---
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00016	<0.00010	---	---	---	---
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.68	<0.10	---	---	---	---
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00093	<0.00020	---	---	---	---
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---	---
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	---
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0465	<0.0010	---	---	---	---
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	110	<0.0050	---	---	---	---
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00110	<0.00010	---	---	---	---
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000456 <sup>DTMF</sup>	<0.000050	---	---	---	---
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00055	<0.00050	---	---	---	---
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.97	<0.050	---	---	---	---
selenium, dissolved	7782-49-2	E421	0.050	µg/L	227	<0.050	---	---	---	---
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.07	<0.050	---	---	---	---
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	---
sodium, dissolved	7440-23-5	E421	0.050	mg/L	4.50	<0.050	---	---	---	---



### Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-3A_WG_ 2021-11_NP	FR_TRP1_WG_ 2021-11_NP	----	----	----
Client sampling date / time					25-Nov-2021 11:50	25-Nov-2021 16:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106065-001	CG2106065-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.289	<0.00020	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	194	<0.50	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00576	<0.000010	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0039	<0.0010	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106065</b>	Page	: 1 of 14
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Paul Dore	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 26-Nov-2021 09:10
PO	: VPO00765458	Issue Date	: 17-Dec-2021 09:13
C-O-C number	: QTR_KC_GW_2021-11		
Sampler	: KP		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Laboratory Control Sample (LCS) Recoveries</b>								
Dissolved Metals	QC-MRG2-3573150 02	----	bismuth, dissolved	7440-69-9	E421	71.3 % <sup>MES</sup>	80.0-120%	Recovery less than lower control limit

**Result Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

<b>Matrix Spike (MS) Recoveries</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	26.9 % <sup>MSTN</sup>	70.0-130%	Recovery less than lower data quality objective

**Result Qualifiers**

Qualifier	Description
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_KB-3A_WG_2021-11_NP	E298	25-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_TRP1_WG_2021-11_NP	E298	25-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_KB-3A_WG_2021-11_NP	E235.Br-L	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_TRP1_WG_2021-11_NP	E235.Br-L	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_KB-3A_WG_2021-11_NP	E235.Cl-L	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_TRP1_WG_2021-11_NP	E235.Cl-L	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> FR_KB-3A_WG_2021-11_NP	E378-U	25-Nov-2021	----	----	----		26-Nov-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_TRP1_WG_2021-11_NP	E378-U	25-Nov-2021	----	----	----		26-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_KB-3A_WG_2021-11_NP	E235.F	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_TRP1_WG_2021-11_NP	E235.F	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_KB-3A_WG_2021-11_NP	E235.NO3-L	25-Nov-2021	----	----	----		27-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_TRP1_WG_2021-11_NP	E235.NO3-L	25-Nov-2021	----	----	----		27-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_KB-3A_WG_2021-11_NP	E235.NO2-L	25-Nov-2021	----	----	----		27-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_TRP1_WG_2021-11_NP	E235.NO2-L	25-Nov-2021	----	----	----		27-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_KB-3A_WG_2021-11_NP	E235.SO4	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_TRP1_WG_2021-11_NP	E235.SO4	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-3A_WG_2021-11_NP	E318	25-Nov-2021	01-Dec-2021	----	----		03-Dec-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP1_WG_2021-11_NP	E318	25-Nov-2021	01-Dec-2021	----	----		03-Dec-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-3A_WG_2021-11_NP	E372-U	25-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP1_WG_2021-11_NP	E372-U	25-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-3A_WG_2021-11_NP	E421.Cr-L	25-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TRP1_WG_2021-11_NP	E421.Cr-L	25-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-3A_WG_2021-11_NP	E421	25-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TRP1_WG_2021-11_NP	E421	25-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-3A_WG_2021-11_NP	E358-L	25-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	4 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-3A_WG_2021-11_NP	E355-L	25-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP1_WG_2021-11_NP	E355-L	25-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	4 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-3A_WG_2021-11_NP	E283	25-Nov-2021	----	----	----		30-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_TRP1_WG_2021-11_NP	E283	25-Nov-2021	----	----	----		30-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_KB-3A_WG_2021-11_NP	E290	25-Nov-2021	----	----	----		30-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_TRP1_WG_2021-11_NP	E290	25-Nov-2021	----	----	----		30-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> FR_KB-3A_WG_2021-11_NP	E100	25-Nov-2021	----	----	----		30-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> FR_TRP1_WG_2021-11_NP	E100	25-Nov-2021	----	----	----		30-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> FR_TRP1_WG_2021-11_NP	E125	25-Nov-2021	----	----	----		03-Dec-2021	0.25 hrs	185 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_KB-3A_WG_2021-11_NP	E125	25-Nov-2021	----	----	----		03-Dec-2021	0.25 hrs	189 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_TRP1_WG_2021-11_NP	E108	25-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	114 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_KB-3A_WG_2021-11_NP	E108	25-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	119 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_KB-3A_WG_2021-11_NP	E162	25-Nov-2021	----	----	----		01-Dec-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_TRP1_WG_2021-11_NP	E162	25-Nov-2021	----	----	----		01-Dec-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] FR_KB-3A_WG_2021-11_NP	E160-L	25-Nov-2021	----	----	----		01-Dec-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] FR_TRP1_WG_2021-11_NP	E160-L	25-Nov-2021	----	----	----		01-Dec-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE FR_KB-3A_WG_2021-11_NP	E121	25-Nov-2021	----	----	----		28-Nov-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE FR_TRP1_WG_2021-11_NP	E121	25-Nov-2021	----	----	----		28-Nov-2021	3 days	3 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-3A_WG_2021-11_NP	E420.Cr-L	25-Nov-2021	----	----	----		02-Dec-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-3A_WG_2021-11_NP	E420	25-Nov-2021	----	----	----		02-Dec-2021	180 days	7 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	355875	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355873	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	355923	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354104	2	23	8.7	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354105	2	23	8.7	5.0	✓
Conductivity in Water	E100	355871	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	357315	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	357316	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	353906	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	353889	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	354102	2	23	8.7	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354106	2	23	8.7	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354107	2	23	8.7	5.0	✓
ORP by Electrode	E125	358653	1	20	5.0	5.0	✓
pH by Meter	E108	355872	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	354103	2	23	8.7	5.0	✓
TDS by Gravimetry	E162	355369	2	31	6.4	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	357435	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357269	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	357436	1	2	50.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	353907	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354453	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	354434	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	355875	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355873	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	355923	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354104	2	23	8.7	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354105	2	23	8.7	5.0	✓
Conductivity in Water	E100	355871	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	357315	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	357316	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	353906	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	353889	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	354102	2	23	8.7	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354106	2	23	8.7	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354107	2	23	8.7	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	358653	1	20	5.0	5.0	✓
pH by Meter	E108	355872	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	354103	2	23	8.7	5.0	✓
TDS by Gravimetry	E162	355369	2	31	6.4	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	357435	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357269	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	357436	1	2	50.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	353907	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354453	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	355364	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	354434	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	355875	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355873	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	355923	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354104	2	23	8.7	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354105	2	23	8.7	5.0	✓
Conductivity in Water	E100	355871	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	357315	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	357316	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	353906	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	353889	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	354102	2	23	8.7	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354106	2	23	8.7	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354107	2	23	8.7	5.0	✓
Sulfate in Water by IC	E235.SO4	354103	2	23	8.7	5.0	✓
TDS by Gravimetry	E162	355369	2	31	6.4	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	357435	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357269	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	357436	1	2	50.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	353907	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354453	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	355364	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	354434	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	355923	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354104	2	23	8.7	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354105	2	23	8.7	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	357315	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	357316	1	15	6.6	5.0	✓



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	353906	1	7	14.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	353889	1	11	9.0	5.0	✔
Fluoride in Water by IC	E235.F	354102	2	23	8.7	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	354106	2	23	8.7	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	354107	2	23	8.7	5.0	✔
Sulfate in Water by IC	E235.SO4	354103	2	23	8.7	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	357435	0	1	0.0	5.0	✘
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357269	1	14	7.1	5.0	✔
Total Metals in Water by CRC ICPMS	E420	357436	1	2	50.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	353907	1	8	12.5	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354453	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2106065**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-11  
**Sampler** : KP  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Nov-2021 09:10  
**Date Analysis Commenced** : 26-Nov-2021  
**Issue Date** : 17-Dec-2021 09:13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 18  
Work Order : CG2106065  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 354434)</b>											
CG2106056-003	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 355369)</b>											
CG2106042-007	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	3150	3250	3.00%	20%	----
<b>Physical Tests (QC Lot: 355370)</b>											
CG2106065-002	FR_TRP1_WG_2021-11_N P	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 355871)</b>											
CG2106056-005	Anonymous	conductivity	----	E100	2.0	µS/cm	463	471	1.71%	10%	----
<b>Physical Tests (QC Lot: 355872)</b>											
CG2106056-005	Anonymous	pH	----	E108	0.10	pH units	7.80	7.80	0.00%	4%	----
<b>Physical Tests (QC Lot: 355873)</b>											
CG2106056-005	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	218	222	1.82%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	266	271	1.82%	20%	----
<b>Physical Tests (QC Lot: 355875)</b>											
CG2106057-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	5.6	4.8	0.8	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 358653)</b>											
CG2106057-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	285	277	3.06%	15%	----
<b>Anions and Nutrients (QC Lot: 353889)</b>											
CG2106057-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354102)</b>											
CG2106051-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.107	0.106	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354103)</b>											
CG2106051-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	1000	1020	1.27%	20%	----
<b>Anions and Nutrients (QC Lot: 354104)</b>											
CG2106051-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354105)</b>											
CG2106051-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.82	1.78	0.04	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354106)</b>											
CG2106051-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	8.64	8.72	0.914%	20%	----
<b>Anions and Nutrients (QC Lot: 354107)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 354107) - continued</b>											
CG2106051-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354108)</b>											
CG2106065-002	FR_TRP1_WG_2021-11_N P	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354109)</b>											
CG2106065-002	FR_TRP1_WG_2021-11_N P	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354110)</b>											
CG2106065-002	FR_TRP1_WG_2021-11_N P	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354111)</b>											
CG2106065-002	FR_TRP1_WG_2021-11_N P	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354112)</b>											
CG2106065-002	FR_TRP1_WG_2021-11_N P	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354113)</b>											
CG2106065-002	FR_TRP1_WG_2021-11_N P	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354453)</b>											
CG2106056-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 355923)</b>											
CG2106056-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357269)</b>											
CG2106057-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 353906)</b>											
CG2106057-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.54	0.54	0.001	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 353907)</b>											
CG2106057-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.52	0.56	0.04	Diff <2x LOR	----
<b>Total Metals (QC Lot: 357435)</b>											
CG2106065-001	FR_KB-3A_WG_2021-11_ NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00024	0.00038	0.00014	Diff <2x LOR	----
<b>Total Metals (QC Lot: 357436)</b>											
CG2106065-001	FR_KB-3A_WG_2021-11_ NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0106	0.0145	0.0038	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00014	0.00015	0.000005	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	0.00010	0.0000008	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0483	0.0487	0.836%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 357436) - continued</b>											
CG2106065-001	FR_KB-3A_WG_2021-11_NP	boron, total	7440-42-8	E420	0.010	mg/L	0.017	0.017	0.00004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0345 µg/L	0.0000291	0.0000054	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	292	297	1.58%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.65 µg/L	0.00066	0.000008	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00066	0.00066	0.0000009	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.026	0.028	0.003	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0440	0.0437	0.885%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	115	116	0.628%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00144	0.00154	6.89%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000274	0.000297	0.000023	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00052	0.00002	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.91	1.90	0.411%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	193 µg/L	0.197	2.04%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.14	3.21	1.96%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	4.49	4.46	0.612%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.319	0.321	0.445%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	193	196	1.73%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00090	mg/L	<0.00090	<0.00090	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00576	0.00585	1.54%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0038	0.0041	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 357315)</b>											
CG2106065-001	FR_KB-3A_WG_2021-11_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00016	0.00014	0.000010	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 357316)</b>											
CG2106065-001	FR_KB-3A_WG_2021-11_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	0.00013	0.000004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0490	0.0468	4.50%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 357316) - continued</b>											
CG2106065-001	FR_KB-3A_WG_2021-11_NP	boron, dissolved	7440-42-8	E421	0.010	mg/L	0.017	0.017	0.0008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0327 µg/L	0.0000266	0.0000061	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	273	269	1.33%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.68 µg/L	0.00068	0.0000007	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00093	0.00094	0.000006	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0465	0.0450	3.28%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	110	110	0.473%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00110	0.00108	2.04%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000456	0.000446	0.000010	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00055	0.00053	0.00002	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.97	1.96	0.546%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	227 µg/L	0.227	0.149%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.07	3.08	0.216%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	4.50	4.68	3.77%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.289	0.298	3.28%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	194	198	1.99%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00576	0.00551	4.43%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0039	0.0038	0.0002	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 354434)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 355364)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 355369)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 355370)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 355871)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 355873)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 355875)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	2.1	----
<b>Anions and Nutrients (QCLot: 353889)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 354102)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 354103)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 354104)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 354105)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 354106)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 354107)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 354108)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 354109)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 354109) - continued</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 354110)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 354111)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 354112)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 354113)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 354453)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 355923)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 357269)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 353906)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 353907)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 357435)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 357436)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 357436) - continued</b>						
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 357315)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 357316)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 357316) - continued</b>						
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 354434)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	---
<b>Physical Tests (QCLot: 355364)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.8	85.0	115	---
<b>Physical Tests (QCLot: 355369)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.3	85.0	115	---
<b>Physical Tests (QCLot: 355370)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.1	85.0	115	---
<b>Physical Tests (QCLot: 355871)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.5	90.0	110	---
<b>Physical Tests (QCLot: 355872)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 355873)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 355875)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 358653)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 353889)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	94.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 354102)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 354103)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 354104)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	109	85.0	115	---
<b>Anions and Nutrients (QCLot: 354105)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 354106)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 354107)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 354108)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 354108) - continued</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 354109)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 354110)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	----
<b>Anions and Nutrients (QCLot: 354111)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 354112)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 354113)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 354453)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	98.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 355923)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	107	85.0	115	----
<b>Anions and Nutrients (QCLot: 357269)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	100	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 353906)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 353907)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	109	80.0	120	----
<b>Total Metals (QCLot: 357435)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	95.3	80.0	120	----
<b>Total Metals (QCLot: 357436)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	95.1	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.6	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.3	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	94.7	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	92.2	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.7	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.2	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	94.4	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	95.8	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 357436) - continued</b>									
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	95.6	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	99.2	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	95.4	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	96.3	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	96.7	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	97.1	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.4	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	91.9	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	94.4	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	96.3	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	92.9	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	94.0	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	93.1	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	97.8	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	109	80.0	120	----
<b>Dissolved Metals (QCLot: 357315)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 357316)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	111	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	# 71.3	80.0	120	MES
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	112	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.2	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	103	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
						Low	High		
<b>Dissolved Metals (QCLot: 357316) - continued</b>									
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	116	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.8	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	107	80.0	120	----

**Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 353889)</b>										
CG2106057-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0514 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 354102)</b>										
CG2106056-003	Anonymous	fluoride	16984-48-8	E235.F	1.09 mg/L	1 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 354103)</b>										
CG2106056-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 354104)</b>										
CG2106056-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.593 mg/L	0.5 mg/L	118	75.0	125	----
<b>Anions and Nutrients (QCLot: 354105)</b>										
CG2106056-003	Anonymous	chloride	16887-00-6	E235.Cl-L	110 mg/L	100 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 354106)</b>										
CG2106056-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.78 mg/L	2.5 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 354107)</b>										
CG2106056-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.562 mg/L	0.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 354108)</b>										
CG2106065-002	FR_TRP1_WG_2021-11_N P	fluoride	16984-48-8	E235.F	1.08 mg/L	1 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 354109)</b>										
CG2106065-002	FR_TRP1_WG_2021-11_N P	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 354110)</b>										
CG2106065-002	FR_TRP1_WG_2021-11_N P	bromide	24959-67-9	E235.Br-L	0.580 mg/L	0.5 mg/L	116	75.0	125	----
<b>Anions and Nutrients (QCLot: 354111)</b>										
CG2106065-002	FR_TRP1_WG_2021-11_N P	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 354112)</b>										
CG2106065-002	FR_TRP1_WG_2021-11_N P	nitrate (as N)	14797-55-8	E235.NO3-L	2.68 mg/L	2.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 354113)</b>										
CG2106065-002	FR_TRP1_WG_2021-11_N P	nitrite (as N)	14797-65-0	E235.NO2-L	0.542 mg/L	0.5 mg/L	108	75.0	125	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 354453)</b>										
CG2106056-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0531 mg/L	0.0676 mg/L	78.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 355923)</b>										
CG2106056-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.107 mg/L	0.1 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 357269)</b>										
CG2106057-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.672 mg/L	2.5 mg/L	26.9	70.0	130	MSTN
<b>Organic / Inorganic Carbon (QCLot: 353906)</b>										
CG2106057-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	26.1 mg/L	23.9 mg/L	109	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 353907)</b>										
CG2106057-001	Anonymous	carbon, total organic [TOC]	----	E355-L	27.6 mg/L	23.9 mg/L	115	70.0	130	----
<b>Total Metals (QCLot: 357436)</b>										
VA21C6792-001	Anonymous	aluminum, total	7429-90-5	E420	0.180 mg/L	0.2 mg/L	89.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		barium, total	7440-39-3	E420	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0101 mg/L	0.01 mg/L	101	70.0	130	----
		boron, total	7440-42-8	E420	0.095 mg/L	0.1 mg/L	95.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00388 mg/L	0.004 mg/L	97.0	70.0	130	----
		calcium, total	7440-70-2	E420	3.90 mg/L	4 mg/L	97.4	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		copper, total	7440-50-8	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		iron, total	7439-89-6	E420	1.92 mg/L	2 mg/L	95.8	70.0	130	----
		lead, total	7439-92-1	E420	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		lithium, total	7439-93-2	E420	0.0981 mg/L	0.1 mg/L	98.1	70.0	130	----
		magnesium, total	7439-95-4	E420	0.979 mg/L	1 mg/L	97.9	70.0	130	----
		manganese, total	7439-96-5	E420	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		nickel, total	7440-02-0	E420	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
		potassium, total	7440-09-7	E420	3.79 mg/L	4 mg/L	94.8	70.0	130	----
		selenium, total	7782-49-2	E420	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	----
		silicon, total	7440-21-3	E420	9.41 mg/L	10 mg/L	94.1	70.0	130	----
		silver, total	7440-22-4	E420	0.00381 mg/L	0.004 mg/L	95.2	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		sulfur, total	7704-34-9	E420	19.8 mg/L	20 mg/L	99.1	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 357436) - continued</b>										
VA21C6792-001	Anonymous	thallium, total	7440-28-0	E420	0.00385 mg/L	0.004 mg/L	96.2	70.0	130	----
		tin, total	7440-31-5	E420	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		titanium, total	7440-32-6	E420	0.0370 mg/L	0.04 mg/L	92.4	70.0	130	----
		uranium, total	7440-61-1	E420	0.00400 mg/L	0.004 mg/L	100	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0973 mg/L	0.1 mg/L	97.3	70.0	130	----
		zinc, total	7440-66-6	E420	0.411 mg/L	0.4 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 357315)</b>										
CG2106065-002	FR_TRP1_WG_2021-11_N P	chromium, dissolved	7440-47-3	E421.Cr-L	0.0310 mg/L	0.04 mg/L	77.6	70.0	130	----
<b>Dissolved Metals (QCLot: 357316)</b>										
CG2106065-002	FR_TRP1_WG_2021-11_N P	aluminum, dissolved	7429-90-5	E421	0.152 mg/L	0.2 mg/L	76.1	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0158 mg/L	0.02 mg/L	79.1	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0158 mg/L	0.02 mg/L	79.1	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0145 mg/L	0.02 mg/L	72.6	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0336 mg/L	0.04 mg/L	83.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0456 mg/L	0.05 mg/L	91.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.077 mg/L	0.1 mg/L	77.4	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00331 mg/L	0.004 mg/L	82.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	3.15 mg/L	4 mg/L	78.7	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0156 mg/L	0.02 mg/L	77.9	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0160 mg/L	0.02 mg/L	80.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.58 mg/L	2 mg/L	78.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0154 mg/L	0.02 mg/L	76.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0856 mg/L	0.1 mg/L	85.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	0.770 mg/L	1 mg/L	77.0	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0154 mg/L	0.02 mg/L	77.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0149 mg/L	0.02 mg/L	74.6	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0311 mg/L	0.04 mg/L	77.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.12 mg/L	4 mg/L	77.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0339 mg/L	0.04 mg/L	84.7	70.0	130	----
		silicon, dissolved	7440-21-3	E421	7.60 mg/L	10 mg/L	76.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00316 mg/L	0.004 mg/L	79.1	70.0	130	----
		sodium, dissolved	7440-23-5	E421	1.58 mg/L	2 mg/L	79.1	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.0160 mg/L	0.02 mg/L	79.9	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	15.5 mg/L	20 mg/L	77.6	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00300 mg/L	0.004 mg/L	74.9	70.0	130	----



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 357316) - continued</b>										
CG2106065-002	FR_TRP1_WG_2021-11_N P	tin, dissolved	7440-31-5	E421	0.0152 mg/L	0.02 mg/L	76.3	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0307 mg/L	0.04 mg/L	76.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00316 mg/L	0.004 mg/L	79.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0767 mg/L	0.1 mg/L	76.7	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.316 mg/L	0.4 mg/L	79.0	70.0	130	----

### Qualifiers

<i>Qualifier</i>	<i>Description</i>
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.



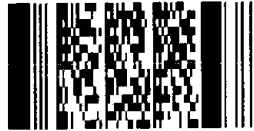


COC ID: **QTR\_KC\_GW\_2021-11** TURNAROUND TIME: RUSH

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Paul Dore			Lab Contact	Lyudmyla Shvets			Email 1:	teckcoal@equisonline.com	X	X	X
Email	paul.dore@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	paul.dore@teck.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	leslie.harker@snclavalin.com	X	X	X
								Email 4:	David.Burroughs@teck.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 5:	Stefan.Humphrys@snclavalin.com	X	X	X
Postal Code	T2G 0R3		Country	Canada	Postal Code	T1Y 7B5		Country	Canada			
Phone Number	1-250-433-6716			Phone Number	403 407 1794			PO number	VPO00765458			

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None					
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com # of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN/nutrients	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA	FIL	N	F	N	N	F
<del>FR_KB-1_WG_2021-11_NP</del>	<del>FR_KB-1</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
<del>FR_KB-2_WG_2021-11_NP</del>	<del>FR_KB-2</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
FR_KB-3A_WG_2021-11_NP	FR_KB-3A	WG	N	11/20/2021	11:50	G	1	1	1	1	1						
<del>FR_KB-3B_WG_2021-11_NP</del>	<del>FR_KB-3B</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
<del>FR_KB-4MW_WG_2021-11_NP</del>	<del>FR_KB-4MW</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
<del>FR_KB-5PW_WG_2021-11_NP</del>	<del>FR_KB-5PW</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
<del>FR_KB-6PW_WG_2021-11_NP</del>	<del>FR_KB-6PW</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
<del>FR_KB-7PW_WG_2021-11_NP</del>	<del>FR_KB-7PW</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
<del>FR_KB-8PW_WG_2021-11_NP</del>	<del>FR_KB-8PW</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
FR_DC1_WG_2021-11_NP	FR_DC1	WG	N			G	1	1	1	1	1						
<del>FR_FL01_WG_2021-11_NP</del>	<del>FR_FL01</del>	<del>WG</del>	<del>N</del>			<del>G</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
FR_TRP1_WG_2021-11_NP	FR_TRP	WG	N	11/25/2021	16:00	G	1	1	1	1	1						

Environmental Division  
Calgary  
Work Order Reference  
**CG2106065**



Telephone : - 1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
*All samples field filtered and preserved as required:			Rafael	11/26
				9:10
SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>		Sampler's Name	Mobile #	
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	Date/Time	Nov 25, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

COC Attached ✓



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2106067**  
**Client** : **Teck Coal Limited**  
**Contact** : Dave Tomlinson  
**Address** : Fording River Operations PO BOX 100  
Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00683840  
**C-O-C number** : FRO\_NGW-2021-11-25  
**Sampler** : Connor Zinck  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Nov-2021 09:10  
**Date Analysis Commenced** : 27-Nov-2021  
**Issue Date** : 08-Dec-2021 14:16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					FR_GCMW-3C_2021-11-25	FR_GCMW-2_2021-11-25	----	----	----
Client sampling date / time					25-Nov-2021 12:30	25-Nov-2021 14:05	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106067-001	CG2106067-002	-----	-----	-----
					Result	Result	----	----	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	11.6	6.2	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	308	203	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	376	248	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	376	248	----	----	----
conductivity	----	E100	2.0	µS/cm	952	1610	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	533	955	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	440	465	----	----	----
pH	----	E108	0.10	pH units	7.56	7.78	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	653	1260	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.8	1.4	----	----	----
turbidity	----	E121	0.10	NTU	1.77	2.33	----	----	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0450	<0.0050	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.64	2.79	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.111	0.194	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.426 <sup>TKN</sup>	<0.050 <sup>TKN</sup>	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	5.53	58.7	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0236	<0.0050 <sup>DLDS</sup>	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0049	0.0016	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0069	0.0051	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	190	524	----	----	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.38	<0.50	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.29	<0.50	----	----	----
<b>Dissolved Sulfides</b>									



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_GCMW-3C_2021-11-25	FR_GCMW-2_2021-11-25	----	----	----
Client sampling date / time					25-Nov-2021 12:30	25-Nov-2021 14:05	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106067-001	CG2106067-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Sulfides</b>										
sulfide, dissolved (as S)	18496-25-8	E397	0.0015	mg/L	<0.0015	----	---	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	11.9	20.1	---	---	---	
cation sum	----	EC101	0.10	meq/L	10.8	19.5	---	---	---	
ion balance (cations/anions ratio)	----	EC101	0.010	%	90.8	97.0	---	---	---	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.84	1.52	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0312	----	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00026	----	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00024	----	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.128	----	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	0.013	----	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0430	----	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	152	----	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	----	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.40	----	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	----	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	0.040	----	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0083	----	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	35.2	----	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.204	----	---	---	---	
mercury, total	7439-97-6	E508	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000669	----	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00178	----	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	1.37	----	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	95.1	----	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	5.52	----	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_GCMW-3C_2021-11-25	FR_GCMW-2_2021-11-25	----	----	----
Client sampling date / time					25-Nov-2021 12:30	25-Nov-2021 14:05	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2106067-001	CG2106067-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
sodium, total	17341-25-2	E420	0.050	mg/L	2.17	---	---	---	---	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.169	---	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	62.5	---	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000014	---	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	---	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00035	---	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00140	---	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	---	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0055	---	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0024	0.0017	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00024	0.00038	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00020	<0.00010	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.110	0.0539	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	0.019	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0377	0.0494	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	156	211	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00014	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.36	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00070	<0.00020	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0086	0.221	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	34.8	104	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.205	0.00186	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000659	0.00176	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00184	0.00448	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.30	3.71	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_GCMW-3C_2021-11-25	FR_GCMW-2_2021-11-25	----	----	----
Client sampling date / time					25-Nov-2021 12:30	25-Nov-2021 14:05	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106067-001	CG2106067-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	95.2	115	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.06	2.22	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.35	6.90	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.181	0.328	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	62.7	177	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00153	0.00829	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0050	0.0016	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106067</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Dave Tomlinson	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 26-Nov-2021 09:10
PO	: VPO00683840	Issue Date	: 08-Dec-2021 14:16
C-O-C number	: FRO_NGW-2021-11-25		
Sampler	: Connor Zinck		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.





**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	26.9 % <sup>MSTN</sup>	70.0-130%	Recovery less than lower data quality objective

**Result Qualifiers**

Qualifier	Description
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-2_2021-11-25	E298	25-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-3C_2021-11-25	E298	25-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_GCMW-2_2021-11-25	E235.Br-L	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_GCMW-3C_2021-11-25	E235.Br-L	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_GCMW-2_2021-11-25	E235.Cl-L	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_GCMW-3C_2021-11-25	E235.Cl-L	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> FR_GCMW-2_2021-11-25	E378-U	25-Nov-2021	----	----	----		27-Nov-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE FR_GCMW-3C_2021-11-25	E378-U	25-Nov-2021	----	----	----		27-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_GCMW-2_2021-11-25	E235.F	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_GCMW-3C_2021-11-25	E235.F	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_GCMW-2_2021-11-25	E235.NO3-L	25-Nov-2021	----	----	----		27-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_GCMW-3C_2021-11-25	E235.NO3-L	25-Nov-2021	----	----	----		27-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_GCMW-2_2021-11-25	E235.NO2-L	25-Nov-2021	----	----	----		27-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_GCMW-3C_2021-11-25	E235.NO2-L	25-Nov-2021	----	----	----		27-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_GCMW-2_2021-11-25	E235.SO4	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE FR_GCMW-3C_2021-11-25	E235.SO4	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-2_2021-11-25	E318	25-Nov-2021	01-Dec-2021	----	----		03-Dec-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-3C_2021-11-25	E318	25-Nov-2021	01-Dec-2021	----	----		03-Dec-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-2_2021-11-25	E372-U	25-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-3C_2021-11-25	E372-U	25-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_GCMW-2_2021-11-25	E421.Cr-L	25-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_GCMW-3C_2021-11-25	E421.Cr-L	25-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_GCMW-2_2021-11-25	E509	25-Nov-2021	02-Dec-2021	----	----		02-Dec-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_GCMW-3C_2021-11-25	E509	25-Nov-2021	02-Dec-2021	----	----		02-Dec-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_GCMW-2_2021-11-25	E421	25-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_GCMW-3C_2021-11-25	E421	25-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	180 days	7 days	✓	
<b>Dissolved Sulfides : Dissolved Sulfide by Colourimetry (Automated Flow)</b>											
<b>HDPE dissolved (zinc acetate+sodium hydroxide)</b> FR_GCMW-3C_2021-11-25	E397	25-Nov-2021	----	----	----		01-Dec-2021	7 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_GCMW-2_2021-11-25	E358-L	25-Nov-2021	27-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_GCMW-3C_2021-11-25	E358-L	25-Nov-2021	27-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-2_2021-11-25	E355-L	25-Nov-2021	27-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-3C_2021-11-25	E355-L	25-Nov-2021	27-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_GCMW-2_2021-11-25	E283	25-Nov-2021	----	----	----		30-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_GCMW-3C_2021-11-25	E283	25-Nov-2021	----	----	----		30-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_GCMW-2_2021-11-25	E290	25-Nov-2021	----	----	----		30-Nov-2021	14 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_GCMW-3C_2021-11-25	E290	25-Nov-2021	----	----	----		30-Nov-2021	14 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_GCMW-2_2021-11-25	E100	25-Nov-2021	----	----	----		30-Nov-2021	28 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_GCMW-3C_2021-11-25	E100	25-Nov-2021	----	----	----		30-Nov-2021	28 days	5 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_GCMW-2_2021-11-25	E125	25-Nov-2021	----	----	----		03-Dec-2021	0.25 hrs	187 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_GCMW-3C_2021-11-25	E125	25-Nov-2021	----	----	----		03-Dec-2021	0.25 hrs	189 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_GCMW-2_2021-11-25	E108	25-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	116 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_GCMW-3C_2021-11-25	E108	25-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	118 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_GCMW-2_2021-11-25	E162	25-Nov-2021	----	----	----		01-Dec-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_GCMW-3C_2021-11-25	E162	25-Nov-2021	----	----	----		01-Dec-2021	7 days	6 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_GCMW-2_2021-11-25	E160-L	25-Nov-2021	----	----	----		01-Dec-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> FR_GCMW-3C_2021-11-25	E160-L	25-Nov-2021	----	----	----		01-Dec-2021	7 days	6 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_GCMW-2_2021-11-25	E121	25-Nov-2021	----	----	----		28-Nov-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> FR_GCMW-3C_2021-11-25	E121	25-Nov-2021	----	----	----		28-Nov-2021	3 days	3 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> FR_GCMW-3C_2021-11-25	E420.Cr-L	25-Nov-2021	----	----	----		01-Dec-2021	180 days	6 days	✔	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> FR_GCMW-2_2021-11-25	E508	25-Nov-2021	----	----	----		01-Dec-2021	28 days	6 days	✔	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> FR_GCMW-3C_2021-11-25	E508	25-Nov-2021	----	----	----		01-Dec-2021	28 days	6 days	✔	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> FR_GCMW-3C_2021-11-25	E420	25-Nov-2021	----	----	----		01-Dec-2021	180 days	6 days	✔	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	355875	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355873	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	355923	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354256	1	11	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354257	1	11	9.0	5.0	✓
Conductivity in Water	E100	355871	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	356534	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357473	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	356533	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	354128	1	6	16.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	354370	1	20	5.0	5.0	✓
Dissolved Sulfide by Colourimetry (Automated Flow)	E397	357271	1	1	100.0	5.0	✓
Fluoride in Water by IC	E235.F	354254	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354258	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354259	1	11	9.0	5.0	✓
ORP by Electrode	E125	358653	1	20	5.0	5.0	✓
pH by Meter	E108	355872	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	354255	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	355370	1	11	9.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	356498	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357269	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	356537	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	356497	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	354129	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354453	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	354434	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	355875	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355873	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	355923	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354256	1	11	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354257	1	11	9.0	5.0	✓
Conductivity in Water	E100	355871	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	356534	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357473	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	356533	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	354128	1	6	16.6	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	354370	1	20	5.0	5.0	✓
Dissolved Sulfide by Colourimetry (Automated Flow)	E397	357271	1	1	100.0	5.0	✓
Fluoride in Water by IC	E235.F	354254	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354258	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354259	1	11	9.0	5.0	✓
ORP by Electrode	E125	358653	1	20	5.0	5.0	✓
pH by Meter	E108	355872	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	354255	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	355370	1	11	9.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	356498	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357269	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	356537	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	356497	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	354129	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354453	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	355365	1	12	8.3	5.0	✓
Turbidity by Nephelometry	E121	354434	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	355875	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355873	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	355923	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354256	1	11	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354257	1	11	9.0	5.0	✓
Conductivity in Water	E100	355871	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	356534	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357473	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	356533	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	354128	1	6	16.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	354370	1	20	5.0	5.0	✓
Dissolved Sulfide by Colourimetry (Automated Flow)	E397	357271	1	1	100.0	5.0	✓
Fluoride in Water by IC	E235.F	354254	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354258	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354259	1	11	9.0	5.0	✓
Sulfate in Water by IC	E235.SO4	354255	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	355370	1	11	9.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	356498	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357269	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	356537	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	356497	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	354129	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354453	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Method Blanks (MB) - Continued</b>							
TSS by Gravimetry (Low Level)	E160-L	355365	1	12	8.3	5.0	✔
Turbidity by Nephelometry	E121	354434	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	355923	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	354256	1	11	9.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	354257	1	11	9.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	356534	1	13	7.6	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	357473	1	18	5.5	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	356533	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	354128	1	6	16.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	354370	1	20	5.0	5.0	✔
Dissolved Sulfide by Colourimetry (Automated Flow)	E397	357271	0	1	0.0	5.0	✖
Fluoride in Water by IC	E235.F	354254	1	11	9.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	354258	1	11	9.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	354259	1	11	9.0	5.0	✔
Sulfate in Water by IC	E235.SO4	354255	1	11	9.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	356498	1	14	7.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357269	1	14	7.1	5.0	✔
Total Mercury in Water by CVAAS	E508	356537	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	356497	1	16	6.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	354129	1	6	16.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354453	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Sulfide by Colourimetry (Automated Flow)	E397 Vancouver - Environmental	Water	APHA 4500 -S E-Auto-Colorimetry	Dissolved Sulfide is determined using the gas dialysis automated methylene blue colourimetric method. This analysis must be conducted on a sample that has had suspended solids removed by flocculation and settling in the field, prior to sample preservation. ALS provides field sampling kits to conduct the flocculation process. Filtration is not valid for dissolved sulfide due to its reactivity and volatility. Results expressed "as H <sub>2</sub> S" if reported represent the maximum possible H <sub>2</sub> S concentration based on the dissolved sulfide concentration in the sample. The H <sub>2</sub> S calculation converts dissolved Sulphide as (S <sub>2</sub> -) and reports it as Sulphide, dissolved as (H <sub>2</sub> S)
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L  Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421  Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.  Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2106067**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Dave Tomlinson  
**Address** : Fording River Operations PO BOX 100  
                   Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00683840  
**C-O-C number** : FRO\_NGW-2021-11-25  
**Sampler** : Connor Zinck  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Nov-2021 09:10  
**Date Analysis Commenced** : 27-Nov-2021  
**Issue Date** : 08-Dec-2021 14:16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 18  
Work Order : CG2106067  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 354434)</b>											
CG2106056-003	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 355370)</b>											
CG2106065-002	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 355871)</b>											
CG2106056-005	Anonymous	conductivity	----	E100	2.0	µS/cm	463	471	1.71%	10%	----
<b>Physical Tests (QC Lot: 355872)</b>											
CG2106056-005	Anonymous	pH	----	E108	0.10	pH units	7.80	7.80	0.00%	4%	----
<b>Physical Tests (QC Lot: 355873)</b>											
CG2106056-005	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	218	222	1.82%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	266	271	1.82%	20%	----
<b>Physical Tests (QC Lot: 355875)</b>											
CG2106057-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	5.6	4.8	0.8	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 358653)</b>											
CG2106057-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	285	277	3.06%	15%	----
<b>Anions and Nutrients (QC Lot: 354254)</b>											
CG2106067-001	FR_GCMW-3C_2021-11-25	fluoride	16984-48-8	E235.F	0.100	mg/L	0.111	0.110	0.001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354255)</b>											
CG2106067-001	FR_GCMW-3C_2021-11-25	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	190	190	0.0947%	20%	----
<b>Anions and Nutrients (QC Lot: 354256)</b>											
CG2106067-001	FR_GCMW-3C_2021-11-25	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354257)</b>											
CG2106067-001	FR_GCMW-3C_2021-11-25	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	0.64	0.56	0.08	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354258)</b>											
CG2106067-001	FR_GCMW-3C_2021-11-25	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	5.53	5.49	0.746%	20%	----
<b>Anions and Nutrients (QC Lot: 354259)</b>											
CG2106067-001	FR_GCMW-3C_2021-11-25	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0236	0.0249	0.0013	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354370)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 354370) - continued</b>											
CG2106067-001	FR_GCMW-3C_2021-11-25	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0049	0.0046	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354453)</b>											
CG2106056-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 355923)</b>											
CG2106056-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357269)</b>											
CG2106057-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 354128)</b>											
CG2106067-001	FR_GCMW-3C_2021-11-25	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.38	2.56	0.18	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 354129)</b>											
CG2106067-001	FR_GCMW-3C_2021-11-25	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.29	2.28	0.01	Diff <2x LOR	----
<b>Dissolved Sulfides (QC Lot: 357271)</b>											
CG2106067-001	FR_GCMW-3C_2021-11-25	sulfide, dissolved (as S)	18496-25-8	E397	0.0015	mg/L	<0.0015	<0.0015	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 356497)</b>											
CG2106057-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0090	0.0106	0.0016	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00077	0.00073	0.00004	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00011	0.00012	0.000003	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0316	0.0306	3.24%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.030	0.029	0.002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.643 µg/L	0.000618	3.87%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	293	286	2.47%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.21 µg/L	0.00022	0.000002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00067	<0.00050	0.00017	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.439	0.408	7.37%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	164	162	1.34%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00248	0.00242	2.72%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00335	0.00323	3.62%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0619	0.0607	1.93%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	6.99	7.01	0.281%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 356497) - continued</b>											
CG2106057-001	Anonymous	selenium, total	7782-49-2	E420	0.050	mg/L	186 µg/L	0.187	0.318%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.85	1.85	0.0408%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	11.0	10.6	3.84%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.444	0.434	2.46%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	282	278	1.29%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000046	0.000046	0.00000006	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.0147	0.0146	0.330%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0316	0.0308	2.43%	20%	----
<b>Total Metals (QC Lot: 356498)</b>											
CG2106057-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00034	0.00031	0.00004	Diff <2x LOR	----
<b>Total Metals (QC Lot: 356537)</b>											
CG2105991-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 356533)</b>											
CG2106067-001	FR_GCMW-3C_2021-11-25	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0024	0.0018	0.0006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00024	0.00024	0.000001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00020	0.00018	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.110	0.113	2.88%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	0.014	0.0004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0377 µg/L	0.0000308	0.0000069	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	156	158	1.52%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.36 µg/L	0.00034	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00070	0.00067	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0086	0.0086	0.00008	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	34.8	34.2	1.75%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.205	0.206	0.671%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000659	0.000674	2.27%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00184	0.00174	0.00010	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 356533) - continued</b>											
CG2106067-001	FR_GCMW-3C_2021-11-25	potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.30	1.29	1.31%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	95.2 µg/L	0.0909	4.64%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.06	5.18	2.32%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.35	2.36	0.336%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.181	0.185	2.44%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	62.7	65.2	3.89%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000010	0.000011	0.0000003	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00153	0.00148	2.93%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0050	0.0050	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 356534)</b>											
CG2106067-001	FR_GCMW-3C_2021-11-25	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 357473)</b>											
CG2106045-010	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 354434)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 355365)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 355370)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 355871)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 355873)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 355875)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	2.1	----
<b>Anions and Nutrients (QCLot: 354254)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 354255)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 354256)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 354257)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 354258)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 354259)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 354370)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 354453)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 355923)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 357269)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 357269) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 354128)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 354129)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Sulfides (QCLot: 357271)</b>						
sulfide, dissolved (as S)	18496-25-8	E397	0.0015	mg/L	<0.0015	---
<b>Total Metals (QCLot: 356497)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 356497) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 356498)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 356537)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 356533)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----





Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 356533) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 356534)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 357473)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 354434)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	----
<b>Physical Tests (QCLot: 355365)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	95.5	85.0	115	----
<b>Physical Tests (QCLot: 355370)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.1	85.0	115	----
<b>Physical Tests (QCLot: 355871)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.5	90.0	110	----
<b>Physical Tests (QCLot: 355872)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 355873)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	107	85.0	115	----
<b>Physical Tests (QCLot: 355875)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	104	85.0	115	----
<b>Physical Tests (QCLot: 358653)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	----
<b>Anions and Nutrients (QCLot: 354254)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 354255)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 354256)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	----
<b>Anions and Nutrients (QCLot: 354257)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 354258)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 354259)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 354370)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	98.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 354453)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	98.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 355923)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 355923) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	107	85.0	115	----
<b>Anions and Nutrients (QCLot: 357269)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	100	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 354128)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	116	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 354129)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	96.0	80.0	120	----
<b>Dissolved Sulfides (QCLot: 357271)</b>									
sulfide, dissolved (as S)	18496-25-8	E397	0.0015	mg/L	0.08 mg/L	104	80.0	120	----
<b>Total Metals (QCLot: 356497)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.8	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	98.8	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	94.8	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	94.1	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.2	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.6	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	96.0	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	95.8	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.1	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	85.4	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	91.7	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 356497) - continued</b>									
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	98.8	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.3	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	98.7	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	93.3	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.1	80.0	120	----
<b>Total Metals (QCLot: 356498)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Total Metals (QCLot: 356537)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 356533)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.6	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	93.8	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	84.9	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	89.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.9	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	94.7	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.8	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.5	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	108	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.4	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 356533) - continued</b>									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.1	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.5	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.9	80.0	120	----
<b>Dissolved Metals (QCLot: 356534)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.0	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 354254)</b>										
CG2106067-002	FR_GCMW-2_2021-11-25	fluoride	16984-48-8	E235.F	0.909 mg/L	1 mg/L	90.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 354255)</b>										
CG2106067-002	FR_GCMW-2_2021-11-25	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 354256)</b>										
CG2106067-002	FR_GCMW-2_2021-11-25	bromide	24959-67-9	E235.Br-L	0.490 mg/L	0.5 mg/L	98.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 354257)</b>										
CG2106067-002	FR_GCMW-2_2021-11-25	chloride	16887-00-6	E235.Cl-L	100 mg/L	100 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 354258)</b>										
CG2106067-002	FR_GCMW-2_2021-11-25	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 354259)</b>										
CG2106067-002	FR_GCMW-2_2021-11-25	nitrite (as N)	14797-65-0	E235.NO2-L	0.500 mg/L	0.5 mg/L	99.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 354370)</b>										
CG2106067-002	FR_GCMW-2_2021-11-25	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0521 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 354453)</b>										
CG2106056-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0531 mg/L	0.0676 mg/L	78.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 355923)</b>										
CG2106056-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.107 mg/L	0.1 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 357269)</b>										
CG2106057-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.672 mg/L	2.5 mg/L	26.9	70.0	130	MSTN
<b>Organic / Inorganic Carbon (QCLot: 354128)</b>										
CG2106067-001	FR_GCMW-3C_2021-11-25	carbon, dissolved organic [DOC]	----	E358-L	29.5 mg/L	23.9 mg/L	123	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 354129)</b>										
CG2106067-001	FR_GCMW-3C_2021-11-25	carbon, total organic [TOC]	----	E355-L	30.8 mg/L	23.9 mg/L	129	70.0	130	----
<b>Total Metals (QCLot: 356497)</b>										
CG2106057-002	Anonymous	aluminum, total	7429-90-5	E420	0.395 mg/L	0.4 mg/L	98.7	70.0	130	----
		antimony, total	7440-36-0	E420	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		barium, total	7440-39-3	E420	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 356497) - continued</b>										
CG2106057-002	Anonymous	beryllium, total	7440-41-7	E420	0.0737 mg/L	0.08 mg/L	92.1	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0166 mg/L	0.02 mg/L	83.2	70.0	130	----
		boron, total	7440-42-8	E420	0.199 mg/L	0.2 mg/L	99.6	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00822 mg/L	0.008 mg/L	103	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		copper, total	7440-50-8	E420	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		iron, total	7439-89-6	E420	3.86 mg/L	4 mg/L	96.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0348 mg/L	0.04 mg/L	87.1	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	18.2 mg/L	20 mg/L	91.0	70.0	130	----
		silver, total	7440-22-4	E420	0.00703 mg/L	0.008 mg/L	87.9	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00705 mg/L	0.008 mg/L	88.2	70.0	130	----
		tin, total	7440-31-5	E420	0.0376 mg/L	0.04 mg/L	93.9	70.0	130	----
		titanium, total	7440-32-6	E420	0.0780 mg/L	0.08 mg/L	97.5	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.205 mg/L	0.2 mg/L	103	70.0	130	----
		zinc, total	7440-66-6	E420	0.732 mg/L	0.8 mg/L	91.4	70.0	130	----
<b>Total Metals (QCLot: 356498)</b>										
CG2106057-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0798 mg/L	0.08 mg/L	99.8	70.0	130	----
<b>Total Metals (QCLot: 356537)</b>										
CG2105991-002	Anonymous	mercury, total	7439-97-6	E508	0.000103 mg/L	0.0001 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 356533)</b>										
CG2106067-002	FR_GCMW-2_2021-11-25	aluminum, dissolved	7429-90-5	E421	0.193 mg/L	0.2 mg/L	96.5	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 356533) - continued</b>										
CG2106067-002	FR_GCMW-2_2021-11-25	beryllium, dissolved	7440-41-7	E421	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00861 mg/L	0.01 mg/L	86.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	87.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00374 mg/L	0.004 mg/L	93.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0188 mg/L	0.02 mg/L	94.3	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0180 mg/L	0.02 mg/L	90.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0183 mg/L	0.02 mg/L	91.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0187 mg/L	0.02 mg/L	93.5	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0361 mg/L	0.04 mg/L	90.2	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.72 mg/L	4 mg/L	93.1	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.43 mg/L	10 mg/L	94.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00356 mg/L	0.004 mg/L	88.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00361 mg/L	0.004 mg/L	90.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0996 mg/L	0.1 mg/L	99.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.346 mg/L	0.4 mg/L	86.6	70.0	130	----
<b>Dissolved Metals (QCLot: 356534)</b>										
CG2106067-002	FR_GCMW-2_2021-11-25	chromium, dissolved	7440-47-3	E421.Cr-L	0.0389 mg/L	0.04 mg/L	97.2	70.0	130	----
<b>Dissolved Metals (QCLot: 357473)</b>										
CG2106045-011	Anonymous	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----

**Qualifiers**

Qualifier	Description
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.





# Teck

COC ID: **FR0-NGW-2021-11-25**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO		
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD
Project Manager	Dave Tomlinson			Lab Contact	Justine Buma-a		Email 1:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Email	[Redacted]			Email	justine.bumaa@ALSGlobal.com		Email 2:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Address	PO Box 100			Address	2559 29 Street NE		Email 3:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Postal Code	VOB 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Phone Number	1-604-699-7952			Phone Number	403 407 1781		PO number	VPO00683840		

Environmental Division  
Calgary  
Work Order Reference  
**CG2106067**



Telephone: +1 403 407 1800

SAMPLE DETAILS							ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com # Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	Total metals	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	Dissolved Sulph	HG-T-CVAF-CL						
<del>FR_GCMW-1A-2021</del>	<del>FR_GCMW-1A</del>	<del>WG</del>				<del>G 6</del>	<del>1</del>	<del>1</del>	<del>1</del>		<del>1</del>	<del>1</del>		<del>1</del>						
<del>FR_GCMW-1B-2021</del>	<del>FR_GCMW-1B</del>	<del>WG</del>				<del>G 6</del>	<del>1</del>	<del>1</del>	<del>1</del>		<del>1</del>	<del>1</del>		<del>1</del>						
<del>FR_GCMW-3A-2021</del>	<del>FR_GCMW-3A</del>	<del>WG</del>				<del>G 6</del>	<del>1</del>	<del>1</del>	<del>1</del>		<del>1</del>	<del>1</del>		<del>1</del>						
<del>FR_GCMW-3B-2021</del>	<del>FR_GCMW-3B</del>	<del>WG</del>				<del>G 6</del>	<del>1</del>	<del>1</del>	<del>1</del>		<del>1</del>	<del>1</del>		<del>1</del>						
FR_GCMW-3C-2021-11-25	FR_GCMW-3C	WG		2021-11-25	12:30	G 8	1	1	1	1	1	1	1	1						
FR_GCMW-2-2021-11-25	FR_GCMW-2	WG		2021-11-25	14:05	G 6	1	1	1		1	1		1						
<del>FR_GCMW-4B-2021</del>	<del>FR_GCMW-4B</del>	<del>WG</del>				<del>G 6</del>	<del>1</del>	<del>1</del>	<del>1</del>		<del>1</del>	<del>1</del>		<del>1</del>						
<del>FR_GCMW-4C-2021</del>	<del>FR_GCMW-4C</del>	<del>WG</del>				<del>G 6</del>	<del>1</del>	<del>1</del>	<del>1</del>		<del>1</del>	<del>1</del>		<del>1</del>						
<del>FR_GCMW-5A-2021</del>	<del>FR_GCMW-5A</del>	<del>WG</del>				<del>G 6</del>	<del>1</del>	<del>1</del>	<del>1</del>		<del>1</del>	<del>1</del>		<del>1</del>						
<del>FR_GCMW-5B-2021</del>	<del>FR_GCMW-5B</del>	<del>WG</del>				<del>G 6</del>	<del>1</del>	<del>1</del>	<del>1</del>		<del>1</del>	<del>1</del>		<del>1</del>						
<del>FR_GCMW-5C-2021</del>	<del>FR_GCMW-5C</del>	<del>WG</del>				<del>G 6</del>	<del>1</del>	<del>1</del>	<del>1</del>		<del>1</del>	<del>1</del>		<del>1</del>						
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS							DATE/TIME	ACCEPTED BY/AFFILIATION			DATE/TIME									
								[Signature]			11/26 9:10									
SERVICE REQUEST (rush, subject to availability):							Sampler's Name		Connor Zinck		Mobile #		204-995-8004							
Regular (default) <input checked="" type="checkbox"/>							Sampler's Signature		[Signature]		Date/Time		2021-11-25							
Priority (2-3 business days) - 50% surcharge																				
Emergency (1 Business Day) - 100% surcharge																				

20



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2106180**  
**Client** : **Teck Coal Limited**  
**Contact** : Dave Tomlinson  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00683840  
**C-O-C number** : FRO-N\_GW-2021\_11\_29  
**Sampler** : CONNOR ZINCK  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 30-Nov-2021 08:45  
**Date Analysis Commenced** : 30-Nov-2021  
**Issue Date** : 20-Dec-2021 10:20

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_GCMW-1B_	----	----	----	----
(Matrix: Water)						2021-11-29				
					Client sampling date / time	29-Nov-2021 13:45	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106180-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	383	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	467	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	19.6	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	11.8	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	403	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	711	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	73.0	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	431	----	----	----	----	----
pH	----	E108	0.10	pH units	8.49	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	449	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.4	----	----	----	----	----
turbidity	----	E121	0.10	NTU	6.82	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.129	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.069 <sup>RRV</sup>	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	13.5 <sup>RRV</sup>	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	1.34 <sup>RRV</sup>	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.410	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050 <sup>RRV</sup>	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0017 <sup>RRV</sup>	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0032	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0154	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	2.32 <sup>RRV</sup>	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	9.41	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	9.77	----	----	----	----	----
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water					Client sample ID	FR_GCMW-1B_	----	----	----	----
(Matrix: Water)						2021-11-29				
					Client sampling date / time	29-Nov-2021 13:45	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2106180-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	8.55	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	8.44	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	98.7	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	0.647	----	----	----	----	----
<b>Total Metals</b>										
mercury, total	7439-97-6	E508	0.000050	mg/L	<0.000050	----	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0092	----	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00206	----	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.164	----	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.071	----	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	----	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	19.5	----	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.18	----	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.233	----	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0850	----	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	5.91	----	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.226	----	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	----	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0365	----	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00146	----	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.62	----	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.078	----	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.39	----	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----



### Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_GCMW-1B_	----	----	----	----
						2021-11-29				
					Client sampling date / time	29-Nov-2021 13:45	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106180-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Dissolved Metals</b>										
sodium, dissolved	7440-23-5	E421	0.050	mg/L	159	----	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.131	----	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.07	----	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000258	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106180</b>	Page	: 1 of 10
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Dave Tomlinson	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 30-Nov-2021 08:45
PO	: VPO00683840	Issue Date	: 20-Dec-2021 10:20
C-O-C number	: FRO-N_GW-2021_11_29		
Sampler	: CONNOR ZINCK		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-1B_2021-11-29	E298	29-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_GCMW-1B_2021-11-29	E235.Br-L	29-Nov-2021	----	----	----		01-Dec-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_GCMW-1B_2021-11-29	E235.Cl-L	29-Nov-2021	----	----	----		01-Dec-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> FR_GCMW-1B_2021-11-29	E378-U	29-Nov-2021	----	----	----		01-Dec-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> FR_GCMW-1B_2021-11-29	E235.F	29-Nov-2021	----	----	----		01-Dec-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_GCMW-1B_2021-11-29	E235.NO3-L	29-Nov-2021	----	----	----		01-Dec-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> FR_GCMW-1B_2021-11-29	E235.NO2-L	29-Nov-2021	----	----	----		01-Dec-2021	3 days	2 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Container / Client Sample ID(s)				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> FR_GCMW-1B_2021-11-29	E235.SO4	29-Nov-2021	----	----	----		01-Dec-2021	28 days	2 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-1B_2021-11-29	E318	29-Nov-2021	02-Dec-2021	----	----		06-Dec-2021	28 days	7 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-1B_2021-11-29	E372-U	29-Nov-2021	03-Dec-2021	----	----		03-Dec-2021	28 days	4 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> FR_GCMW-1B_2021-11-29	E421.Cr-L	29-Nov-2021	03-Dec-2021	----	----		04-Dec-2021	180 days	5 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> FR_GCMW-1B_2021-11-29	E509	29-Nov-2021	04-Dec-2021	----	----		04-Dec-2021	28 days	5 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> FR_GCMW-1B_2021-11-29	E421	29-Nov-2021	03-Dec-2021	----	----		04-Dec-2021	180 days	5 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> FR_GCMW-1B_2021-11-29	E358-L	29-Nov-2021	30-Nov-2021	----	----		02-Dec-2021	28 days	3 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_GCMW-1B_2021-11-29	E355-L	29-Nov-2021	30-Nov-2021	----	----		02-Dec-2021	28 days	3 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> FR_GCMW-1B_2021-11-29	E283	29-Nov-2021	----	----	----		01-Dec-2021	14 days	2 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE FR_GCMW-1B_2021-11-29	E290	29-Nov-2021	----	----	----		01-Dec-2021	14 days	2 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE FR_GCMW-1B_2021-11-29	E100	29-Nov-2021	----	----	----		01-Dec-2021	28 days	2 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE FR_GCMW-1B_2021-11-29	E125	29-Nov-2021	----	----	----		07-Dec-2021	0.25 hrs	191 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE FR_GCMW-1B_2021-11-29	E108	29-Nov-2021	----	----	----		01-Dec-2021	0.25 hrs	50 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_GCMW-1B_2021-11-29	E162	29-Nov-2021	----	----	----		02-Dec-2021	7 days	3 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE FR_GCMW-1B_2021-11-29	E160-L	29-Nov-2021	----	----	----		02-Dec-2021	7 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE FR_GCMW-1B_2021-11-29	E121	29-Nov-2021	----	----	----		01-Dec-2021	3 days	2 days	✓
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
Glass vial total (hydrochloric acid) FR_GCMW-1B_2021-11-29	E508	29-Nov-2021	----	----	----		07-Dec-2021	28 days	8 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	356784	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	357225	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	357069	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	356988	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	356989	1	20	5.0	5.0	✓
Conductivity in Water	E100	357224	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	358310	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	359638	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	358311	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	356306	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	356958	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	356992	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	356990	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	356991	1	20	5.0	5.0	✓
ORP by Electrode	E125	360258	1	20	5.0	5.0	✓
pH by Meter	E108	357223	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	356987	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	357081	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	358343	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	361690	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	356308	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	356384	1	11	9.0	5.0	✓
Turbidity by Nephelometry	E121	356814	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	356784	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	357225	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	357069	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	356988	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	356989	1	20	5.0	5.0	✓
Conductivity in Water	E100	357224	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	358310	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	359638	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	358311	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	356306	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	356958	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	356992	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	356990	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	356991	1	20	5.0	5.0	✓
ORP by Electrode	E125	360258	1	20	5.0	5.0	✓
pH by Meter	E108	357223	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	356987	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	357081	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	358343	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	361690	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	356308	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	356384	1	11	9.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	357085	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	356814	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	356784	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	357225	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	357069	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	356988	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	356989	1	20	5.0	5.0	✓
Conductivity in Water	E100	357224	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	358310	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	359638	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	358311	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	356306	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	356958	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	356992	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	356990	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	356991	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	356987	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	357081	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	358343	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	361690	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	356308	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	356384	1	11	9.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	357085	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	356814	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	357069	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	356988	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	356989	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	358310	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	359638	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	358311	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	356306	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	356958	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	356992	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	356990	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	356991	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	356987	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	358343	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	361690	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	356308	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	356384	1	11	9.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2106180**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Dave Tomlinson  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00683840  
**C-O-C number** : FRO-N\_GW-2021\_11\_29  
**Sampler** : CONNOR ZINCK  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 30-Nov-2021 08:45  
**Date Analysis Commenced** : 30-Nov-2021  
**Issue Date** : 20-Dec-2021 10:20

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
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Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2106180  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 356784)</b>											
CG2106165-010	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	10.8	<10.0	0.8	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 356814)</b>											
CG2106159-001	Anonymous	turbidity	----	E121	0.10	NTU	0.12	0.12	0.004	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 357081)</b>											
CG2106165-012	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1490	1550	3.55%	20%	----
<b>Physical Tests (QC Lot: 357223)</b>											
CG2106163-001	Anonymous	pH	----	E108	0.10	pH units	7.36	7.37	0.136%	4%	----
<b>Physical Tests (QC Lot: 357224)</b>											
CG2106179-003	Anonymous	conductivity	----	E100	2.0	µS/cm	1630	1650	1.28%	10%	----
<b>Physical Tests (QC Lot: 357225)</b>											
CG2106179-003	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	427	430	0.607%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	427	430	0.607%	20%	----
<b>Physical Tests (QC Lot: 360258)</b>											
CG2106165-014	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	500	502	0.240%	15%	----
<b>Anions and Nutrients (QC Lot: 356384)</b>											
CG2106118-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0020	<0.0020	0.00005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 356958)</b>											
CG2106118-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 356987)</b>											
CG2106176-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	71.3	70.7	0.848%	20%	----
<b>Anions and Nutrients (QC Lot: 356988)</b>											
CG2106176-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 356989)</b>											
CG2106176-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.15	1.13	1.46%	20%	----
<b>Anions and Nutrients (QC Lot: 356990)</b>											
CG2106176-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.346	0.341	1.63%	20%	----
<b>Anions and Nutrients (QC Lot: 356991)</b>											
CG2106176-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0017	0.0018	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 356992)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 356992) - continued</b>											
CG2106176-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.153	0.136	0.017	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357069)</b>											
CG2106165-011	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.210	0.217	3.00%	20%	----
<b>Anions and Nutrients (QC Lot: 358343)</b>											
CG2106176-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.091	0.099	0.008	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 356306)</b>											
CG2106174-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.95	4.25	0.30	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 356308)</b>											
CG2106174-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	5.20	5.22	0.374%	20%	----
<b>Total Metals (QC Lot: 361690)</b>											
CG2106180-001	FR_GCMW-1B_2021-11-29	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 358310)</b>											
CG2106174-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 358311)</b>											
CG2106174-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0026	<0.0020	0.0006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00023	0.00023	0.0000002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0423	0.0432	1.92%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.022	0.022	0.0001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.0463 µg/L	0.0000447	0.0000016	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	292	289	1.03%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.0388	0.0387	0.285%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	190	186	2.16%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.00051	0.00050	0.000002	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00158	0.00157	0.535%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.00777	0.00761	0.00016	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	2.62	2.60	0.674%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	233 µg/L	0.236	1.17%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	3.67	3.60	1.88%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 358311) - continued</b>											
CG2106174-001	Anonymous	silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.100	mg/L	12.5	12.5	0.493%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.669	0.671	0.279%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	456	450	1.39%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.00924	0.00925	0.0518%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 359638)</b>											
CG2106118-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 356784)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	2.0	----
<b>Physical Tests (QCLot: 356814)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 357081)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 357085)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 357224)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 357225)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 356384)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 356958)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 356987)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 356988)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 356989)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 356990)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 356991)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 356992)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 357069)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 358343)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 358343) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 356306)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 356308)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 361690)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 358310)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 358311)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 358311) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 359638)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 356784)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 356814)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	102	85.0	115	---
<b>Physical Tests (QCLot: 357081)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	90.8	85.0	115	---
<b>Physical Tests (QCLot: 357085)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 357223)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 357224)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.4	90.0	110	---
<b>Physical Tests (QCLot: 357225)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 360258)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 356384)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	97.3	80.0	120	---
<b>Anions and Nutrients (QCLot: 356958)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	99.1	80.0	120	---
<b>Anions and Nutrients (QCLot: 356987)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 356988)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	---
<b>Anions and Nutrients (QCLot: 356989)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 356990)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 356991)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 356992)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 357069)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 357069) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Anions and Nutrients (QCLot: 358343)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	95.9	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 356306)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	99.8	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 356308)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Total Metals (QCLot: 361690)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	99.5	80.0	120	----
<b>Dissolved Metals (QCLot: 358310)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
<b>Dissolved Metals (QCLot: 358311)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	94.2	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.5	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.2	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.7	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.3	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.4	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.8	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 358311) - continued</b>									
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.6	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.6	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 356384)</b>										
CG2106118-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0538 mg/L	0.0676 mg/L	79.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 356958)</b>										
CG2106118-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0512 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 356987)</b>										
CG2106183-008	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 356988)</b>										
CG2106183-008	Anonymous	bromide	24959-67-9	E235.Br-L	0.485 mg/L	0.5 mg/L	97.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 356989)</b>										
CG2106183-008	Anonymous	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 356990)</b>										
CG2106183-008	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.64 mg/L	2.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 356991)</b>										
CG2106183-008	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.501 mg/L	0.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 356992)</b>										
CG2106183-008	Anonymous	fluoride	16984-48-8	E235.F	1.08 mg/L	1 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 357069)</b>										
CG2106165-014	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.112 mg/L	0.1 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 358343)</b>										
CG2106176-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.24 mg/L	2.5 mg/L	89.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 356306)</b>										
CG2106174-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.4 mg/L	23.9 mg/L	98.1	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 356308)</b>										
CG2106174-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.6 mg/L	23.9 mg/L	103	70.0	130	----
<b>Total Metals (QCLot: 361690)</b>										
FJ2101340-001	Anonymous	mercury, total	7439-97-6	E508	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 358310)</b>										
CG2106180-001	FR_GCMW-1B_2021-11-29	chromium, dissolved	7440-47-3	E421.Cr-L	0.0382 mg/L	0.04 mg/L	95.5	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 358311)</b>										
CG2106180-001	FR_GCMW-1B_2021-11-29	aluminum, dissolved	7429-90-5	E421	0.193 mg/L	0.2 mg/L	96.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0385 mg/L	0.04 mg/L	96.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00889 mg/L	0.01 mg/L	88.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.092 mg/L	0.1 mg/L	91.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00378 mg/L	0.004 mg/L	94.5	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0182 mg/L	0.02 mg/L	91.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	97.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0181 mg/L	0.02 mg/L	90.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0892 mg/L	0.1 mg/L	89.2	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0374 mg/L	0.04 mg/L	93.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.17 mg/L	4 mg/L	104	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.27 mg/L	10 mg/L	92.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00314 mg/L	0.004 mg/L	78.5	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	21.8 mg/L	20 mg/L	109	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00361 mg/L	0.004 mg/L	90.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00385 mg/L	0.004 mg/L	96.3	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.1000 mg/L	0.1 mg/L	100.0	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.381 mg/L	0.4 mg/L	95.2	70.0	130	----
<b>Dissolved Metals (QCLot: 359638)</b>										
CG2106118-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000105 mg/L	0.0001 mg/L	105	70.0	130	----



COC ID: **FRO-N GW-2021-11-29**

TURNAROUND TIME:

RUSH:

**PROJECT/CLIENT INFO**

**LABORATORY**

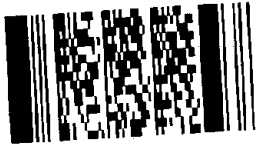
**OTHER INFO**

Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD
Project Manager	Dave Tomlinson			Lab Contact	Justine Buma-a		Email 1:	X	X	X
Email	[redacted]			Email	justine.bumaa@ALSGlobal.com		Email 2:	X	X	X
Address	PO Box 100			Address	2559 29 Street NE		Email 3:	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	X	X
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	X	X
Phone Number	1-604-699-7952			Phone Number	403 407 1781		PO number	683840		

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Environmental Division  
Calgary  
Work Order Reference  
**CG2106180**



Telephone: +1 403 407 1800

Location (loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN/TP/NH3	TECK COAL-MET-T-CL	TECK COAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	DISSOLVED SULFIDE
<del>FR_CB-1A</del>	<del>WG</del>				<del>G</del>	<del>6</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_CB-1B</del>	<del>WG</del>				<del>G</del>	<del>6</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_CB-2A</del>	<del>WG</del>				<del>C</del>	<del>6</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_GCMW-1A</del>	<del>WG</del>				<del>G</del>	<del>6</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
FR_GCMW-1B 2021-11-29	WG		2021-11-29	13:45	G	6	1	1	1	1	1	1	1	1
<del>FR_GCMW-3A</del>	<del>WG</del>				<del>G</del>	<del>8</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_GCMW-3B</del>	<del>WG</del>				<del>G</del>	<del>8</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_GCMW-3C</del>	<del>WG</del>				<del>G</del>	<del>8</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_GCMW-4A</del>	<del>WG</del>				<del>G</del>	<del>8</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_GCMW-4B</del>	<del>WG</del>				<del>G</del>	<del>8</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_GCMW-4C</del>	<del>WG</del>				<del>C</del>	<del>8</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_GCMW-5A</del>	<del>WG</del>				<del>G</del>	<del>8</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_GCMW-5B</del>	<del>WG</del>				<del>G</del>	<del>8</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_GCMW-5C</del>	<del>WG</del>				<del>G</del>	<del>8</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>

14 14 14 9 14 14 14 9

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
		<i>[Signature]</i>	2021-11-29
		<i>[Signature]</i>	8:45

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Connor Zinck		Mobile #	
Sampler's Signature	<i>[Signature]</i>		Date/Time	2021-11-29

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2106269**  
**Client** : **Teck Coal Limited**  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
                   Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-11  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 02-Dec-2021 09:05  
**Date Analysis Commenced** : 02-Dec-2021  
**Issue Date** : 20-Dec-2021 13:53

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-1_WG_2 021-11_NP	FR_KB-10MW_ WG_2021-11_N P	FR_KB-5PW_W G_2021-11_NP	FR_TRP2_WG_ 2021-11_NP	----
Client sampling date / time					01-Dec-2021 11:05	01-Dec-2021 13:35	01-Dec-2021 11:55	01-Dec-2021 16:00	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106269-001	CG2106269-002	CG2106269-003	CG2106269-004	-----	
					Result	Result	Result	Result	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	16.5	18.2	16.7	<2.0	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	481	483	492	<1.0	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	586	589	601	<1.0	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	481	483	492	<1.0	----	
conductivity	----	E100	2.0	µS/cm	2350	2220	2380	<2.0	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1430	1330	1450	<0.50	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	521	466	494	504	----	
pH	----	E108	0.10	pH units	7.85	7.72	7.84	5.33	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	1820	1760	1920	<10	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.5	1.7	2.7	<1.0	----	
turbidity	----	E121	0.10	NTU	<0.10	<0.10	0.11	<0.10	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.050	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.69	1.54	1.68	<0.10	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.184	0.178	0.182	<0.020	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0.138 <sup>TKNI</sup>	<0.050	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	89.6 <sup>TKNI</sup>	80.6 <sup>TKNI</sup>	93.3 <sup>TKNI</sup>	<0.0050	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	0.0065	<0.0050 <sup>DLDS</sup>	<0.0010	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0031	0.0022	0.0018	<0.0010	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0027	0.0021	0.0021	<0.0020	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	715	681	733	<0.30	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.72 <sup>DTC,RRV</sup>	0.63	0.75	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.58 <sup>DTC,RRV</sup>	0.57	0.80	<0.50	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-1_WG_2 021-11_NP	FR_KB-10MW_ WG_2021-11_N P	FR_KB-5PW_W G_2021-11_NP	FR_TRP2_WG_ 2021-11_NP	----
Client sampling date / time					01-Dec-2021 11:05	01-Dec-2021 13:35	01-Dec-2021 11:55	01-Dec-2021 16:00	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106269-001 Result	CG2106269-002 Result	CG2106269-003 Result	CG2106269-004 Result	----- ----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	31.0	29.6	31.8	<0.10	----	
cation sum	----	EC101	0.10	meq/L	29.1	27.0	29.5	<0.10	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.9	91.2	92.8	100	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.16	4.59	3.75	<0.010	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0060 <sup>DLA</sup>	<0.0060 <sup>DLA</sup>	0.0138	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00056	0.00036	0.00059	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0494	0.0636	0.0484	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.033	0.030	0.033	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.702	0.168	0.961	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	343	312	348	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.20 <sup>DLA</sup>	<0.20 <sup>DLA</sup>	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.182	0.155	0.186	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	159	144	164	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00044	<0.00020 <sup>DLA</sup>	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00165	0.00139	0.00164	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0312	0.00530	0.0427	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	5.42	4.80	5.63	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	274	244	295	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.29	2.44	2.34	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	----	----	
sodium, total	7440-23-5	E420	0.050	mg/L	7.47	6.56	7.66	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.320	0.302	0.338	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-1_WG_2 021-11_NP	FR_KB-10MW_ WG_2021-11_N P	FR_KB-5PW_W G_2021-11_NP	FR_TRP2_WG_ 2021-11_NP	----
Client sampling date / time					01-Dec-2021 11:05	01-Dec-2021 13:35	01-Dec-2021 11:55	01-Dec-2021 16:00	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106269-001 Result	CG2106269-002 Result	CG2106269-003 Result	CG2106269-004 Result	----- ----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	257	248	278	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.0132	0.0128	0.0141	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0138	<0.0060 <sup>DLA</sup>	0.0164	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0020 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00050	0.00032	0.00054	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0459	0.0641	0.0456	<0.00010	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.032	0.030	0.030	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.684	0.153	0.897	<0.0050	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	321	298	322	<0.050	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.20 <sup>DLA</sup>	<0.20 <sup>DLA</sup>	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	<0.00040 <sup>DLA</sup>	<0.00040 <sup>DLA</sup>	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.163	0.140	0.157	<0.0010	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	153	143	157	<0.0050	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00036	<0.00020 <sup>DLA</sup>	<0.00010	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00156	0.00131	0.00154	<0.000050	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0303	0.00524	0.0414	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.40	4.87	5.50	<0.050	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	280	244	299	<0.050	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.14	2.19	2.14	<0.050	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_KB-1_WG_2 021-11_NP	FR_KB-10MW_ WG_2021-11_N P	FR_KB-5PW_W G_2021-11_NP	FR_TRP2_WG_ 2021-11_NP	----
Client sampling date / time					01-Dec-2021 11:05	01-Dec-2021 13:35	01-Dec-2021 11:55	01-Dec-2021 16:00	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106269-001 Result	CG2106269-002 Result	CG2106269-003 Result	CG2106269-004 Result	----- ----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010	----	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	7.57	6.77	7.86	<0.050	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.311	0.284	0.325	<0.00020	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	257	225	265	<0.50	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0131	0.0126	0.0132	<0.000010	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0130	0.0043	0.0156	<0.0010	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106269</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Paul Dore	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATIONS	Date Samples Received	: 02-Dec-2021 09:05
PO	: VPO00765458	Issue Date	: 20-Dec-2021 13:53
C-O-C number	: QTR_KC_GW_2021-11		
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-1_WG_2021-11_NP	E298	01-Dec-2021	02-Dec-2021	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-10MW_WG_2021-11_NP	E298	01-Dec-2021	02-Dec-2021	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-5PW_WG_2021-11_NP	E298	01-Dec-2021	02-Dec-2021	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP2_WG_2021-11_NP	E298	01-Dec-2021	02-Dec-2021	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-1_WG_2021-11_NP	E235.Br-L	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-10MW_WG_2021-11_NP	E235.Br-L	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-5PW_WG_2021-11_NP	E235.Br-L	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE FR_TRP2_WG_2021-11_NP	E235.Br-L	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-1_WG_2021-11_NP	E235.Cl-L	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-10MW_WG_2021-11_NP	E235.Cl-L	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_KB-5PW_WG_2021-11_NP	E235.Cl-L	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_TRP2_WG_2021-11_NP	E235.Cl-L	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-1_WG_2021-11_NP	E378-U	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-10MW_WG_2021-11_NP	E378-U	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_KB-5PW_WG_2021-11_NP	E378-U	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_TRP2_WG_2021-11_NP	E378-U	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-1_WG_2021-11_NP	E235.F	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-10MW_WG_2021-11_NP	E235.F	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_KB-5PW_WG_2021-11_NP	E235.F	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE FR_TRP2_WG_2021-11_NP	E235.F	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-1_WG_2021-11_NP	E235.NO3-L	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-10MW_WG_2021-11_NP	E235.NO3-L	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_KB-5PW_WG_2021-11_NP	E235.NO3-L	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE FR_TRP2_WG_2021-11_NP	E235.NO3-L	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE FR_KB-1_WG_2021-11_NP	E235.NO2-L	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-10MW_WG_2021-11_NP	E235.NO2-L	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_KB-5PW_WG_2021-11_NP	E235.NO2-L	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_TRP2_WG_2021-11_NP	E235.NO2-L	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-1_WG_2021-11_NP	E235.SO4	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-10MW_WG_2021-11_NP	E235.SO4	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_KB-5PW_WG_2021-11_NP	E235.SO4	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> FR_TRP2_WG_2021-11_NP	E235.SO4	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-1_WG_2021-11_NP	E318	01-Dec-2021	06-Dec-2021	----	----		10-Dec-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-10MW_WG_2021-11_NP	E318	01-Dec-2021	06-Dec-2021	----	----		10-Dec-2021	28 days	9 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-5PW_WG_2021-11_NP	E318	01-Dec-2021	06-Dec-2021	----	----		10-Dec-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP2_WG_2021-11_NP	E318	01-Dec-2021	06-Dec-2021	----	----		10-Dec-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-1_WG_2021-11_NP	E372-U	01-Dec-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-10MW_WG_2021-11_NP	E372-U	01-Dec-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-5PW_WG_2021-11_NP	E372-U	01-Dec-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP2_WG_2021-11_NP	E372-U	01-Dec-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TRP2_WG_2021-11_NP	E421.Cr-L	01-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-1_WG_2021-11_NP	E421.Cr-L	01-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-10MW_WG_2021-11_NP	E421.Cr-L	01-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-5PW_WG_2021-11_NP	E421.Cr-L	01-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_TRP2_WG_2021-11_NP	E421	01-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-1_WG_2021-11_NP	E421	01-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-10MW_WG_2021-11_NP	E421	01-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_KB-5PW_WG_2021-11_NP	E421	01-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-1_WG_2021-11_NP	E358-L	01-Dec-2021	02-Dec-2021	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-10MW_WG_2021-11_NP	E358-L	01-Dec-2021	02-Dec-2021	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_KB-5PW_WG_2021-11_NP	E358-L	01-Dec-2021	02-Dec-2021	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-1_WG_2021-11_NP	E355-L	01-Dec-2021	02-Dec-2021	----	----		03-Dec-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-10MW_WG_2021-11_NP	E355-L	01-Dec-2021	02-Dec-2021	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_KB-5PW_WG_2021-11_NP	E355-L	01-Dec-2021	02-Dec-2021	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_TRP2_WG_2021-11_NP	E355-L	01-Dec-2021	02-Dec-2021	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-1_WG_2021-11_NP	E283	01-Dec-2021	----	----	----		03-Dec-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-10MW_WG_2021-11_NP	E283	01-Dec-2021	----	----	----		03-Dec-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_KB-5PW_WG_2021-11_NP	E283	01-Dec-2021	----	----	----		03-Dec-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_TRP2_WG_2021-11_NP	E283	01-Dec-2021	----	----	----		03-Dec-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_KB-1_WG_2021-11_NP	E290	01-Dec-2021	----	----	----		03-Dec-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_KB-10MW_WG_2021-11_NP	E290	01-Dec-2021	----	----	----		03-Dec-2021	14 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_KB-5PW_WG_2021-11_NP	E290	01-Dec-2021	----	----	----		03-Dec-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE FR_TRP2_WG_2021-11_NP	E290	01-Dec-2021	----	----	----		03-Dec-2021	14 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-1_WG_2021-11_NP	E100	01-Dec-2021	----	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-10MW_WG_2021-11_NP	E100	01-Dec-2021	----	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_KB-5PW_WG_2021-11_NP	E100	01-Dec-2021	----	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_TRP2_WG_2021-11_NP	E100	01-Dec-2021	----	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_TRP2_WG_2021-11_NP	E125	01-Dec-2021	----	----	----		07-Dec-2021	0.25 hrs	145 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-10MW_WG_2021-11_NP	E125	01-Dec-2021	----	----	----		07-Dec-2021	0.25 hrs	147 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-5PW_WG_2021-11_NP	E125	01-Dec-2021	----	----	----		07-Dec-2021	0.25 hrs	149 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_KB-1_WG_2021-11_NP	E125	01-Dec-2021	----	----	----		07-Dec-2021	0.25 hrs	150 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_TRP2_WG_2021-11_NP	E108	01-Dec-2021	----	----	----		03-Dec-2021	0.25 hrs	47 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-10MW_WG_2021-11_NP	E108	01-Dec-2021	----	----	----		03-Dec-2021	0.25 hrs	50 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-5PW_WG_2021-11_NP	E108	01-Dec-2021	----	----	----		03-Dec-2021	0.25 hrs	51 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_KB-1_WG_2021-11_NP	E108	01-Dec-2021	----	----	----		03-Dec-2021	0.25 hrs	52 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_KB-1_WG_2021-11_NP	E162	01-Dec-2021	----	----	----		07-Dec-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_KB-10MW_WG_2021-11_NP	E162	01-Dec-2021	----	----	----		07-Dec-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_KB-5PW_WG_2021-11_NP	E162	01-Dec-2021	----	----	----		07-Dec-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_TRP2_WG_2021-11_NP	E162	01-Dec-2021	----	----	----		07-Dec-2021	7 days	6 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_KB-1_WG_2021-11_NP	E160-L	01-Dec-2021	----	----	----		06-Dec-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_KB-10MW_WG_2021-11_NP	E160-L	01-Dec-2021	----	----	----		06-Dec-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_KB-5PW_WG_2021-11_NP	E160-L	01-Dec-2021	----	----	----		06-Dec-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> FR_TRP2_WG_2021-11_NP	E160-L	01-Dec-2021	----	----	----		06-Dec-2021	7 days	5 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_KB-1_WG_2021-11_NP	E121	01-Dec-2021	----	----	----		04-Dec-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_KB-10MW_WG_2021-11_NP	E121	01-Dec-2021	----	----	----		04-Dec-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_KB-5PW_WG_2021-11_NP	E121	01-Dec-2021	----	----	----		04-Dec-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> FR_TRP2_WG_2021-11_NP	E121	01-Dec-2021	----	----	----		04-Dec-2021	3 days	3 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-1_WG_2021-11_NP	E420.Cr-L	01-Dec-2021	----	----	----		07-Dec-2021	180 days	6 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-10MW_WG_2021-11_NP	E420.Cr-L	01-Dec-2021	----	----	----		07-Dec-2021	180 days	6 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> FR_KB-5PW_WG_2021-11_NP	E420.Cr-L	01-Dec-2021	----	----	----		07-Dec-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-1_WG_2021-11_NP	E420	01-Dec-2021	----	----	----		07-Dec-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-10MW_WG_2021-11_NP	E420	01-Dec-2021	----	----	----		07-Dec-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> FR_KB-5PW_WG_2021-11_NP	E420	01-Dec-2021	----	----	----		07-Dec-2021	180 days	6 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	358733	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	359053	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	357999	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	357851	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	357852	1	20	5.0	5.0	✓
Conductivity in Water	E100	359052	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	360640	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	360641	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	358028	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	357939	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	357849	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	357853	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	357854	1	20	5.0	5.0	✓
ORP by Electrode	E125	361759	1	20	5.0	5.0	✓
pH by Meter	E108	359051	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	357850	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	360083	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	360694	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	360751	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	360695	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	358029	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	357949	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	359451	2	40	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	358733	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	359053	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	357999	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	357851	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	357852	1	20	5.0	5.0	✓
Conductivity in Water	E100	359052	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	360640	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	360641	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	358028	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	357939	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	357849	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	357853	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	357854	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	361759	1	20	5.0	5.0	✓
pH by Meter	E108	359051	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	357850	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	360083	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	360694	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	360751	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	360695	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	358029	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	357949	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	360080	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	359451	2	40	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	358733	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	359053	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	357999	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	357851	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	357852	1	20	5.0	5.0	✓
Conductivity in Water	E100	359052	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	360640	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	360641	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	358028	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	357939	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	357849	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	357853	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	357854	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	357850	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	360083	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	360694	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	360751	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	360695	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	358029	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	357949	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	360080	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	359451	2	40	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	357999	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	357851	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	357852	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	360640	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	360641	1	16	6.2	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	358028	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	357939	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	357849	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	357853	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	357854	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	357850	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	360694	1	14	7.1	5.0	✓
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Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	358029	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	357949	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2106269**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Paul Dore  
**Address** : Fording River Operations PO BOX 100  
 Elkford BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATIONS  
**PO** : VPO00765458  
**C-O-C number** : QTR\_KC\_GW\_2021-11  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 02-Dec-2021 09:05  
**Date Analysis Commenced** : 02-Dec-2021  
**Issue Date** : 20-Dec-2021 13:53

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



Page : 2 of 17  
Work Order : CG2106269  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 358733)</b>											
CG2106184-004	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	8.9	8.1	0.8	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 359051)</b>											
CG2106265-023	Anonymous	pH	----	E108	0.10	pH units	7.67	7.67	0.00%	4%	----
<b>Physical Tests (QC Lot: 359052)</b>											
CG2106265-023	Anonymous	conductivity	----	E100	2.0	µS/cm	1870	1880	0.481%	10%	----
<b>Physical Tests (QC Lot: 359053)</b>											
CG2106269-001	FR_KB-1_WG_2021-11_N P	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	481	476	0.940%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	481	476	0.940%	20%	----
<b>Physical Tests (QC Lot: 359451)</b>											
CG2106265-001	Anonymous	turbidity	----	E121	0.10	NTU	0.74	0.73	0.008	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 359470)</b>											
CG2106265-017	Anonymous	turbidity	----	E121	0.10	NTU	8.14	8.07	0.864%	15%	----
<b>Physical Tests (QC Lot: 360083)</b>											
CG2106265-019	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1520	1480	2.60%	20%	----
<b>Physical Tests (QC Lot: 361759)</b>											
CG2106266-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	434	441	1.60%	15%	----
<b>Anions and Nutrients (QC Lot: 357849)</b>											
CG2106232-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.909	0.874	0.035	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357850)</b>											
CG2106232-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	513	519	1.09%	20%	----
<b>Anions and Nutrients (QC Lot: 357851)</b>											
CG2106232-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357852)</b>											
CG2106232-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	5.30	5.32	0.390%	20%	----
<b>Anions and Nutrients (QC Lot: 357853)</b>											
CG2106232-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.180	0.185	0.0054	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357854)</b>											
CG2106232-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357939)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 357939) - continued</b>											
CG2106266-006	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357949)</b>											
CG2106266-005	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357999)</b>											
CG2106266-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0204	0.0206	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 360751)</b>											
CG2106269-001	FR_KB-1_WG_2021-11_N P	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 358028)</b>											
CG2106269-001	FR_KB-1_WG_2021-11_N P	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.72	0.71	0.009	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 358029)</b>											
CG2106269-001	FR_KB-1_WG_2021-11_N P	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.58	0.57	0.01	Diff <2x LOR	----
<b>Total Metals (QC Lot: 360694)</b>											
CG2106269-001	FR_KB-1_WG_2021-11_N P	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 360695)</b>											
CG2106269-001	FR_KB-1_WG_2021-11_N P	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00056	0.00054	0.00001	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0494	0.0491	0.633%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.033	0.032	0.0004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	0.702 µg/L	0.000727	3.45%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	343	338	1.36%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.182	0.175	3.61%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	159	161	1.22%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00165	0.00161	2.58%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.0312	0.0314	0.837%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	5.42	5.41	0.173%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 360695) - continued</b>											
CG2106269-001	FR_KB-1_WG_2021-11_N P	selenium, total	7782-49-2	E420	0.100	mg/L	274 µg/L	0.276	0.983%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	2.29	2.29	0.0296%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.100	mg/L	7.47	7.61	1.79%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.320	0.311	2.74%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	257	262	1.65%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0132	0.0131	1.07%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.0138	0.0134	0.0004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 360640)</b>											
CG2106269-001	FR_KB-1_WG_2021-11_N P	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 360641)</b>											
CG2106269-001	FR_KB-1_WG_2021-11_N P	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00050	0.00049	0.00001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0459	0.0481	4.67%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.032	0.031	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.684 µg/L	0.000676	1.18%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	321	318	1.05%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.163	0.157	3.47%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	153	153	0.185%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00156	0.00151	3.26%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.0303	0.0308	1.68%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	5.40	5.43	0.562%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 360641) - continued</b>											
CG2106269-001	FR_KB-1_WG_2021-11_N P	selenium, dissolved	7782-49-2	E421	0.100	mg/L	280 µg/L	0.289	3.05%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.14	2.17	1.44%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.100	mg/L	7.57	7.76	2.50%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.311	0.304	2.31%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	257	257	0.00980%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0131	0.0136	3.65%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0130	0.0133	0.0004	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 358733)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 359052)</b>						
conductivity	----	E100	1	µS/cm	1.4	----
<b>Physical Tests (QCLot: 359053)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 359451)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 359470)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 360080)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 360083)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 357849)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 357850)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 357851)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 357852)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 357853)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 357854)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 357939)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 357949)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 357999)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 357999) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 360751)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 358028)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 358029)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 360694)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 360695)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 360695) - continued</b>						
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Dissolved Metals (QCLot: 360640)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 360641)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Page : 10 of 17  
Work Order : CG2106269  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATIONS



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 360641) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 358733)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	105	85.0	115	----
<b>Physical Tests (QCLot: 359051)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 359052)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	----
<b>Physical Tests (QCLot: 359053)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	108	85.0	115	----
<b>Physical Tests (QCLot: 359451)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	106	85.0	115	----
<b>Physical Tests (QCLot: 359470)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	102	85.0	115	----
<b>Physical Tests (QCLot: 360080)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	91.4	85.0	115	----
<b>Physical Tests (QCLot: 360083)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	94.6	85.0	115	----
<b>Physical Tests (QCLot: 361759)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----
<b>Anions and Nutrients (QCLot: 357849)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 357850)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 357851)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 357852)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 357853)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 357854)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 357939)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	98.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 357949)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 357949) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	97.3	80.0	120	----
<b>Anions and Nutrients (QCLot: 357999)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.6	85.0	115	----
<b>Anions and Nutrients (QCLot: 360751)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 358028)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	94.0	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 358029)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Total Metals (QCLot: 360694)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 360695)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	110	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	113	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	111	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	109	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.6	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	106	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	109	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	109	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	110	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	108	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 360695) - continued</b>									
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	111	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	93.0	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	106	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	108	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	120	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	107	80.0	120	----
<b>Dissolved Metals (QCLot: 360640)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
<b>Dissolved Metals (QCLot: 360641)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.9	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.3	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.7	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.2	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.9	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.4	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.8	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 360641) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 357849)</b>										
CG2106266-006	Anonymous	fluoride	16984-48-8	E235.F	1.11 mg/L	1 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 357850)</b>										
CG2106266-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 357851)</b>										
CG2106266-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.459 mg/L	0.5 mg/L	91.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 357852)</b>										
CG2106266-006	Anonymous	chloride	16887-00-6	E235.Cl-L	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 357853)</b>										
CG2106266-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.63 mg/L	2.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 357854)</b>										
CG2106266-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.537 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 357939)</b>										
CG2106269-001	FR_KB-1_WG_2021-11_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0516 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 357949)</b>										
CG2106266-006	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0530 mg/L	0.0676 mg/L	78.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 357999)</b>										
CG2106269-004	FR_TRP2_WG_2021-11_NP	ammonia, total (as N)	7664-41-7	E298	0.113 mg/L	0.1 mg/L	113	75.0	125	----
<b>Anions and Nutrients (QCLot: 360751)</b>										
CG2106269-002	FR_KB-10MW_WG_2021-11_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.63 mg/L	2.5 mg/L	105	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 358028)</b>										
CG2106269-001	FR_KB-1_WG_2021-11_NP	carbon, dissolved organic [DOC]	----	E358-L	23.9 mg/L	23.9 mg/L	99.9	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 358029)</b>										
CG2106269-001	FR_KB-1_WG_2021-11_NP	carbon, total organic [TOC]	----	E355-L	25.3 mg/L	23.9 mg/L	106	70.0	130	----
<b>Total Metals (QCLot: 360694)</b>										
CG2106269-002	FR_KB-10MW_WG_2021-11_NP	chromium, total	7440-47-3	E420.Cr-L	0.0773 mg/L	0.08 mg/L	96.6	70.0	130	----
<b>Total Metals (QCLot: 360695)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 360695) - continued</b>										
CG2106269-002	FR_KB-10MW_WG_2021-1 1_NP	aluminum, total	7429-90-5	E420	0.393 mg/L	0.4 mg/L	98.4	70.0	130	----
		antimony, total	7440-36-0	E420	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0806 mg/L	0.08 mg/L	101	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0186 mg/L	0.02 mg/L	92.8	70.0	130	----
		boron, total	7440-42-8	E420	0.198 mg/L	0.2 mg/L	99.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00770 mg/L	0.008 mg/L	96.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0368 mg/L	0.04 mg/L	92.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0353 mg/L	0.04 mg/L	88.3	70.0	130	----
		iron, total	7439-89-6	E420	3.99 mg/L	4 mg/L	99.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0368 mg/L	0.04 mg/L	92.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0711 mg/L	0.08 mg/L	88.9	70.0	130	----
		potassium, total	7440-09-7	E420	7.93 mg/L	8 mg/L	99.1	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	19.7 mg/L	20 mg/L	98.7	70.0	130	----
		silver, total	7440-22-4	E420	0.00769 mg/L	0.008 mg/L	96.1	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00744 mg/L	0.008 mg/L	93.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0395 mg/L	0.04 mg/L	98.9	70.0	130	----
		titanium, total	7440-32-6	E420	0.0779 mg/L	0.08 mg/L	97.4	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.727 mg/L	0.8 mg/L	90.8	70.0	130	----
<b>Dissolved Metals (QCLot: 360640)</b>										
CG2106269-002	FR_KB-10MW_WG_2021-1 1_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0804 mg/L	0.08 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 360641)</b>										
CG2106269-002	FR_KB-10MW_WG_2021-1 1_NP	aluminum, dissolved	7429-90-5	E421	0.390 mg/L	0.4 mg/L	97.4	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 360641) - continued</b>										
CG2106269-002	FR_KB-10MW_WG_2021-1 1_NP	antimony, dissolved	7440-36-0	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0779 mg/L	0.08 mg/L	97.4	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.188 mg/L	0.2 mg/L	94.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00790 mg/L	0.008 mg/L	98.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.76 mg/L	4 mg/L	94.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0761 mg/L	0.08 mg/L	95.2	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	17.8 mg/L	20 mg/L	88.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00794 mg/L	0.008 mg/L	99.3	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00754 mg/L	0.008 mg/L	94.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0370 mg/L	0.04 mg/L	92.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0777 mg/L	0.08 mg/L	97.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.205 mg/L	0.2 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.767 mg/L	0.8 mg/L	95.8	70.0	130	----



Teck

COC ID: **QTR\_KC\_GW\_2021-11**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Paul Dore			Lab Contact	Lyudmyla Shvets			Email 1:	teckcoal@equisonline.com	X	X	X
Email	paul.dore@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	paul.dore@teck.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	teslie.harker@snclavalin.com	X	X	X
								Email 4:	David.Burroughs@teck.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 5:	Stefan.Humphries@snclavalin.com	X	X	X
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-433-6716			Phone Number	403 407 1794			PO number	VPO00765458			

SAMPLE DETAILS							ANALYSIS REQUESTED					
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com # Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN/Nutrients	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None
FR_KB-1_WG_2021-11-NP	FR_KB-1	WG	N	12/01/21	11:05	G 5	1	1	1	1	1	
<del>FR_KB-2_WG_2021-11-NP</del>	<del>FR_KB-2</del>	<del>WG</del>	<del>N</del>	<del>12/01/21</del>	<del>11:05</del>	<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	
<del>FR_KB-3_WG_2021-11-NP</del>	<del>FR_KB-3</del>	<del>WG</del>	<del>N</del>	<del>12/01/21</del>	<del>11:05</del>	<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	
<del>FR_KB-4_WG_2021-11-NP</del>	<del>FR_KB-4</del>	<del>WG</del>	<del>N</del>	<del>12/01/21</del>	<del>11:05</del>	<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	
FR_KB-10W_WG_2021-11-NP	FR_KB-10W	WG	N	12/01/21	13:35	G 5	1	1	1	1	1	
FR_KB-5PW_WG_2021-11-NP	FR_KB-5PW	WG	N	12/01/21	11:55	G 5	1	1	1	1	1	
<del>FR_KB-6PW_WG_2021-06-NP</del>	<del>FR_KB-6PW</del>	<del>WG</del>	<del>N</del>	<del>12/01/21</del>	<del>11:55</del>	<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	
<del>FR_KB-7PW_WG_2021-06-NP</del>	<del>FR_KB-7PW</del>	<del>WG</del>	<del>N</del>	<del>12/01/21</del>	<del>11:55</del>	<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	
<del>FR_KB-8PW_WG_2021-06-NP</del>	<del>FR_KB-8PW</del>	<del>WG</del>	<del>N</del>	<del>12/01/21</del>	<del>11:55</del>	<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	
<del>FR_KB-9PW_WG_2021-06-NP</del>	<del>FR_KB-9PW</del>	<del>WG</del>	<del>N</del>	<del>12/01/21</del>	<del>11:55</del>	<del>G 5</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	
FR-TRP2-WG-2021-11	FR-TRP2-WG	WG	N	12/01/21	16:00	G 3	1	1	1	1	1	

Environmental Division  
Calgary  
Work Order Reference  
**CG2106269**



Telephone: +1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
*All samples field filtered and preserved as required.			<i>[Signature]</i>	DEC 02, 2021
SERVICE REQUEST (rush - subject to availability)			<i>[Signature]</i>	9:05 am
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Sampler's Name	Mobile #	
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time	



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2106517**  
**Client** : **Teck Coal Limited**  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : ----  
**Sampler** : BRITT ANDERSON  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Dec-2021 09:00  
**Date Analysis Commenced** : 09-Dec-2021  
**Issue Date** : 17-Dec-2021 17:34

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Ruby Pham	Lab Assistant	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC3_QTR_2 021-10-04_N	FR_MW-1B_QT R_2021-10-04_N	FR_POTWELLS _QTR_2021-10-04_N	----	----
Client sampling date / time					08-Dec-2021 10:18	08-Dec-2021 11:17	08-Dec-2021 10:18	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106517-001	CG2106517-002	CG2106517-003	-----	-----	
					Result	Result	Result	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	2.4	4.6	3.0	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	155	189	143	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	189	230	174	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	155	189	143	----	----	
conductivity	----	E100	2.0	µS/cm	577	887	583	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	310	478	302	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	467	493	477	----	----	
pH	----	E108	0.10	pH units	7.91	7.92	8.01	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	356	608	364	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.1	2.3	----	----	
turbidity	----	E121	0.10	NTU	<0.10	1.51	<0.10	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0067	<0.0050	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.250 <sup>DLDS</sup>	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.28	0.95	0.29	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.160	0.129	0.165	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.294 <sup>TKNI</sup>	0.300 <sup>TKNI</sup>	0.295 <sup>TKNI</sup>	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	4.15	20.2	4.15	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0021	0.0026	0.0019	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0024	0.0042 <sup>DLM</sup>	0.0021	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	162	254	162	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.59	0.53	0.54	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.82	0.60	0.83	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC3_QTR_2 021-10-04_N	FR_MW-1B_QT R_2021-10-04_ N	FR_POTWELLS _QTR_2021-10- 04_N	----	----
Client sampling date / time					08-Dec-2021 10:18	08-Dec-2021 11:17	08-Dec-2021 10:18	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106517-001 Result	CG2106517-002 Result	CG2106517-003 Result	----- ----	----- ----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.78	10.5	6.54	----	----	
cation sum	----	EC101	0.10	meq/L	6.25	9.66	6.08	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.2	92.0	93.0	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.07	4.17	3.64	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0019	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00019	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0668	0.131	0.0658	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0102	0.0198	0.0106	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	79.3	115	73.9	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00011	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00057	0.00031	0.00061	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0.012	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0077	0.0379	0.0072	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	27.3	46.3	28.5	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00038	<0.00010	0.00045	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000643	0.00112	0.000683	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.641	1.41	0.647	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	24.1	56.6	24.9	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.49	1.72	1.48	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	0.752	1.88	0.730	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.134	0.202	0.137	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	56.2	79.9	52.0	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FR_DC3_QTR_2 021-10-04_N	FR_MW-1B_QT R_2021-10-04_ N	FR_POTWELLS _QTR_2021-10- 04_N	----	----
Client sampling date / time					08-Dec-2021 10:18	08-Dec-2021 11:17	08-Dec-2021 10:18	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106517-001	CG2106517-002	CG2106517-003	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00120	0.00264	0.00113	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0030	0.0015	0.0043	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106517</b>	Page	: 1 of 16
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Scott Roughead	Account Manager	: Justine Buma-a
Address	: PO BOX 100 ELKFORD BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 09-Dec-2021 09:00
PO	: VPO00741392	Issue Date	: 17-Dec-2021 17:34
C-O-C number	: ----		
Sampler	: BRITT ANDERSON		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	134 % TKND	20%	Duplicate RPD does not meet the DQO for this test.

**Result Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC3_QTR_2021-10-04_N	E298	08-Dec-2021	09-Dec-2021	----	----		09-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-1B_QTR_2021-10-04_N	E298	08-Dec-2021	09-Dec-2021	----	----		09-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> FR_POTWELLS_QTR_2021-10-04_N	E298	08-Dec-2021	09-Dec-2021	----	----		09-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC3_QTR_2021-10-04_N	E235.Br-L	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_MW-1B_QTR_2021-10-04_N	E235.Br-L	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_POTWELLS_QTR_2021-10-04_N	E235.Br-L	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> FR_DC3_QTR_2021-10-04_N	E235.Cl-L	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_MW-1B_QTR_2021-10-04_N	E235.Cl-L	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE FR_POTWELLS_QTR_2021-10-04_N	E235.Cl-L	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_DC3_QTR_2021-10-04_N	E378-U	08-Dec-2021	----	----	----		10-Dec-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_MW-1B_QTR_2021-10-04_N	E378-U	08-Dec-2021	----	----	----		10-Dec-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE FR_POTWELLS_QTR_2021-10-04_N	E378-U	08-Dec-2021	----	----	----		10-Dec-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_DC3_QTR_2021-10-04_N	E235.F	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_MW-1B_QTR_2021-10-04_N	E235.F	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE FR_POTWELLS_QTR_2021-10-04_N	E235.F	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_DC3_QTR_2021-10-04_N	E235.NO3-L	08-Dec-2021	----	----	----		10-Dec-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_MW-1B_QTR_2021-10-04_N	E235.NO3-L	08-Dec-2021	----	----	----		10-Dec-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE FR_POTWELLS_QTR_2021-10-04_N	E235.NO3-L	08-Dec-2021	----	----	----		10-Dec-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_DC3_QTR_2021-10-04_N	E235.NO2-L	08-Dec-2021	----	----	----		10-Dec-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_MW-1B_QTR_2021-10-04_N	E235.NO2-L	08-Dec-2021	----	----	----		10-Dec-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE FR_POTWELLS_QTR_2021-10-04_N	E235.NO2-L	08-Dec-2021	----	----	----		10-Dec-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_DC3_QTR_2021-10-04_N	E235.SO4	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_MW-1B_QTR_2021-10-04_N	E235.SO4	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE FR_POTWELLS_QTR_2021-10-04_N	E235.SO4	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> FR_DC3_QTR_2021-10-04_N	E318	08-Dec-2021	13-Dec-2021	----	----		15-Dec-2021	28 days	7 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-1B_QTR_2021-10-04_N	E318	08-Dec-2021	13-Dec-2021	----	----		15-Dec-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_POTWELLS_QTR_2021-10-04_N	E318	08-Dec-2021	13-Dec-2021	----	----		15-Dec-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC3_QTR_2021-10-04_N	E372-U	08-Dec-2021	15-Dec-2021	----	----		15-Dec-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-1B_QTR_2021-10-04_N	E372-U	08-Dec-2021	15-Dec-2021	----	----		15-Dec-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_POTWELLS_QTR_2021-10-04_N	E372-U	08-Dec-2021	15-Dec-2021	----	----		15-Dec-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC3_QTR_2021-10-04_N	E421.Cr-L	08-Dec-2021	15-Dec-2021	----	----		15-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-1B_QTR_2021-10-04_N	E421.Cr-L	08-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> FR_POTWELLS_QTR_2021-10-04_N	E421.Cr-L	08-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_DC3_QTR_2021-10-04_N	E509	08-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	8 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_MW-1B_QTR_2021-10-04_N	E509	08-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> FR_POTWELLS_QTR_2021-10-04_N	E509	08-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_DC3_QTR_2021-10-04_N	E421	08-Dec-2021	15-Dec-2021	----	----		15-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_MW-1B_QTR_2021-10-04_N	E421	08-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> FR_POTWELLS_QTR_2021-10-04_N	E421	08-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	180 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_DC3_QTR_2021-10-04_N	E358-L	08-Dec-2021	09-Dec-2021	----	----		09-Dec-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_MW-1B_QTR_2021-10-04_N	E358-L	08-Dec-2021	09-Dec-2021	----	----		09-Dec-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> FR_POTWELLS_QTR_2021-10-04_N	E358-L	08-Dec-2021	09-Dec-2021	----	----		09-Dec-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_DC3_QTR_2021-10-04_N	E355-L	08-Dec-2021	09-Dec-2021	----	----		09-Dec-2021	28 days	1 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_MW-1B_QTR_2021-10-04_N	E355-L	08-Dec-2021	09-Dec-2021	----	----		09-Dec-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> FR_POTWELLS_QTR_2021-10-04_N	E355-L	08-Dec-2021	09-Dec-2021	----	----		09-Dec-2021	28 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_DC3_QTR_2021-10-04_N	E283	08-Dec-2021	----	----	----		09-Dec-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_MW-1B_QTR_2021-10-04_N	E283	08-Dec-2021	----	----	----		09-Dec-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> FR_POTWELLS_QTR_2021-10-04_N	E283	08-Dec-2021	----	----	----		10-Dec-2021	14 days	2 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_DC3_QTR_2021-10-04_N	E290	08-Dec-2021	----	----	----		10-Dec-2021	14 days	2 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_MW-1B_QTR_2021-10-04_N	E290	08-Dec-2021	----	----	----		10-Dec-2021	14 days	2 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> FR_POTWELLS_QTR_2021-10-04_N	E290	08-Dec-2021	----	----	----		10-Dec-2021	14 days	2 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> FR_DC3_QTR_2021-10-04_N	E100	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_MW-1B_QTR_2021-10-04_N	E100	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE FR_POTWELLS_QTR_2021-10-04_N	E100	08-Dec-2021	----	----	----		10-Dec-2021	28 days	2 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_MW-1B_QTR_2021-10-04_N	E125	08-Dec-2021	----	----	----		16-Dec-2021	0.25 hrs	196 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_DC3_QTR_2021-10-04_N	E125	08-Dec-2021	----	----	----		16-Dec-2021	0.25 hrs	197 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE FR_POTWELLS_QTR_2021-10-04_N	E125	08-Dec-2021	----	----	----		16-Dec-2021	0.25 hrs	197 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_MW-1B_QTR_2021-10-04_N	E108	08-Dec-2021	----	----	----		10-Dec-2021	0.25 hrs	49 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_DC3_QTR_2021-10-04_N	E108	08-Dec-2021	----	----	----		10-Dec-2021	0.25 hrs	50 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE FR_POTWELLS_QTR_2021-10-04_N	E108	08-Dec-2021	----	----	----		10-Dec-2021	0.25 hrs	50 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE FR_DC3_QTR_2021-10-04_N	E162	08-Dec-2021	----	----	----		14-Dec-2021	7 days	6 days		✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_MW-1B_QTR_2021-10-04_N	E162	08-Dec-2021	----	----	----		14-Dec-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE FR_POTWELLS_QTR_2021-10-04_N	E162	08-Dec-2021	----	----	----		14-Dec-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE FR_DC3_QTR_2021-10-04_N	E160-L	08-Dec-2021	----	----	----		14-Dec-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE FR_MW-1B_QTR_2021-10-04_N	E160-L	08-Dec-2021	----	----	----		14-Dec-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE FR_POTWELLS_QTR_2021-10-04_N	E160-L	08-Dec-2021	----	----	----		14-Dec-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE FR_DC3_QTR_2021-10-04_N	E121	08-Dec-2021	----	----	----		11-Dec-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE FR_MW-1B_QTR_2021-10-04_N	E121	08-Dec-2021	----	----	----		11-Dec-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE FR_POTWELLS_QTR_2021-10-04_N	E121	08-Dec-2021	----	----	----		11-Dec-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	363602	3	60	5.0	5.0	✓
Alkalinity Species by Titration	E290	364582	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	363851	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	364658	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	364659	1	20	5.0	5.0	✓
Conductivity in Water	E100	364581	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	367954	2	22	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	369114	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	367953	2	38	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	363634	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	364817	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	364662	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	364660	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	364661	1	20	5.0	5.0	✓
ORP by Electrode	E125	368864	1	20	5.0	5.0	✓
pH by Meter	E108	364580	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	364657	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	366445	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	366805	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	363635	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	363564	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	365233	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	363602	3	60	5.0	5.0	✓
Alkalinity Species by Titration	E290	364582	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	363851	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	364658	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	364659	1	20	5.0	5.0	✓
Conductivity in Water	E100	364581	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	367954	2	22	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	369114	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	367953	2	38	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	363634	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	364817	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	364662	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	364660	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	364661	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	368864	1	20	5.0	5.0	✓
pH by Meter	E108	364580	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	364657	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	366445	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	366805	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	363635	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	363564	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	366441	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	365233	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	363602	3	60	5.0	5.0	✓
Alkalinity Species by Titration	E290	364582	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	363851	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	364658	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	364659	1	20	5.0	5.0	✓
Conductivity in Water	E100	364581	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	367954	2	22	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	369114	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	367953	2	38	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	363634	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	364817	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	364662	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	364660	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	364661	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	364657	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	366445	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	366805	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	363635	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	363564	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	366441	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	365233	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	363851	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	364658	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	364659	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	367954	2	22	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	369114	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	367953	2	38	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	363634	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	364817	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	364662	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	364660	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	364661	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	364657	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	366805	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	363635	1	7	14.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	363564	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2106517**

**Page** : 1 of 15

**Client** : Teck Coal Limited  
**Contact** : Scott Roughead  
**Address** : PO BOX 100  
 ELKFORD BC Canada V0B 1H0  
**Telephone** : ----  
**Project** : FORDING RIVER OPERATION  
**PO** : VPO00741392  
**C-O-C number** : ----  
**Sampler** : BRITT ANDERSON  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Justine Buma-a  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Dec-2021 09:00  
**Date Analysis Commenced** : 09-Dec-2021  
**Issue Date** : 17-Dec-2021 17:34

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
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Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 15  
Work Order : CG2106517  
Client : Teck Coal Limited  
Project : FORDING RIVER OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 363602)</b>											
CG2106481-017	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 363603)</b>											
CG2106517-002	FR_MW-1B_QTR_2021-10-04_N	acidity (as CaCO3)	----	E283	2.0	mg/L	4.6	4.2	0.4	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 364408)</b>											
CG2106517-003	FR_POTWELLS_QTR_2021-10-04_N	acidity (as CaCO3)	----	E283	2.0	mg/L	3.0	2.6	0.4	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 364580)</b>											
CG2106502-001	Anonymous	pH	----	E108	0.10	pH units	8.64	8.65	0.116%	4%	----
<b>Physical Tests (QC Lot: 364581)</b>											
CG2106502-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1060	1050	0.475%	10%	----
<b>Physical Tests (QC Lot: 364582)</b>											
CG2106502-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	486	477	1.93%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	59.3	55.0	7.58%	20%	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	486	477	1.93%	20%	----
<b>Physical Tests (QC Lot: 365233)</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 366445)</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	solids, total dissolved [TDS]	----	E162	20	mg/L	356	362	1.67%	20%	----
<b>Physical Tests (QC Lot: 368864)</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	467	474	1.40%	15%	----
<b>Anions and Nutrients (QC Lot: 363564)</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0024	0.0024	0.00002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 363851)</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0063	0.0013	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 364657)</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	162	162	0.208%	20%	----
<b>Anions and Nutrients (QC Lot: 364658)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 364658) - continued</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 364659)</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.28	0.27	0.010	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 364660)</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	4.15	4.14	0.374%	20%	----
<b>Anions and Nutrients (QC Lot: 364661)</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 364662)</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	fluoride	16984-48-8	E235.F	0.020	mg/L	0.160	0.160	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 364817)</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0021	0.0021	0.00004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 366805)</b>											
CG2106491-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.460	2.32	134%	20%	TKND
<b>Organic / Inorganic Carbon (QC Lot: 363634)</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.59	0.52	0.06	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 363635)</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.82	0.86	0.04	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 367953)</b>											
CG2106481-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0046	0.0042	0.0004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00032	0.00034	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0468	0.0488	4.05%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	36.0	36.2	0.601%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00028	0.00027	0.00001	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0023	0.0024	0.00004	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	11.0	11.2	1.91%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00029	0.00031	0.00002	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000605	0.000642	5.97%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 367953) - continued</b>											
CG2106481-001	Anonymous	potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.540	0.558	3.20%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	1.28 µg/L	0.00121	5.68%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.59	1.63	2.86%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	3.30	3.42	3.58%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.132	0.136	3.76%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	9.58	9.20	4.09%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000702	0.000704	0.208%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----		
<b>Dissolved Metals (QC Lot: 367954)</b>											
CG2106481-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 369114)</b>											
CG2106517-001	FR_DC3_QTR_2021-10-04_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 369123)</b>											
CG2106517-002	FR_MW-1B_QTR_2021-10-04_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0013	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00019	0.00018	0.00001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.131	0.131	0.240%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0198 µg/L	0.0000204	0.0000005	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	115	113	2.05%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00031	0.00034	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0379	0.0376	0.607%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	46.3	47.3	2.07%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00112	0.00111	0.670%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.41	1.46	2.95%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	56.6 µg/L	0.0557	1.74%	20%	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.72	1.72	0.273%	20%	----		



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 369123) - continued</b>											
CG2106517-002	FR_MW-1B_QTR_2021-10-04_N	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	1.88	1.92	1.88%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.202	0.196	3.10%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	79.9	78.1	2.25%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00264	0.00264	0.0667%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0015	0.0014	0.0001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 369124)</b>											
CG2106517-002	FR_MW-1B_QTR_2021-10-04_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00012	0.00002	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 363602)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 363603)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 364408)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	2.0	----
<b>Physical Tests (QCLot: 364581)</b>						
conductivity	----	E100	1	µS/cm	1.1	----
<b>Physical Tests (QCLot: 364582)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 365233)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 366441)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 366445)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 363564)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 363851)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 364657)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 364658)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 364659)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 364660)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 364661)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 364662)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 364662) - continued</b>						
fluoride	16984-48-8	E235-F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 364817)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 366805)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 363634)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 363635)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 367953)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 367954)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 369114)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 369123)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 369124)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 363602)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	99.4	85.0	115	---
<b>Physical Tests (QCLot: 363603)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 364408)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	98.8	85.0	115	---
<b>Physical Tests (QCLot: 364580)</b>									
pH	---	E108	---	pH units	7 pH units	99.1	98.6	101	---
<b>Physical Tests (QCLot: 364581)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.1	90.0	110	---
<b>Physical Tests (QCLot: 364582)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 365233)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.9	85.0	115	---
<b>Physical Tests (QCLot: 366441)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.6	85.0	115	---
<b>Physical Tests (QCLot: 366445)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	92.2	85.0	115	---
<b>Physical Tests (QCLot: 368864)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 363564)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	91.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 363851)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	91.2	85.0	115	---
<b>Anions and Nutrients (QCLot: 364657)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 364658)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	101	85.0	115	---
<b>Anions and Nutrients (QCLot: 364659)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 364660)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 364661)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 364661) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 364662)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.3	90.0	110	----
<b>Anions and Nutrients (QCLot: 364817)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 366805)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 363634)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	93.6	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 363635)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	93.7	80.0	120	----
<b>Dissolved Metals (QCLot: 367953)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	93.8	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.3	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.9	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.6	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.4	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.4	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.2	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 367953) - continued</b>									
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 367954)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.2	80.0	120	----
<b>Dissolved Metals (QCLot: 369123)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	106	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.6	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.8	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.7	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	100	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.6	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	99.4	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 369124)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 363564)</b>										
CG2106517-002	FR_MW-1B_QTR_2021-10-04_N	phosphorus, total	7723-14-0	E372-U	0.0575 mg/L	0.0676 mg/L	85.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 363851)</b>										
CG2106517-002	FR_MW-1B_QTR_2021-10-04_N	ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 364657)</b>										
CG2106533-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 364658)</b>										
CG2106533-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.513 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 364659)</b>										
CG2106533-005	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 364660)</b>										
CG2106533-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.59 mg/L	2.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 364661)</b>										
CG2106533-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.498 mg/L	0.5 mg/L	99.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 364662)</b>										
CG2106533-005	Anonymous	fluoride	16984-48-8	E235.F	0.959 mg/L	1 mg/L	95.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 364817)</b>										
CG2106517-002	FR_MW-1B_QTR_2021-10-04_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0530 mg/L	0.05 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 366805)</b>										
CG2106493-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.39 mg/L	2.5 mg/L	95.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 363634)</b>										
CG2106517-001	FR_DC3_QTR_2021-10-04_N	carbon, dissolved organic [DOC]	----	E358-L	22.5 mg/L	23.9 mg/L	94.0	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 363635)</b>										
CG2106517-001	FR_DC3_QTR_2021-10-04_N	carbon, total organic [TOC]	----	E355-L	23.3 mg/L	23.9 mg/L	97.7	70.0	130	----
<b>Dissolved Metals (QCLot: 367953)</b>										
CG2106481-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.207 mg/L	0.2 mg/L	104	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 367953) - continued</b>										
CG2106481-002	Anonymous	antimony, dissolved	7440-36-0	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0209 mg/L	0.02 mg/L	105	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0426 mg/L	0.04 mg/L	106	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00430 mg/L	0.004 mg/L	108	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.08 mg/L	2 mg/L	104	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.109 mg/L	0.1 mg/L	109	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.25 mg/L	4 mg/L	106	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0429 mg/L	0.04 mg/L	107	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.44 mg/L	10 mg/L	94.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	22.0 mg/L	20 mg/L	110	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00419 mg/L	0.004 mg/L	105	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00462 mg/L	0.004 mg/L	116	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.430 mg/L	0.4 mg/L	108	70.0	130	----
<b>Dissolved Metals (QCLot: 367954)</b>										
CG2106481-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 369114)</b>										
CG2106517-002	FR_MW-1B_QTR_2021-10-04_N	mercury, dissolved	7439-97-6	E509	0.0000959 mg/L	0.0001 mg/L	95.9	70.0	130	----
<b>Dissolved Metals (QCLot: 369123)</b>										
CG2106517-003	FR_POTWELLS_QTR_2021-10-04_N	aluminum, dissolved	7429-90-5	E421	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0368 mg/L	0.04 mg/L	91.9	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 369123) - continued</b>										
CG2106517-003	FR_POTWELLS_QTR_2021-10-04_N	cadmium, dissolved	7440-43-9	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0183 mg/L	0.02 mg/L	91.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.97 mg/L	2 mg/L	98.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0970 mg/L	0.1 mg/L	97.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.97 mg/L	4 mg/L	99.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.10 mg/L	10 mg/L	91.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00397 mg/L	0.004 mg/L	99.4	70.0	130	----
		sodium, dissolved	7440-23-5	E421	1.83 mg/L	2 mg/L	91.6	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00376 mg/L	0.004 mg/L	94.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
uranium, dissolved	7440-61-1	E421	0.00395 mg/L	0.004 mg/L	98.9	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.377 mg/L	0.4 mg/L	94.3	70.0	130	----		
<b>Dissolved Metals (QCLot: 369124)</b>										
CG2106517-003	FR_POTWELLS_QTR_2021-10-04_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	----

Teck

COC ID:	12/8/2021 WG	TURNAROUND TIME:		RUSH:					
<b>PROJECT/CLIENT INFO</b>			<b>LABORATORY</b>		<b>OTHER INFO</b>				
Facility Name / Job#	Fording River Operation	Lab Name	ALS Calgary		Report Format / Distribution	Excel PDF EDD			
Project Manager	Scott Roughthead	Lab Contact	Lyudmyla Shvets		Email 1:	X X X			
Email	scott.roughead@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	X X X			
Address		Address	2559 29 Street NE		Email 3:	X			
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	X X X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	X X X
Phone Number	1-250-433-6976	Phone Number	403 407 1794		PO number	VPO00741392			

SAMPLE DETAILS								ANALYSIS REQUESTED							
Sample Location (svs loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	F	N	F	N	F	N	N	Filtered: F: Field, L: Lab, FL: Field & Lab, N: None
							ANALYSIS	H2SO4	H2SO4	HCL	NONE	HN03	HN03	NONE	
							ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CYAF-VA	HG-T-U-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	ALS_Package-BOD	ALS_Package-Colour
FR_DC3_QTR_2021-10-04_N	FR_DC3	WG	NO	8-Dec	10:18	G	5	1	1	1		1		1	
FR_MW-1B_QTR_2021-10-04_N	FR_MW-1B	WG	NO	8-Dec	11:17	G	5	1	1	1		1		1	
FR_POTWELLS_QTR_2021-10-04_N	FR_POTWELLS	WG	NO	8-Dec	10:18	G	5	1	1	1		1		1	

Environmental Division  
Calgary  
Work Order Reference  
**CG2106517**



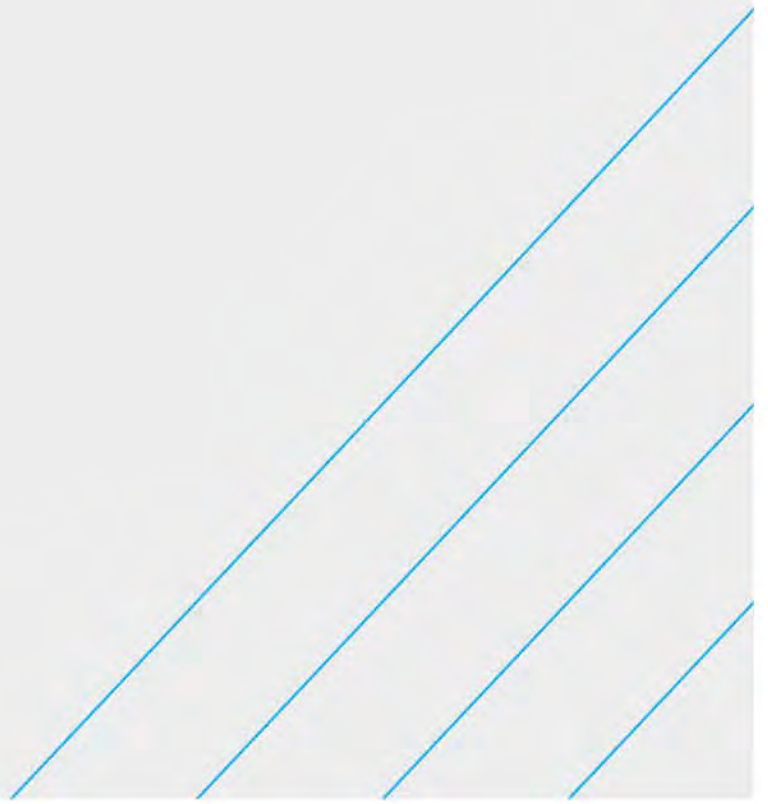
Telephone : 1 403 407 1800

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Britt Anderson	December 8, 2021	<i>[Signature]</i> 8146	Dec 9 2021

<b>SERVICE REQUEST (rush - subject to availability)</b>			
Regular (default) x	Sampler's Name	Britt Anderson	Mobile #
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time
Emergency (1 Business Day) - 100% surcharge			December 8, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

# Certificates of Analysis 2021 SSGMP and RGMP Report

- › Line Creek Operations



## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>CG2100444</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Tom Jeffery <b>Address</b> : Line Creek Operations PO BOX 2003 15km North Hwy 43 Sparwood BC Canada V0B 2G0 <b>Telephone</b> : 250-433-8467 <b>Project</b> : LINE CREEK OPERATIONS <b>PO</b> : VPO00739930 <b>C-O-C number</b> : DC_GW_20210318 <b>Sampler</b> : S. Fossen/D. Tymstra <b>Site</b> : ---- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 2 <b>No. of samples analysed</b> : 2	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Lyudmyla Shvets <b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5 <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 19-Mar-2021 10:10 <b>Date Analysis Commenced</b> : 19-Mar-2021 <b>Issue Date</b> : 05-Nov-2021 12:41
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebeccah Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).



## Analytical Results

Sub-Matrix: Water					Client sample ID		LC_PIZDC1306	LC_PIZDC0901	---	---	---
(Matrix: Water)					LC_PIZDC1306	LC_PIZDC0901	_WG_Q4-2020_	_WG_Q4-2020_	---	---	---
					NP	NP					
Client sampling date / time					18-Mar-2021	18-Mar-2021					
					12:55	11:15					
Analyte	CAS Number	Method	LOR	Unit	CG2100444-001	CG2100444-002	-----	-----	-----	-----	-----
					Result	Result	---	---	---	---	---
<b>Physical Tests</b>											
acidity (as CaCO3)	---	E283	2.0	mg/L	13.1	8.9	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	288	252	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	352	308	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	288	252	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	464	420	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	236	210	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	348	430	---	---	---	---	---
pH	---	E108	0.10	pH units	7.47	7.41	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	339 <sup>DLHC</sup>	263 <sup>DLHC</sup>	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	199	2.4	---	---	---	---	---
turbidity	---	E121	0.10	NTU	172	1.85	---	---	---	---	---
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0379	0.0183	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.119	0.084	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.787	0.308	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.118	0.269	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0012	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0024	0.0157	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.220 <sup>DLHC</sup>	0.0176	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	5.86	7.40	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	1.06	3.94	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	20.9	5.04	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					LC_PIZDC1306 _WG_Q4-2020_ NP	LC_PIZDC0901 _WG_Q4-2020_ NP	---	---	---
Client sampling date / time					18-Mar-2021 12:55	18-Mar-2021 11:15	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100444-001	CG2100444-002	-----	-----	-----
					Result	Result	---	---	---
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	5.89	5.21	---	---	---
cation sum	----	EC101	0.10	meq/L	4.81	4.27	---	---	---
ion balance (cations/anions ratio)	----	EC101	0.010	%	81.7	82.0	---	---	---
ion balance (cation-anion difference)	----	EC101	0.010	%	10.1	9.92	---	---	---
<b>Total Metals</b>									
aluminum, total	7429-90-5	E420	0.0030	mg/L	1.68	0.0583	---	---	---
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00048	0.00019	---	---	---
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00138	0.00029	---	---	---
barium, total	7440-39-3	E420	0.00010	mg/L	0.243	0.140	---	---	---
beryllium, total	7440-41-7	E420	0.020	µg/L	0.229	<0.020	---	---	---
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---
boron, total	7440-42-8	E420	0.010	mg/L	0.014	<0.010	---	---	---
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.705	0.0760	---	---	---
calcium, total	7440-70-2	E420	0.050	mg/L	69.3	64.9	---	---	---
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00357	0.00024	---	---	---
cobalt, total	7440-48-4	E420	0.10	µg/L	2.12	0.14	---	---	---
copper, total	7440-50-8	E420	0.00050	mg/L	0.00735	0.00138	---	---	---
iron, total	7439-89-6	E420	0.010	mg/L	2.55	0.041	---	---	---
lead, total	7439-92-1	E420	0.000050	mg/L	0.00281	<0.000050	---	---	---
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0195	0.0033	---	---	---
magnesium, total	7439-95-4	E420	0.0050	mg/L	23.9	17.6	---	---	---
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0748	0.00496	---	---	---
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00198	0.000763	---	---	---
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00945	0.00146	---	---	---
potassium, total	7440-09-7	E420	0.050	mg/L	2.84	0.865	---	---	---
selenium, total	7782-49-2	E420	0.050	µg/L	2.04	1.71	---	---	---
silicon, total	7440-21-3	E420	0.10	mg/L	4.95	3.37	---	---	---
silver, total	7440-22-4	E420	0.000010	mg/L	0.000195	<0.000010	---	---	---
sodium, total	17341-25-2	E420	0.050	mg/L	1.02	1.37	---	---	---
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0832	0.127	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1306 _WG_Q4-2020_ NP	LC_PIZDC0901 _WG_Q4-2020_ NP	---	---	---
Client sampling date / time					18-Mar-2021 12:55	18-Mar-2021 11:15	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2100444-001 Result	CG2100444-002 Result	-----	-----	-----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	2.08	2.64	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000180	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0162	0.00173	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00129	0.00254	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0180	0.00098	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0395	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00017	0.00017	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00027	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.189	0.153	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.118	0.0695	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	56.6	55.3	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00014	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00049	0.00124	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0150	0.0023	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	22.9	17.4	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00177	0.000662	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00067	0.00099	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.16	0.859	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	2.15	2.21	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1306 _WG_Q4-2020_ NP	LC_PIZDC0901 _WG_Q4-2020_ NP	---	---	---
Client sampling date / time					18-Mar-2021 12:55	18-Mar-2021 11:15	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2100444-001 Result	CG2100444-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.90	3.37	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.06	1.40	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0640	0.115	---	---	---	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.15	2.53	---	---	---	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000762	0.00210	---	---	---	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00052	0.00052	---	---	---	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0028	<0.0010	---	---	---	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	---	---	---	
dissolved metals filtration location	----	EP421	-	-	Field	Field	---	---	---	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100444</b>	Page	: 1 of 14
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: Line Creek Operations PO BOX 2003 15km North Hwy 43 Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATIONS	Date Samples Received	: 19-Mar-2021 10:10
PO	: VPO00739930	Issue Date	: 05-Nov-2021 12:42
C-O-C number	: DC_GW_20210318		
Sampler	: S. Fossen/D. Tymstra		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Method Blank (MB) Values</b>								
Dissolved Metals	QC-MRG2-1679680 01	----	selenium, dissolved	7782-49-2	E421	0.000058 <sup>B</sup> mg/L	0.00005 mg/L	Blank result exceeds permitted value

**Result Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q4-2020_NP	E298	18-Mar-2021	25-Mar-2021	----	----		25-Mar-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q4-2020_NP	E298	18-Mar-2021	25-Mar-2021	----	----		25-Mar-2021	28 days	7 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2020_NP	E235.Br-L	18-Mar-2021	----	----	----		20-Mar-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2020_NP	E235.Br-L	18-Mar-2021	----	----	----		20-Mar-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2020_NP	E235.Cl-L	18-Mar-2021	----	----	----		20-Mar-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2020_NP	E235.Cl-L	18-Mar-2021	----	----	----		20-Mar-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2020_NP	E378-U	18-Mar-2021	----	----	----		20-Mar-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2020_NP	E378-U	18-Mar-2021	----	----	----		20-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2020_NP	E235.F	18-Mar-2021	----	----	----		20-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2020_NP	E235.F	18-Mar-2021	----	----	----		20-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2020_NP	E235.NO3-L	18-Mar-2021	----	----	----		20-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2020_NP	E235.NO3-L	18-Mar-2021	----	----	----		20-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2020_NP	E235.NO2-L	18-Mar-2021	----	----	----		20-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2020_NP	E235.NO2-L	18-Mar-2021	----	----	----		20-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2020_NP	E235.SO4	18-Mar-2021	----	----	----		20-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2020_NP	E235.SO4	18-Mar-2021	----	----	----		20-Mar-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q4-2020_NP	E318	18-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q4-2020_NP	E318	18-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q4-2020_NP	E372-U	18-Mar-2021	25-Mar-2021	----	----		25-Mar-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q4-2020_NP	E372-U	18-Mar-2021	25-Mar-2021	----	----		25-Mar-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC0901_WG_Q4-2020_NP	E421.Cr-L	18-Mar-2021	23-Mar-2021	----	----		24-Mar-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1306_WG_Q4-2020_NP	E421.Cr-L	18-Mar-2021	23-Mar-2021	----	----		24-Mar-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC0901_WG_Q4-2020_NP	E509	18-Mar-2021	25-Mar-2021	----	----		25-Mar-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1306_WG_Q4-2020_NP	E509	18-Mar-2021	25-Mar-2021	----	----		25-Mar-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC0901_WG_Q4-2020_NP	E421	18-Mar-2021	23-Mar-2021	----	----		24-Mar-2021	180 days	5 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1306_WG_Q4-2020_NP	E421	18-Mar-2021	23-Mar-2021	----	----		24-Mar-2021	180 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC0901_WG_Q4-2020_NP	E358-L	18-Mar-2021	25-Mar-2021	----	----		25-Mar-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1306_WG_Q4-2020_NP	E358-L	18-Mar-2021	25-Mar-2021	----	----		25-Mar-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q4-2020_NP	E355-L	18-Mar-2021	25-Mar-2021	----	----		25-Mar-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q4-2020_NP	E355-L	18-Mar-2021	25-Mar-2021	----	----		25-Mar-2021	28 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2020_NP	E283	18-Mar-2021	----	----	----		26-Mar-2021	14 days	8 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2020_NP	E283	18-Mar-2021	----	----	----		26-Mar-2021	14 days	8 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2020_NP	E290	18-Mar-2021	----	----	----		25-Mar-2021	14 days	7 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2020_NP	E290	18-Mar-2021	----	----	----		25-Mar-2021	14 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZDC0901_WG_Q4-2020_NP	E100	18-Mar-2021	----	----	----		25-Mar-2021	28 days	7 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZDC1306_WG_Q4-2020_NP	E100	18-Mar-2021	----	----	----		25-Mar-2021	28 days	7 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC1306_WG_Q4-2020_NP	E125	18-Mar-2021	----	----	----		25-Mar-2021	0.25 hrs	161 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC0901_WG_Q4-2020_NP	E125	18-Mar-2021	----	----	----		26-Mar-2021	0.25 hrs	186 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC1306_WG_Q4-2020_NP	E108	18-Mar-2021	----	----	----		25-Mar-2021	0.25 hrs	172 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC0901_WG_Q4-2020_NP	E108	18-Mar-2021	----	----	----		25-Mar-2021	0.25 hrs	173 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZDC0901_WG_Q4-2020_NP	E162	18-Mar-2021	----	----	----		25-Mar-2021	7 days	7 days		✓
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZDC1306_WG_Q4-2020_NP	E162	18-Mar-2021	----	----	----		25-Mar-2021	7 days	7 days		✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] LC_PIZDC0901_WG_Q4-2020_NP	E160-L	18-Mar-2021	----	----	----		25-Mar-2021	7 days	7 days		✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZDC1306_WG_Q4-2020_NP	E160-L	18-Mar-2021	----	----	----		25-Mar-2021	7 days	7 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2020_NP	E121	18-Mar-2021	----	----	----		20-Mar-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2020_NP	E121	18-Mar-2021	----	----	----		20-Mar-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC0901_WG_Q4-2020_NP	E420.Cr-L	18-Mar-2021	----	----	----		24-Mar-2021	180 days	6 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1306_WG_Q4-2020_NP	E420.Cr-L	18-Mar-2021	----	----	----		24-Mar-2021	180 days	6 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC0901_WG_Q4-2020_NP	E420	18-Mar-2021	----	----	----		24-Mar-2021	180 days	6 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1306_WG_Q4-2020_NP	E420	18-Mar-2021	----	----	----		24-Mar-2021	180 days	6 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	169793	1	17	5.8	5.0	✓
Alkalinity Species by Titration	E290	169137	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	168678	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	166715	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	166718	1	20	5.0	5.0	✓
Conductivity in Water	E100	169135	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	167968	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	168618	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	167969	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	169151	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	166753	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	166713	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	166717	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	166716	1	20	5.0	5.0	✓
ORP by Electrode	E125	168641	2	40	5.0	5.0	✓
pH by Meter	E108	169136	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	166714	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	168649	1	19	5.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	167954	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	168792	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	167955	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	169154	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	168153	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	166452	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	169793	1	17	5.8	5.0	✓
Alkalinity Species by Titration	E290	169137	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	168678	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	166715	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	166718	1	20	5.0	5.0	✓
Conductivity in Water	E100	169135	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	167968	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	168618	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	167969	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	169151	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	166753	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	166713	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	166717	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	166716	1	20	5.0	5.0	✓
ORP by Electrode	E125	168641	2	40	5.0	5.0	✓
pH by Meter	E108	169136	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	166714	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	168649	1	19	5.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	167954	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	168792	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	167955	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	169154	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	168153	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	168652	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	166452	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	169793	1	17	5.8	5.0	✓
Alkalinity Species by Titration	E290	169137	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	168678	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	166715	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	166718	1	20	5.0	5.0	✓
Conductivity in Water	E100	169135	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	167968	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	168618	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	167969	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	169151	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	166753	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	166713	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	166717	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	166716	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	166714	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	168649	1	19	5.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	167954	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	168792	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	167955	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	169154	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	168153	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	168652	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	166452	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	168678	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	166715	1	20	5.0	5.0	✓





Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	166718	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	167968	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	168618	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	167969	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	169151	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	166753	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	166713	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	166717	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	166716	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	166714	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	167954	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	168792	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	167955	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	169154	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	168153	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2100444**  
**Amendment** : **1**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : Line Creek Operations PO BOX 2003 15km North Hwy 43  
 Sparwood BC Canada V0B 2G0  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATIONS  
**PO** : VPO00739930  
**C-O-C number** : DC\_GW\_20210318  
**Sampler** : S. Fossen/D. Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 19-Mar-2021 10:10  
**Date Analysis Commenced** : 19-Mar-2021  
**Issue Date** : 05-Nov-2021 12:41

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
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Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 166452)</b>											
CG2100435-005	Anonymous	turbidity	----	E121	0.10	NTU	3.92	3.93	0.255%	15%	----
<b>Physical Tests (QC Lot: 168641)</b>											
CG2100435-004	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	307	311	1.07%	15%	----
<b>Physical Tests (QC Lot: 168649)</b>											
CG2100443-002	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	529	533	0.659%	20%	----
<b>Physical Tests (QC Lot: 169135)</b>											
CG2100441-003	Anonymous	conductivity	----	E100	2.0	µS/cm	376	379	0.795%	10%	----
<b>Physical Tests (QC Lot: 169136)</b>											
CG2100441-003	Anonymous	pH	----	E108	0.10	pH units	8.14	8.14	0.00%	4%	----
<b>Physical Tests (QC Lot: 169137)</b>											
CG2100441-003	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	157	159	1.26%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	157	159	1.26%	20%	----
<b>Physical Tests (QC Lot: 169251)</b>											
CG2100444-002	LC_PIZDC0901_WG_Q4-2 020_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	430	437	1.54%	15%	----
<b>Physical Tests (QC Lot: 169793)</b>											
CG2100446-004	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	5.9	6.0	0.06	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 166713)</b>											
CG2100436-025	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.124	0.127	0.003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 166714)</b>											
CG2100436-025	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	1580	1580	0.333%	20%	----
<b>Anions and Nutrients (QC Lot: 166715)</b>											
CG2100436-025	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	0.792	0.770	0.022	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 166716)</b>											
CG2100436-025	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0063	<0.0050	0.0013	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 166717)</b>											
CG2100436-025	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.0528	<0.0250	0.0278	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 166718)</b>											
CG2100436-025	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	21.0	19.9	5.46%	20%	----
<b>Anions and Nutrients (QC Lot: 166753)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 166753) - continued</b>											
CG2100444-001	LC_PIZDC1306_WG_Q4-2 020_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0024	0.0024	0.00008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 168153)</b>											
CG2100443-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	0.362	0.351	2.94%	20%	----
<b>Anions and Nutrients (QC Lot: 168678)</b>											
CG2100441-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 168792)</b>											
CG2100443-007	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.107	0.114	0.007	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 169151)</b>											
CG2100442-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.52	1.80	0.28	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 169154)</b>											
CG2100443-007	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 167954)</b>											
CG2100444-002	LC_PIZDC0901_WG_Q4-2 020_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00024	0.00026	0.00001	Diff <2x LOR	----
<b>Total Metals (QC Lot: 167955)</b>											
CG2100444-002	LC_PIZDC0901_WG_Q4-2 020_NP	bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
CG2100444-002	LC_PIZDC0901_WG_Q4-2 020_NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0583	0.0672	14.2%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00019	0.00019	0.000002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00029	0.00028	0.000004	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.140	0.139	0.863%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0760 µg/L	0.0000786	3.33%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	64.9	64.8	0.180%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.14 µg/L	0.00013	0.000006	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00138	0.00128	0.00010	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.041	0.042	0.001	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0033	0.0034	0.00004	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	17.6	17.6	0.119%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00496	0.00519	4.61%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000763	0.000768	0.704%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00146	0.00153	0.00008	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.865	0.863	0.227%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 167955) - continued</b>											
CG2100444-002	LC_PIZDC0901_WG_Q4-2 020_NP	selenium, total	7782-49-2	E420	0.050	mg/L	1.71 µg/L	0.00175	2.30%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.37	3.41	1.12%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	1.37	1.38	0.619%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.127	0.131	3.34%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	2.64	2.73	0.09	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00173	0.00183	0.00009	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00254	0.00263	3.51%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00098	0.00099	0.00002	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 167968)</b>											
CG2100444-001	LC_PIZDC1306_WG_Q4-2 020_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 167969)</b>											
CG2100444-001	LC_PIZDC1306_WG_Q4-2 020_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00017	0.00017	0.000006	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.189	0.184	2.30%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.118 µg/L	0.000118	0.550%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	56.6	53.6	5.43%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00049	0.00034	0.00015	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0150	0.0138	8.69%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	22.9	22.8	0.344%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00177	0.00164	7.62%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00067	0.00068	0.00001	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.16	2.11	2.41%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 167969) - continued</b>											
CG2100444-001	LC_PIZDC1306_WG_Q4-2 020_NP	selenium, dissolved	7782-49-2	E421	0.050	mg/L	2.15 µg/L	0.00239	10.5%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.90	2.87	0.887%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.06	1.04	1.83%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0640	0.0622	2.86%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.15	1.87	0.28	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000762	0.000714	6.56%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00052	0.00054	0.00002	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0028	0.0029	0.00003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 168618)</b>											
CG2100444-001	LC_PIZDC1306_WG_Q4-2 020_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 166452)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 168649)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 168652)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 169135)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 169137)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 169793)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 166713)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 166714)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 166715)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 166716)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 166717)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 166718)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 166753)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 168153)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 168678)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 168792)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 168792) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 169151)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 169154)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 167954)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 167955)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 167955) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 167968)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 167969)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	# 0.000058	B
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 167969) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 168618)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

**Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 166452)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100.0	85.0	115	---
<b>Physical Tests (QCLot: 168641)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 168649)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 168652)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 169135)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.6	90.0	110	---
<b>Physical Tests (QCLot: 169136)</b>									
pH	---	E108	---	pH units	7 pH units	99.8	98.6	101	---
<b>Physical Tests (QCLot: 169137)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 169251)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Physical Tests (QCLot: 169793)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	113	85.0	115	---
<b>Anions and Nutrients (QCLot: 166713)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 166714)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 166715)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	---
<b>Anions and Nutrients (QCLot: 166716)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 166717)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 166718)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 166753)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	94.4	80.0	120	---
<b>Anions and Nutrients (QCLot: 168153)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 168153) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	105	80.0	120	----
<b>Anions and Nutrients (QCLot: 168678)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	91.2	85.0	115	----
<b>Anions and Nutrients (QCLot: 168792)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	84.4	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 169151)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	107	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 169154)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Total Metals (QCLot: 167954)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
<b>Total Metals (QCLot: 167955)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	108	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	109	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.2	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	103	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	106	80.0	120	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 167955) - continued</b>									
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	109	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	110	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	114	80.0	120	----
<b>Dissolved Metals (QCLot: 167968)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	94.7	80.0	120	----
<b>Dissolved Metals (QCLot: 167969)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	91.1	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.1	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	90.4	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	95.7	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	91.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	93.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	83.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	94.5	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.3	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	93.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	92.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	90.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	94.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.1	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	95.5	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.1	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	94.6	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	95.9	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 167969) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	91.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.7	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	91.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	91.0	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	93.7	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	90.7	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.6	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 166713)</b>										
CG2100442-003	Anonymous	fluoride	16984-48-8	E235.F	0.972 mg/L	1 mg/L	97.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 166714)</b>										
CG2100442-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	115 mg/L	100 mg/L	115	75.0	125	----
<b>Anions and Nutrients (QCLot: 166715)</b>										
CG2100442-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.597 mg/L	0.5 mg/L	119	75.0	125	----
<b>Anions and Nutrients (QCLot: 166716)</b>										
CG2100442-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.591 mg/L	0.5 mg/L	118	75.0	125	----
<b>Anions and Nutrients (QCLot: 166717)</b>										
CG2100442-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.85 mg/L	2.5 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 166718)</b>										
CG2100442-003	Anonymous	chloride	16887-00-6	E235.Cl-L	115 mg/L	100 mg/L	115	75.0	125	----
<b>Anions and Nutrients (QCLot: 166753)</b>										
CG2100444-001	LC_PIZDC1306_WG_Q4-20 20_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0554 mg/L	0.05 mg/L	111	70.0	130	----
<b>Anions and Nutrients (QCLot: 168153)</b>										
CG2100443-002	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 168678)</b>										
CG2100441-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0931 mg/L	0.1 mg/L	93.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 168792)</b>										
CG2100444-002	LC_PIZDC0901_WG_Q4-20 20_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.42 mg/L	2.5 mg/L	96.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 169151)</b>										
CG2100442-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.0 mg/L	23.9 mg/L	105	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 169154)</b>										
CG2100444-001	LC_PIZDC1306_WG_Q4-20 20_NP	carbon, total organic [TOC]	----	E355-L	24.3 mg/L	23.9 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 167954)</b>										
CG2100444-002	LC_PIZDC0901_WG_Q4-20 20_NP	chromium, total	7440-47-3	E420.Cr-L	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
<b>Total Metals (QCLot: 167955)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 167955) - continued</b>										
CG2100444-002	LC_PIZDC0901_WG_Q4-20 20_NP	bismuth, total	7440-69-9	E420	0.00877 mg/L	0.01 mg/L	87.7	70.0	130	----
CG2100444-002	LC_PIZDC0901_WG_Q4-20 20_NP	aluminum, total	7429-90-5	E420	0.188 mg/L	0.2 mg/L	94.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		boron, total	7440-42-8	E420	0.114 mg/L	0.1 mg/L	114	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00422 mg/L	0.004 mg/L	106	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		copper, total	7440-50-8	E420	0.0190 mg/L	0.02 mg/L	95.3	70.0	130	----
		iron, total	7439-89-6	E420	1.94 mg/L	2 mg/L	97.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		lithium, total	7439-93-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, total	7440-02-0	E420	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		potassium, total	7440-09-7	E420	3.92 mg/L	4 mg/L	97.9	70.0	130	----
		selenium, total	7782-49-2	E420	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		silicon, total	7440-21-3	E420	9.08 mg/L	10 mg/L	90.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00413 mg/L	0.004 mg/L	103	70.0	130	----
		sodium, total	17341-25-2	E420	2.05 mg/L	2 mg/L	103	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	19.4 mg/L	20 mg/L	97.2	70.0	130	----
		thallium, total	7440-28-0	E420	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		tin, total	7440-31-5	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		titanium, total	7440-32-6	E420	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, total	7440-61-1	E420	0.00444 mg/L	0.004 mg/L	111	70.0	130	----
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.431 mg/L	0.4 mg/L	108	70.0	130	----
<b>Dissolved Metals (QCLot: 167968)</b>										
CG2100444-001	LC_PIZDC1306_WG_Q4-20 20_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0373 mg/L	0.04 mg/L	93.3	70.0	130	----
<b>Dissolved Metals (QCLot: 167969)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 167969) - continued</b>										
CG2100444-001	LC_PIZDC1306_WG_Q4-20 20_NP	aluminum, dissolved	7429-90-5	E421	0.183 mg/L	0.2 mg/L	91.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0182 mg/L	0.02 mg/L	90.9	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0360 mg/L	0.04 mg/L	90.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00797 mg/L	0.01 mg/L	79.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.087 mg/L	0.1 mg/L	86.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00378 mg/L	0.004 mg/L	94.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0176 mg/L	0.02 mg/L	88.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.85 mg/L	2 mg/L	92.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0179 mg/L	0.02 mg/L	89.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0915 mg/L	0.1 mg/L	91.5	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0185 mg/L	0.02 mg/L	92.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0368 mg/L	0.04 mg/L	91.9	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.59 mg/L	4 mg/L	89.8	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.57 mg/L	10 mg/L	85.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00378 mg/L	0.004 mg/L	94.4	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.81 mg/L	2 mg/L	90.3	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.9 mg/L	20 mg/L	99.4	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00356 mg/L	0.004 mg/L	89.0	70.0	130	----
tin, dissolved	7440-31-5	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0345 mg/L	0.04 mg/L	86.2	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00374 mg/L	0.004 mg/L	93.5	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.0919 mg/L	0.1 mg/L	91.9	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.374 mg/L	0.4 mg/L	93.4	70.0	130	----		
<b>Dissolved Metals (QCLot: 168618)</b>										
CG2100444-002	LC_PIZDC0901_WG_Q4-20 20_NP	mercury, dissolved	7439-97-6	E509	0.0000954 mg/L	0.0001 mg/L	95.4	70.0	130	----



COC ID:	<b>DC_GW_20210318</b>	TURNAROUND TIME:		RUSH:	
<b>PROJECT/CLIENT INFO</b>		<b>LABORATORY</b>		<b>OTHER INFO</b>	
Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Tom Jeffery	Lab Contact	Lyudnyla Shvets	Email 1:	tom.jeffery@teck.com x x
Email	tom.jeffery@teck.com	Email	Lyudnyla.Shvets@ALSGlobal.com	Email 2:	teckcoal@equisonline.com x
Address	Box 2003	Address	2559 29 Street NE	Email 3:	drake.tymstra@teck.com x x
	15km North Hwy 43			Email 4:	shanise.fossen@teck.com x
City	Sparwood	Province	BC	City	Calgary
Postal Code	V0B 2G0	Country	Canada	Province	AB
Phone Number	250-425-8478	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403 407 1794	PO number	<b>VPO00739930</b>

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-IKN/TOC	ALS_Package-Sulfide-T	Other	Other	Other	Other	
LC_PIZDC1306_WG_Q4-2020_NP	LC_PIZDC1306	WG	No	3/18/2021	12:55	G	6	1	1			1	1	1	1						
LC_PIZDC0901_WG_Q4-2020_NP	LC_PIZDC0901	WG	No	3/18/2021	11:15	G	6	1	1			1	1	1	1						

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
	D.Tymstra/S. Fossen	18-Mar	<i>[Signature]</i>	3/18/2021

<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Priority (1-2 business days) - 100% surcharge	Priority (next business day) - Contact ALS	
Sampler's Name	S. Fossen/D. Tymstra	Mobile #		
Sampler's Signature	S Fossen	Date/Time	March 18, 2021	

Environmental Division  
Calgary  
Work Order Reference  
**CG2100444**





**Environmental**

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100532**

**Amendment** : **1**

**Client** : **Teck Coal Limited**

**Contact** : Tom Jeffery

**Address** : Line Creek Operations PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada V0B 2G0

**Telephone** : 250-433-8467

**Project** : LINE CREEK OPERATION

**PO** : VPO00739930

**C-O-C number** : LC\_GW\_20210324

**Sampler** : S. Fossen/D. Tymstra

**Site** : ---

**Quote number** : Teck Coal Master Quote

**No. of samples received** : 4

**No. of samples analysed** : 4

**Page** : 1 of 7

**Laboratory** : Calgary - Environmental

**Account Manager** : Lyudmyla Shvets

**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5

**Telephone** : +1 403 407 1800

**Date Samples Received** : 25-Mar-2021 16:00

**Date Analysis Commenced** : 26-Mar-2021

**Issue Date** : 05-Nov-2021 12:39

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

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## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erick Magalhaes	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
James Diacon	Laboratory Analyst	Metals, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_PIZP1105_	WG_Q1-2021_0	WG_Q1-2021_0	WG_Q1-2021_0	----
(Matrix: Water)						WG_Q1-2021_N	11	12	13	
Client sampling date / time					24-Mar-2021 14:50	24-Mar-2021 14:50	24-Mar-2021 14:50	24-Mar-2021 14:50	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100532-001	CG2100532-002	CG2100532-003	CG2100532-004	-----	
					Result	Result	Result	Result	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	23.6 <sup>DLM</sup>	<2.0	<2.0	23.2 <sup>DLM</sup>	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	459	<1.0	<1.0	413	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	560	<1.0	<1.0	504	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	459	<1.0	<1.0	413	----	
conductivity	----	E100	2.0	µS/cm	1300	<2.0	<2.0	1310	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	740	<0.50	<0.50	735	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	424	430	437	393	----	
pH	----	E108	0.10	pH units	7.48	5.07	4.86	7.40	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	830 <sup>DLHC</sup>	<10	<10	859 <sup>DLHC</sup>	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2590 <sup>DLHC</sup>	<1.0	<1.0	4770 <sup>DLHC</sup>	----	
turbidity	----	E121	0.10	NTU	2450	<0.10	<0.10	3730	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0173	<0.0050	0.0061 <sup>RRV</sup>	0.0223	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	2.19	<0.050	<0.050	2.11	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	175	<0.10	<0.10	174	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.207	<0.020	<0.020	0.215	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	<0.050	2.98	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.812	<0.0050	<0.0050	0.0346	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050	<0.0010	0.0010	<0.0050	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0060	<0.0010	<0.0010	0.0064	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.911 <sup>DLHC</sup>	<0.0020	<0.0020	2.48 <sup>DLHC</sup>	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	106	<0.30	<0.30	101	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.57	<0.50	----	276 <sup>DLHC</sup>	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	74.5	<0.50	<0.50	348	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1105_ WG_Q1-2021_N	WG_Q1-2021_0 11	WG_Q1-2021_0 12	WG_Q1-2021_0 13	----
Client sampling date / time					24-Mar-2021 14:50	24-Mar-2021 14:50	24-Mar-2021 14:50	24-Mar-2021 14:50	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100532-001	CG2100532-002	CG2100532-003	CG2100532-004	-----	
					Result	Result	Result	Result	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	16.4	<0.10	<0.10	15.3	----	
cation sum	----	EC101	0.10	meq/L	15.6	<0.10	<0.10	15.6	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	95.1	100	100	102	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.50	<0.010	<0.010	0.971	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	6.52	<0.0030	<0.0030	6.48	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00067	<0.00010	<0.00010	0.00063	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00438	<0.00010	<0.00010	0.00444	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.285	<0.00010	<0.00010	0.291	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	0.470	<0.020	<0.020	0.465	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	0.000111	<0.000050	<0.000050	0.000106	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.031	<0.010	<0.010	0.032	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	1.04	<0.0050	<0.0050	1.01	----	
calcium, total	7440-70-2	E420	0.050	mg/L	240	<0.050	<0.050	244	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.0116	<0.00010	<0.00010	0.0114	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	3.94	<0.10	<0.10	3.90	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.0133	<0.00050	<0.00050	0.0133	----	
iron, total	7439-89-6	E420	0.010	mg/L	12.2	<0.010	<0.010	12.2	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.00548	<0.000050	<0.000050	0.00558	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0308	<0.0010	<0.0010	0.0313	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	66.7	<0.0050	<0.0050	63.0	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.506	<0.00010	<0.00010	0.496	----	
mercury, total	7439-97-6	E508	0.000050	mg/L	<0.000050 <sup>DLM</sup>	<0.000050	<0.000050	<0.000050 <sup>DLM</sup>	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00142	<0.000050	<0.000050	0.00120	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0135	<0.00050	<0.00050	0.0136	----	
potassium, total	7440-09-7	E420	0.050	mg/L	4.14	<0.050	<0.050	3.98	----	
selenium, total	7782-49-2	E420	0.050	µg/L	0.887	<0.050	<0.050	0.631	----	
silicon, total	7440-21-3	E420	0.10	mg/L	15.5	<0.10	<0.10	16.0	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000167	<0.000010	<0.000010	0.000174	----	
sodium, total	17341-25-2	E420	0.050	mg/L	15.8	<0.050	<0.050	15.6	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.502	<0.00020	<0.00020	0.503	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1105_ WG_Q1-2021_N	WG_Q1-2021_0 11	WG_Q1-2021_0 12	WG_Q1-2021_0 13	----
Client sampling date / time					24-Mar-2021 14:50	24-Mar-2021 14:50	24-Mar-2021 14:50	24-Mar-2021 14:50	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100532-001	CG2100532-002	CG2100532-003	CG2100532-004	-----	
					Result	Result	Result	Result	---	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	39.9	<0.50	<0.50	41.9	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000370	<0.000010	<0.000010	0.000372	----	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00035	<0.00010	<0.00010	0.00031	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0528	<0.00030	<0.00030	0.0670	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000860	<0.000010	<0.000010	0.000873	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0192	<0.00050	<0.00050	0.0196	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0902	<0.0030	<0.0030	0.0899	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0040	<0.0010	----	0.0049	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.0304 <sup>DTMF</sup>	<0.00010	----	0.0296 <sup>DTMF</sup>	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00067	<0.00010	----	0.00065	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.102	<0.00010	----	0.109	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.023	<0.010	----	0.022	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.116	<0.0050	----	0.138	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	204	<0.050	<0.050	197	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00011	<0.00010	----	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.81	<0.10	----	0.84	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00029	<0.00020	----	0.00028	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0225	<0.0010	----	0.0216	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	56.1	<0.0050	<0.0050	59.0	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.275	<0.00010	----	0.287	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000884	<0.000050	----	0.000877	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00300	<0.00050	----	0.00312	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.33	<0.050	<0.050	2.41	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.200	<0.050	----	0.166	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.04	<0.050	----	5.29	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1105_ WG_Q1-2021_N	WG_Q1-2021_0 11	WG_Q1-2021_0 12	WG_Q1-2021_0 13	----
Client sampling date / time					24-Mar-2021 14:50	24-Mar-2021 14:50	24-Mar-2021 14:50	24-Mar-2021 14:50	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100532-001	CG2100532-002	CG2100532-003	CG2100532-004	-----	
					Result	Result	Result	Result	---	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000015	<0.000010	----	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	18.2	<0.050	<0.050	18.7	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.446	<0.00020	----	0.448	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	38.8	<0.50	----	39.9	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000040	<0.000010	----	0.000040	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00106 <sup>DTMF</sup>	<0.00010	----	0.00107 <sup>DTMF</sup>	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000544	<0.000010	----	0.000528	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0106	<0.0010	----	0.0114	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Laboratory	Field	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	----	----	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%	95.2	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100532</b>	Page	: 1 of 20
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: Line Creek Operations PO BOX 2003 15km North Hwy 43 Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 25-Mar-2021 16:00
PO	: VPO00739930	Issue Date	: 05-Nov-2021 12:39
C-O-C number	: LC_GW_20210324		
Sampler	: S. Fossen/D. Tymstra		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q1-2021_N	E298	24-Mar-2021	31-Mar-2021	----	----		31-Mar-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q1-2021_011	E298	24-Mar-2021	31-Mar-2021	----	----		31-Mar-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q1-2021_012	E298	24-Mar-2021	31-Mar-2021	----	----		31-Mar-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q1-2021_013	E298	24-Mar-2021	31-Mar-2021	----	----		31-Mar-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q1-2021_N	E235.Br-L	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q1-2021_011	E235.Br-L	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q1-2021_012	E235.Br-L	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE WG_Q1-2021_013	E235.Br-L	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_PIZP1105_WG_Q1-2021_N	E235.Cl-L	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE WG_Q1-2021_011	E235.Cl-L	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE WG_Q1-2021_012	E235.Cl-L	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE WG_Q1-2021_013	E235.Cl-L	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_PIZP1105_WG_Q1-2021_N	E378-U	24-Mar-2021	----	----	----		26-Mar-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE WG_Q1-2021_011	E378-U	24-Mar-2021	----	----	----		26-Mar-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE WG_Q1-2021_012	E378-U	24-Mar-2021	----	----	----		26-Mar-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE WG_Q1-2021_013	E378-U	24-Mar-2021	----	----	----		26-Mar-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZP1105_WG_Q1-2021_N	E235.F	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE WG_Q1-2021_011	E235.F	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE WG_Q1-2021_012	E235.F	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE WG_Q1-2021_013	E235.F	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_PIZP1105_WG_Q1-2021_N	E235.NO3-L	24-Mar-2021	----	----	----		27-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE WG_Q1-2021_011	E235.NO3-L	24-Mar-2021	----	----	----		27-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE WG_Q1-2021_012	E235.NO3-L	24-Mar-2021	----	----	----		27-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE WG_Q1-2021_013	E235.NO3-L	24-Mar-2021	----	----	----		27-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_PIZP1105_WG_Q1-2021_N	E235.NO2-L	24-Mar-2021	----	----	----		27-Mar-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q1-2021_011	E235.NO2-L	24-Mar-2021	----	----	----		27-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q1-2021_012	E235.NO2-L	24-Mar-2021	----	----	----		27-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q1-2021_013	E235.NO2-L	24-Mar-2021	----	----	----		27-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q1-2021_N	E235.SO4	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> WG_Q1-2021_011	E235.SO4	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> WG_Q1-2021_012	E235.SO4	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> WG_Q1-2021_013	E235.SO4	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q1-2021_N	E318	24-Mar-2021	30-Mar-2021	----	----		30-Mar-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q1-2021_011	E318	24-Mar-2021	30-Mar-2021	----	----		30-Mar-2021	28 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q1-2021_012	E318	24-Mar-2021	30-Mar-2021	----	----		30-Mar-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q1-2021_013	E318	24-Mar-2021	30-Mar-2021	----	----		30-Mar-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q1-2021_N	E372-U	24-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q1-2021_011	E372-U	24-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q1-2021_012	E372-U	24-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q1-2021_013	E372-U	24-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1105_WG_Q1-2021_N	E421.Cr-L	24-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q1-2021_011	E421.Cr-L	24-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q1-2021_013	E421.Cr-L	24-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	5 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1105_WG_Q1-2021_N	E509	24-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> WG_Q1-2021_011	E509	24-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> WG_Q1-2021_013	E509	24-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q1-2021_012	E421	24-Mar-2021	26-Mar-2021	----	----		26-Mar-2021	180 days	2 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1105_WG_Q1-2021_N	E421	24-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q1-2021_011	E421	24-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q1-2021_013	E421	24-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	5 days	✔	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_PIZP1105_WG_Q1-2021_N	E601A	24-Mar-2021	29-Mar-2021	14 days	5 days	✔	30-Mar-2021	40 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1105_WG_Q1-2021_N	E358-L	24-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	9 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> WG_Q1-2021_011	E358-L	24-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> WG_Q1-2021_013	E358-L	24-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q1-2021_N	E355-L	24-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q1-2021_011	E355-L	24-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q1-2021_012	E355-L	24-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q1-2021_013	E355-L	24-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q1-2021_N	E283	24-Mar-2021	----	----	----		05-Apr-2021	14 days	12 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> WG_Q1-2021_011	E283	24-Mar-2021	----	----	----		05-Apr-2021	14 days	12 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> WG_Q1-2021_012	E283	24-Mar-2021	----	----	----		05-Apr-2021	14 days	12 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Acidity by Titration</b>										
HDPE WG_Q1-2021_013	E283	24-Mar-2021	----	----	----		05-Apr-2021	14 days	12 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE LC_PIZP1105_WG_Q1-2021_N	E290	24-Mar-2021	----	----	----		06-Apr-2021	14 days	13 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE WG_Q1-2021_011	E290	24-Mar-2021	----	----	----		06-Apr-2021	14 days	13 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE WG_Q1-2021_012	E290	24-Mar-2021	----	----	----		06-Apr-2021	14 days	13 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE WG_Q1-2021_013	E290	24-Mar-2021	----	----	----		06-Apr-2021	14 days	13 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_PIZP1105_WG_Q1-2021_N	E100	24-Mar-2021	----	----	----		06-Apr-2021	28 days	13 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE WG_Q1-2021_011	E100	24-Mar-2021	----	----	----		06-Apr-2021	28 days	13 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE WG_Q1-2021_012	E100	24-Mar-2021	----	----	----		06-Apr-2021	28 days	13 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE WG_Q1-2021_013	E100	24-Mar-2021	----	----	----		06-Apr-2021	28 days	13 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZP1105_WG_Q1-2021_N	E125	24-Mar-2021	----	----	----		01-Apr-2021	0.25 hrs	183 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE WG_Q1-2021_011	E125	24-Mar-2021	----	----	----		01-Apr-2021	0.25 hrs	183 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE WG_Q1-2021_012	E125	24-Mar-2021	----	----	----		01-Apr-2021	0.25 hrs	183 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE WG_Q1-2021_013	E125	24-Mar-2021	----	----	----		01-Apr-2021	0.25 hrs	183 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZP1105_WG_Q1-2021_N	E108	24-Mar-2021	----	----	----		06-Apr-2021	0.25 hrs	313 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE WG_Q1-2021_011	E108	24-Mar-2021	----	----	----		06-Apr-2021	0.25 hrs	313 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE WG_Q1-2021_012	E108	24-Mar-2021	----	----	----		06-Apr-2021	0.25 hrs	313 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE WG_Q1-2021_013	E108	24-Mar-2021	----	----	----		06-Apr-2021	0.25 hrs	313 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZP1105_WG_Q1-2021_N	E162	24-Mar-2021	----	----	----		31-Mar-2021	7 days	7 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> WG_Q1-2021_011	E162	24-Mar-2021	----	----	----		31-Mar-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> WG_Q1-2021_012	E162	24-Mar-2021	----	----	----		31-Mar-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> WG_Q1-2021_013	E162	24-Mar-2021	----	----	----		31-Mar-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZP1105_WG_Q1-2021_N	E160-L	24-Mar-2021	----	----	----		31-Mar-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> WG_Q1-2021_011	E160-L	24-Mar-2021	----	----	----		31-Mar-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> WG_Q1-2021_012	E160-L	24-Mar-2021	----	----	----		31-Mar-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> WG_Q1-2021_013	E160-L	24-Mar-2021	----	----	----		31-Mar-2021	7 days	7 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q1-2021_N	E121	24-Mar-2021	----	----	----		26-Mar-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> WG_Q1-2021_011	E121	24-Mar-2021	----	----	----		26-Mar-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> WG_Q1-2021_012	E121	24-Mar-2021	----	----	----		26-Mar-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> WG_Q1-2021_013	E121	24-Mar-2021	----	----	----		26-Mar-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZP1105_WG_Q1-2021_N	E420.Cr-L	24-Mar-2021	----	----	----		28-Mar-2021	180 days	4 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> WG_Q1-2021_011	E420.Cr-L	24-Mar-2021	----	----	----		28-Mar-2021	180 days	4 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> WG_Q1-2021_012	E420.Cr-L	24-Mar-2021	----	----	----		28-Mar-2021	180 days	4 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> WG_Q1-2021_013	E420.Cr-L	24-Mar-2021	----	----	----		28-Mar-2021	180 days	4 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_PIZP1105_WG_Q1-2021_N	E508	24-Mar-2021	----	----	----		01-Apr-2021	28 days	8 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> WG_Q1-2021_011	E508	24-Mar-2021	----	----	----		01-Apr-2021	28 days	8 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> WG_Q1-2021_012	E508	24-Mar-2021	----	----	----		01-Apr-2021	28 days	8 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> WG_Q1-2021_013	E508	24-Mar-2021	----	----	----		01-Apr-2021	28 days	8 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1105_WG_Q1-2021_N	E420	24-Mar-2021	----	----	----		28-Mar-2021	180 days	4 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> WG_Q1-2021_011	E420	24-Mar-2021	----	----	----		28-Mar-2021	180 days	4 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> WG_Q1-2021_012	E420	24-Mar-2021	----	----	----		28-Mar-2021	180 days	4 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> WG_Q1-2021_013	E420	24-Mar-2021	----	----	----		28-Mar-2021	180 days	4 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	173503	1	19	5.2	5.0	✔
Alkalinity Species by Titration	E290	174234	1	29	3.4	5.0	✘
Ammonia by Fluorescence	E298	171610	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	170049	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	170050	1	20	5.0	5.0	✔
Conductivity in Water	E100	174232	1	33	3.0	5.0	✘
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170625	1	6	16.6	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	172468	1	19	5.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	169518	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	172874	1	9	11.1	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169706	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	170053	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	170051	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	170052	1	20	5.0	5.0	✔
ORP by Electrode	E125	172161	1	20	5.0	5.0	✔
pH by Meter	E108	174233	1	33	3.0	5.0	✘
Sulfate in Water by IC	E235.SO4	170048	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	171855	2	40	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	170366	1	5	20.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	171334	1	15	6.6	5.0	✔
Total Mercury in Water by CVAAS	E508	172472	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	170367	1	19	5.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	172875	1	13	7.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171015	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	169249	1	13	7.6	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	173503	1	19	5.2	5.0	✔
Alkalinity Species by Titration	E290	174234	2	29	6.9	5.0	✔
Ammonia by Fluorescence	E298	171610	1	20	5.0	5.0	✔
BC PHC - EPH by GC-FID	E601A	170768	1	12	8.3	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	170049	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	170050	1	20	5.0	5.0	✔
Conductivity in Water	E100	174232	2	33	6.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170625	1	6	16.6	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	172468	1	19	5.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	169518	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	172874	1	9	11.1	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169706	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	170053	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	170051	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	170052	1	20	5.0	5.0	✓
ORP by Electrode	E125	172161	1	20	5.0	5.0	✓
pH by Meter	E108	174233	2	33	6.0	5.0	✓
Sulfate in Water by IC	E235.SO4	170048	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	171855	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	170366	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	171334	1	15	6.6	5.0	✓
Total Mercury in Water by CVAAS	E508	172472	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	170367	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	172875	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171015	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	171845	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	169249	1	13	7.6	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	173503	1	19	5.2	5.0	✓
Alkalinity Species by Titration	E290	174234	2	29	6.9	5.0	✓
Ammonia by Fluorescence	E298	171610	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	170768	1	12	8.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	170049	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	170050	1	20	5.0	5.0	✓
Conductivity in Water	E100	174232	2	33	6.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170625	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	172468	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	169518	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	172874	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169706	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	170053	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	170051	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	170052	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	170048	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	171855	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	170366	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	171334	1	15	6.6	5.0	✓
Total Mercury in Water by CVAAS	E508	172472	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	170367	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	172875	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171015	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	171845	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
Method Blanks (MB) - Continued							
Turbidity by Nephelometry	E121	169249	1	13	7.6	5.0	✔
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	171610	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	170049	0	20	0.0	5.0	✘
Chloride in Water by IC (Low Level)	E235.Cl-L	170050	0	20	0.0	5.0	✘
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170625	1	6	16.6	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	172468	1	19	5.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	169518	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	172874	1	9	11.1	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169706	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	170053	0	20	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	170051	0	20	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	170052	0	20	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	170048	0	20	0.0	5.0	✘
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	170366	1	5	20.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	171334	1	15	6.6	5.0	✔
Total Mercury in Water by CVAAS	E508	172472	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	170367	1	19	5.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	172875	1	13	7.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171015	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHC - EPH by GC-FID	E601A  Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
PHCs and PAHs Hexane Extraction	EP601  Calgary - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

## QUALITY CONTROL REPORT

**Work Order** : **CG2100532**

**Page** : 1 of 22

**Amendment** : **1**

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : Line Creek Operations PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : LC\_GW\_20210324  
**Sampler** : S. Fossen/D. Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 25-Mar-2021 16:00  
**Date Analysis Commenced** : 26-Mar-2021  
**Issue Date** : 05-Nov-2021 12:39

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erick Magalhaes	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
James Diacon	Laboratory Analyst	Metals, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta

Rebeccah Baker  
Ruifang Zheng  
Sara Niroomand  
Shaneel Dayal  
Sorina Motea

Analyst  
Analyst  
  
Analyst  
Laboratory Analyst

Inorganics, Calgary, Alberta  
Inorganics, Calgary, Alberta  
Inorganics, Calgary, Alberta  
Metals, Burnaby, British Columbia  
Organics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 169249)</b>											
CG2100526-002	Anonymous	turbidity	----	E121	0.10	NTU	0.13	0.14	0.01	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 171855)</b>											
CG2100520-033	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1950	1970	1.28%	20%	----
<b>Physical Tests (QC Lot: 171856)</b>											
CG2100532-002	WG_Q1-2021_011	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 172161)</b>											
CG2100529-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	436	423	2.82%	15%	----
<b>Physical Tests (QC Lot: 173503)</b>											
CG2100525-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 174235)</b>											
CG2100534-004	Anonymous	conductivity	----	E100	2.0	µS/cm	189	187	0.798%	10%	----
<b>Physical Tests (QC Lot: 174236)</b>											
CG2100534-004	Anonymous	pH	----	E108	0.10	pH units	7.78	7.84	0.768%	4%	----
<b>Physical Tests (QC Lot: 174237)</b>											
CG2100534-004	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	87.9	85.3	3.00%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	87.9	85.3	3.00%	20%	----
<b>Anions and Nutrients (QC Lot: 169706)</b>											
CG2100527-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170048)</b>											
CG2100547-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170049)</b>											
CG2100547-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170050)</b>											
CG2100547-005	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170051)</b>											
CG2100547-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170052)</b>											
CG2100547-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170053)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 170053) - continued</b>											
CG2100547-005	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 171015)</b>											
CG2100525-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0100	mg/L	0.0419	0.0384	0.0035	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 171334)</b>											
CG2100529-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 171610)</b>											
CG2100525-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0052	0.0002	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 172874)</b>											
CG2100532-001	LC_PIZP1105_WG_Q1-20 21_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.57	<0.50	0.07	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 172875)</b>											
CG2100532-001	LC_PIZP1105_WG_Q1-20 21_N	carbon, total organic [TOC]	----	E355-L	2.50	mg/L	74.5	79.6	6.65%	20%	----
<b>Total Metals (QC Lot: 170366)</b>											
CG2100528-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	0.00028	0.00029	0.000006	Diff <2x LOR	----
<b>Total Metals (QC Lot: 170367)</b>											
CG2100528-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00020	0.00021	0.000005	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00098	0.00101	0.00003	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0517	0.0528	2.15%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.048	0.050	0.002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	0.126 µg/L	0.000142	12.0%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	283	292	3.40%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	5.13 µg/L	0.00535	4.19%	20%	----
		copper, total	7440-50-8	E420	0.00100	mg/L	0.00108	0.00116	0.00008	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	1.15	1.20	4.44%	20%	----
		lead, total	7439-92-1	E420	0.000100	mg/L	0.000464	0.000480	0.000016	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.0619	0.0634	2.31%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	174	177	1.63%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	0.142	0.146	2.42%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00208	0.00228	9.23%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.0175	0.0179	2.24%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	26.0	26.8	3.11%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	108 µg/L	0.109	1.01%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 170367) - continued</b>											
CG2100528-001	Anonymous	silicon, total	7440-21-3	E420	0.20	mg/L	3.98	4.01	0.827%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	286	288	0.634%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.351	0.366	4.38%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	338	346	2.24%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.000030	0.000031	0.000001	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0111	0.0114	2.05%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.0091	0.0094	0.0003	Diff <2x LOR	----
<b>Total Metals (QC Lot: 172472)</b>											
CG2100532-001	LC_PIZP1105_WG_Q1-20 21_N	mercury, total	7439-97-6	E508	0.0000500	mg/L	<0.0000500	<0.0000500	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 169518)</b>											
CG2100517-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0022	0.0016	0.0006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00021	0.00020	0.000005	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0374	0.0368	1.90%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	50.2	52.5	4.48%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0017	0.0017	0.000008	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	15.4	15.4	0.305%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00064	0.00064	0.0000004	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000570	0.000549	3.84%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.383	0.381	0.002	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000345	0.000287	0.000058	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.20	2.16	1.70%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 169518) - continued</b>											
CG2100517-001	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.35	1.33	1.86%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.191	0.187	2.33%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	14.5	14.0	3.63%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000534	0.000522	2.20%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 170625)</b>											
CG2100528-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00021	0.00024	0.00003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 170626)</b>											
CG2100528-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	<0.0010	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00017	0.00016	0.000009	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00073	0.00076	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0525	0.0511	2.64%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.048	0.047	0.0009	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0222 µg/L	0.0000210	0.0000012	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	302	297	1.68%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	4.80 µg/L	0.00486	1.03%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.286	0.289	1.15%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0685	0.0638	7.09%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	168	169	0.764%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.134	0.139	3.67%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00214	0.00213	0.641%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0162	0.0164	1.35%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	26.3	27.1	2.88%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	127 µg/L	0.133	4.49%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.93	4.00	1.71%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 170626) - continued</b>											
CG2100528-001	Anonymous	sodium, dissolved	17341-25-2	E421	0.050	mg/L	284	291	2.48%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.371	0.357	3.90%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	316	326	2.96%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00974	0.00946	2.87%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0048	0.0050	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 172468)</b>											
CG2100532-001	LC_PIZP1105_WG_Q1-20 21_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 169249)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 171845)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 171855)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 171856)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 173503)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 174232)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 174234)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 174235)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 174237)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 169706)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 170048)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 170049)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 170050)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 170051)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 170052)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 170053)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 171015)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 171334)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 171610)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 172874)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 172875)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 170366)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 170367)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 170367) - continued</b>						
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 172472)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 169518)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 169518) - continued</b>						
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 170625)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 170626)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	MBRR
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 170626) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 172468)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Hydrocarbons (QCLot: 170768)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----

**Qualifiers**

Qualifier	Description
MBRR	Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 169249)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 171845)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	99.2	85.0	115	---
<b>Physical Tests (QCLot: 171855)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 171856)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	90.1	85.0	115	---
<b>Physical Tests (QCLot: 172161)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Physical Tests (QCLot: 173503)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	110	85.0	115	---
<b>Physical Tests (QCLot: 174232)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	---
<b>Physical Tests (QCLot: 174233)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 174234)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 174235)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.0	90.0	110	---
<b>Physical Tests (QCLot: 174236)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 174237)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	106	85.0	115	---
<b>Anions and Nutrients (QCLot: 169706)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	95.8	80.0	120	---
<b>Anions and Nutrients (QCLot: 170048)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 170049)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 170050)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 170051)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 170051) - continued</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 170052)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	95.8	90.0	110	----
<b>Anions and Nutrients (QCLot: 170053)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 171015)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	84.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 171334)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	90.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 171610)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	92.1	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 172874)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 172875)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	104	80.0	120	----
<b>Total Metals (QCLot: 170366)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
<b>Total Metals (QCLot: 170367)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	96.9	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	99.1	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.8	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	93.9	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.6	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	94.7	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.6	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.1	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	95.2	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 170367) - continued</b>									
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.9	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.8	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	96.8	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.5	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	98.9	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.4	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	95.9	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.0	80.0	120	----
<b>Total Metals (QCLot: 172472)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 169518)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	94.9	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.4	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	96.1	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	91.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	94.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.6	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	93.3	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	95.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	93.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	94.2	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.3	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	105	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	95.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	91.6	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	96.9	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 169518) - continued</b>									
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	90.0	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.4	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.4	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	98.2	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.6	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	90.4	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	91.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	92.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	93.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.6	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.5	80.0	120	----
<b>Dissolved Metals (QCLot: 170625)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 170626)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.7	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.9	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	95.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 170626) - continued</b>									
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	107	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.3	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.6	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	105	80.0	120	----
<b>Hydrocarbons (QCLot: 170768)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	102	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	106	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	103	70.0	130	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 169706)</b>										
CG2100528-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0556 mg/L	0.05 mg/L	111	70.0	130	----
<b>Anions and Nutrients (QCLot: 171015)</b>										
CG2100525-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0703 mg/L	0.0676 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 171334)</b>										
CG2100529-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.40 mg/L	2.5 mg/L	96.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 171610)</b>										
CG2100525-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 172874)</b>										
CG2100532-002	WG_Q1-2021_011	carbon, dissolved organic [DOC]	----	E358-L	23.8 mg/L	23.9 mg/L	99.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 172875)</b>										
CG2100532-002	WG_Q1-2021_011	carbon, total organic [TOC]	----	E355-L	24.2 mg/L	23.9 mg/L	101	70.0	130	----
<b>Total Metals (QCLot: 170366)</b>										
CG2100528-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0843 mg/L	0.08 mg/L	105	70.0	130	----
<b>Total Metals (QCLot: 170367)</b>										
CG2100528-001	Anonymous	aluminum, total	7429-90-5	E420	0.418 mg/L	0.4 mg/L	104	70.0	130	----
		antimony, total	7440-36-0	E420	0.0433 mg/L	0.04 mg/L	108	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0868 mg/L	0.08 mg/L	108	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		boron, total	7440-42-8	E420	0.208 mg/L	0.2 mg/L	104	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00757 mg/L	0.008 mg/L	94.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		copper, total	7440-50-8	E420	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		iron, total	7439-89-6	E420	4.15 mg/L	4 mg/L	104	70.0	130	----
		lead, total	7439-92-1	E420	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.215 mg/L	0.2 mg/L	108	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 170367) - continued</b>										
CG2100528-001	Anonymous	manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0454 mg/L	0.04 mg/L	113	70.0	130	----
		nickel, total	7440-02-0	E420	0.0754 mg/L	0.08 mg/L	94.3	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	20.8 mg/L	20 mg/L	104	70.0	130	----
		silver, total	7440-22-4	E420	0.00808 mg/L	0.008 mg/L	101	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00771 mg/L	0.008 mg/L	96.4	70.0	130	----
		tin, total	7440-31-5	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		titanium, total	7440-32-6	E420	0.0920 mg/L	0.08 mg/L	115	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.219 mg/L	0.2 mg/L	109	70.0	130	----
		zinc, total	7440-66-6	E420	0.745 mg/L	0.8 mg/L	93.1	70.0	130	----
<b>Total Metals (QCLot: 172472)</b>										
CG2100532-002	WG_Q1-2021_011	mercury, total	7439-97-6	E508	0.000106 mg/L	0.0001 mg/L	106	70.0	130	----
<b>Dissolved Metals (QCLot: 169518)</b>										
CG2100517-001	Anonymous	aluminum, dissolved	7429-90-5	E421	2.22 mg/L	2 mg/L	111	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.215 mg/L	0.2 mg/L	108	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.442 mg/L	0.4 mg/L	110	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		boron, dissolved	7440-42-8	E421	1.08 mg/L	1 mg/L	108	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0432 mg/L	0.04 mg/L	108	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.214 mg/L	0.2 mg/L	107	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.213 mg/L	0.2 mg/L	107	70.0	130	----
		iron, dissolved	7439-89-6	E421	21.1 mg/L	20 mg/L	106	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.214 mg/L	0.2 mg/L	107	70.0	130	----
		lithium, dissolved	7439-93-2	E421	1.13 mg/L	1 mg/L	113	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.199 mg/L	0.2 mg/L	99.5	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 169518) - continued</b>										
CG2100517-001	Anonymous	nickel, dissolved	7440-02-0	E421	0.429 mg/L	0.4 mg/L	107	70.0	130	----
		potassium, dissolved	7440-09-7	E421	42.9 mg/L	40 mg/L	107	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.416 mg/L	0.4 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	102 mg/L	100 mg/L	102	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		sodium, dissolved	17341-25-2	E421	21.9 mg/L	20 mg/L	110	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	193 mg/L	200 mg/L	96.6	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.413 mg/L	0.4 mg/L	103	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0434 mg/L	0.04 mg/L	108	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	1.06 mg/L	1 mg/L	106	70.0	130	----
		zinc, dissolved	7440-66-6	E421	4.56 mg/L	4 mg/L	114	70.0	130	----
<b>Dissolved Metals (QCLot: 170625)</b>										
CG2100528-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
<b>Dissolved Metals (QCLot: 170626)</b>										
CG2100528-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.215 mg/L	0.2 mg/L	108	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0223 mg/L	0.02 mg/L	111	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0435 mg/L	0.04 mg/L	109	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0161 mg/L	0.02 mg/L	80.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.096 mg/L	0.1 mg/L	95.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00352 mg/L	0.004 mg/L	88.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0176 mg/L	0.02 mg/L	88.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	98.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0169 mg/L	0.02 mg/L	84.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0219 mg/L	0.02 mg/L	109	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0353 mg/L	0.04 mg/L	88.2	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 170626) - continued</b>										
CG2100528-001	Anonymous	selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	10.3 mg/L	10 mg/L	103	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00297 mg/L	0.004 mg/L	74.3	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00338 mg/L	0.004 mg/L	84.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0462 mg/L	0.04 mg/L	115	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.113 mg/L	0.1 mg/L	113	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.339 mg/L	0.4 mg/L	84.7	70.0	130	----
<b>Dissolved Metals (QCLot: 172468)</b>										
CG2100532-002	WG_Q1-2021_011	mercury, dissolved	7439-97-6	E509	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----



COC ID: **LC\_GW\_20210324**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO						
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD	
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com			x	x	x
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			x	x	x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com			x	x	x
	15km North Hwy 43							Email 4:	shanise.fossen@teck.com			x	x	x
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:						
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number				VPO00739930		
Phone Number	250-425-8478			Phone Number	403 407 1794									

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	N	Y	Y	N	Y	N	N	N	N	NaOH/Zn Ac				
								PREP														
								ANALYSIS														
LC_PIZP1105_WG_Q1-2021_N	LC_PIZP1105	WG	No	3/24/2021	14:50	G	9															
WG_Q1-2021_011	LC_PIZP1105	WG	No	3/24/2021	14:50	G	7			H2SO4	HCl	HCl	HNO3	HNO3	NONE	H2SO4						
WG_Q1-2021_012	LC_PIZP1105	WG	No	3/24/2021	14:50	G	4															
WG_Q1-2021_013	LC_PIZP1105	WG	No	3/24/2021	14:50	G	7															

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S. Fossen	24-Mar		3/29 4:00 PM

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	S. Fossen/D. Tymstra	Mobile #	Sampler's Signature	S Fossen	Date/Time	March 24, 2021
	X										

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2100532**



## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>CG2100551</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Tom Jeffery <b>Address</b> : Line Creek Operations PO BOX 2003 15km North Hwy 43 Sparwood BC Canada V0B 2G0 <b>Telephone</b> : 250-433-8467 <b>Project</b> : LINE CREEK OPERATION <b>PO</b> : VPO00739930 <b>C-O-C number</b> : LC_GW_20210325 <b>Sampler</b> : S. Fossen/D. Tymstra <b>Site</b> : ---- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 1 <b>No. of samples analysed</b> : 1	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Lyudmyla Shvets <b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5 <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 26-Mar-2021 09:25 <b>Date Analysis Commenced</b> : 26-Mar-2021 <b>Issue Date</b> : 05-Nov-2021 12:58
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_PIZP1104_	---	---	---	---
(Matrix: Water)					WG_Q1-2021_N					
					Client sampling date / time	24-Mar-2021 14:00	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100551-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	8.8	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	251	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	306	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	251	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	1190	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	595	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	409	---	---	---	---	---
pH	---	E108	0.10	pH units	7.81	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	803 <sup>DLHC</sup>	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	24.3	---	---	---	---	---
turbidity	---	E121	0.10	NTU	24.2	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0193	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	2.71	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	226	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.270	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.243	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.23	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0071	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0448	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	81.4	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	0.69	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	0.67	---	---	---	---	---
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_PIZP1104_	---	---	---	---
(Matrix: Water)					WG_Q1-2021_N					
Client sampling date / time					24-Mar-2021 14:00	---	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100551-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	13.2	---	---	---	---	---
cation sum	---	EC101	0.10	meq/L	12.7	---	---	---	---	---
ion balance (cations/anions ratio)	---	EC101	0.010	%	96.2	---	---	---	---	---
ion balance (cation-anion difference)	---	EC101	0.010	%	1.93	---	---	---	---	---
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.111	---	---	---	---	---
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00012	---	---	---	---	---
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00101	---	---	---	---	---
barium, total	7440-39-3	E420	0.00010	mg/L	0.276	---	---	---	---	---
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	---	---	---	---	---
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	---	---	---	---	---
boron, total	7440-42-8	E420	0.010	mg/L	0.025	---	---	---	---	---
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0574	---	---	---	---	---
calcium, total	7440-70-2	E420	0.050	mg/L	147	---	---	---	---	---
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.0144	---	---	---	---	---
cobalt, total	7440-48-4	E420	0.10	µg/L	0.89	---	---	---	---	---
copper, total	7440-50-8	E420	0.00050	mg/L	0.00136	---	---	---	---	---
iron, total	7439-89-6	E420	0.010	mg/L	1.98	---	---	---	---	---
lead, total	7439-92-1	E420	0.000050	mg/L	0.000263	---	---	---	---	---
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0242	---	---	---	---	---
magnesium, total	7439-95-4	E420	0.0050	mg/L	46.8	---	---	---	---	---
manganese, total	7439-96-5	E420	0.00010	mg/L	0.349	---	---	---	---	---
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	---	---	---	---	---
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00195	---	---	---	---	---
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0104	---	---	---	---	---
potassium, total	7440-09-7	E420	0.050	mg/L	2.90	---	---	---	---	---
selenium, total	7782-49-2	E420	0.050	µg/L	0.136	---	---	---	---	---
silicon, total	7440-21-3	E420	0.10	mg/L	4.62	---	---	---	---	---
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	---	---	---	---	---
sodium, total	17341-25-2	E420	0.050	mg/L	14.8	---	---	---	---	---
strontium, total	7440-24-6	E420	0.00020	mg/L	0.506	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1104_ WG_Q1-2021_N	----	----	----	----
Client sampling date / time					24-Mar-2021 14:00	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100551-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	24.2	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000018	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00028	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00158	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00313	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00059	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0058	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00064	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.288	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.024	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0212	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	159	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00071	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.76	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	1.42	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0249	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	48.0	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.314	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00182	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00872	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.79	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.143	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.71	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1104_ WG_Q1-2021_N	----	----	----	----
Client sampling date / time					24-Mar-2021 14:00	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100551-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	15.1	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.538	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	25.0	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00299	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0028	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100551</b>	Page	: 1 of 12
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: Line Creek Operations PO BOX 2003 15km North Hwy 43 Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 26-Mar-2021 09:25
PO	: VPO00739930	Issue Date	: 05-Nov-2021 12:59
C-O-C number	: LC_GW_20210325		
Sampler	: S. Fossen/D. Tymstra		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q1-2021_N	E298	24-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	9 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q1-2021_N	E235.Br-L	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q1-2021_N	E235.Cl-L	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q1-2021_N	E378-U	24-Mar-2021	----	----	----		26-Mar-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q1-2021_N	E235.F	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q1-2021_N	E235.NO3-L	24-Mar-2021	----	----	----		27-Mar-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q1-2021_N	E235.NO2-L	24-Mar-2021	----	----	----		27-Mar-2021	3 days	3 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q1-2021_N	E235.SO4	24-Mar-2021	----	----	----		27-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q1-2021_N	E318	24-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q1-2021_N	E372-U	24-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1104_WG_Q1-2021_N	E421.Cr-L	24-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1104_WG_Q1-2021_N	E509	24-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1104_WG_Q1-2021_N	E421	24-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1104_WG_Q1-2021_N	E358-L	24-Mar-2021	05-Apr-2021	----	----		05-Apr-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q1-2021_N	E355-L	24-Mar-2021	05-Apr-2021	----	----		05-Apr-2021	28 days	12 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q1-2021_N	E283	24-Mar-2021	----	----	----		06-Apr-2021	14 days	13 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q1-2021_N	E290	24-Mar-2021	----	----	----		07-Apr-2021	14 days	14 days	✓
<b>Physical Tests : Conductivity in Water</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q1-2021_N	E100	24-Mar-2021	----	----	----		07-Apr-2021	28 days	14 days	✓
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q1-2021_N	E125	24-Mar-2021	----	----	----		03-Apr-2021	0.25 hrs	238 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q1-2021_N	E108	24-Mar-2021	----	----	----		07-Apr-2021	0.25 hrs	338 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q1-2021_N	E162	24-Mar-2021	----	----	----		31-Mar-2021	7 days	7 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_PIZP1104_WG_Q1-2021_N	E160-L	24-Mar-2021	----	----	----		31-Mar-2021	7 days	7 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q1-2021_N	E121	24-Mar-2021	----	----	----		27-Mar-2021	3 days	3 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1104_WG_Q1-2021_N	E420.Cr-L	24-Mar-2021	----	----	----		30-Mar-2021	180 days	6 days	✓
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> LC_PIZP1104_WG_Q1-2021_N	E508	24-Mar-2021	----	----	----		03-Apr-2021	28 days	10 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1104_WG_Q1-2021_N	E420	24-Mar-2021	----	----	----		30-Mar-2021	180 days	6 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	174170	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	174922	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	172852	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	170049	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	170050	1	20	5.0	5.0	✓
Conductivity in Water	E100	174920	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	172528	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	170622	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173661	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169830	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	170053	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	170051	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	170052	1	20	5.0	5.0	✓
ORP by Electrode	E125	173144	1	20	5.0	5.0	✓
pH by Meter	E108	174921	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	170048	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	171856	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	170467	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172854	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	173076	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	170466	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173662	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171017	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	170009	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	174170	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	174922	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	172852	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	170049	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	170050	1	20	5.0	5.0	✓
Conductivity in Water	E100	174920	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	172528	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	170622	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173661	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169830	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	170053	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	170051	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	170052	1	20	5.0	5.0	✓
ORP by Electrode	E125	173144	1	20	5.0	5.0	✓
pH by Meter	E108	174921	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	170048	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	171856	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	170467	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172854	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	173076	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	170466	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173662	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171017	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	171845	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	170009	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	174170	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	174922	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	172852	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	170049	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	170050	1	20	5.0	5.0	✓
Conductivity in Water	E100	174920	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	172528	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	170622	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173661	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169830	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	170053	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	170051	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	170052	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	170048	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	171856	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	170467	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172854	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	173076	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	170466	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173662	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171017	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	171845	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	170009	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	172852	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	170049	0	20	0.0	5.0	✘
Chloride in Water by IC (Low Level)	E235.Cl-L	170050	0	20	0.0	5.0	✘
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	172528	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	170622	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173661	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169830	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	170053	0	20	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	170051	0	20	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	170052	0	20	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	170048	0	20	0.0	5.0	✘
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	170467	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172854	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	173076	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	170466	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173662	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171017	1	20	5.0	5.0	✔





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

Page : 12 of 12  
Work Order : CG2100551 Amendment 1  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			

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## QUALITY CONTROL REPORT

**Work Order** : **CG2100551**  
**Amendment** : **1**

Page : 1 of 17

Client : Teck Coal Limited  
 Contact : Tom Jeffery  
 Address : Line Creek Operations PO BOX 2003 15km North Hwy 43  
           Sparwood BC Canada V0B 2G0  
 Telephone : 250-433-8467  
 Project : LINE CREEK OPERATION  
 PO : VPO00739930  
 C-O-C number : LC\_GW\_20210325  
 Sampler : S. Fossen/D. Tymstra  
 Site : ----  
 Quote number : Teck Coal Master Quote  
 No. of samples received : 1  
 No. of samples analysed : 1

Laboratory : Calgary - Environmental  
 Account Manager : Lyudmyla Shvets  
 Address : 2559 29th Street NE  
           Calgary, Alberta Canada T1Y 7B5  
 Telephone : +1 403 407 1800  
 Date Samples Received : 26-Mar-2021 09:25  
 Date Analysis Commenced : 26-Mar-2021  
 Issue Date : 05-Nov-2021 12:58

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 170009)</b>											
CG2100551-001	LC_PIZP1104_WG_Q1-20 21_N	turbidity	----	E121	0.10	NTU	24.2	24.0	0.829%	15%	----
<b>Physical Tests (QC Lot: 171856)</b>											
CG2100532-002	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 173144)</b>											
CG2100540-021	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	402	399	0.649%	15%	----
<b>Physical Tests (QC Lot: 174170)</b>											
CG2100548-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	2.5	3.1	0.6	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 174920)</b>											
CG2100550-001	Anonymous	conductivity	----	E100	2.0	µS/cm	3080	3060	0.651%	10%	----
<b>Physical Tests (QC Lot: 174921)</b>											
CG2100550-001	Anonymous	pH	----	E108	0.10	pH units	7.74	7.74	0.00%	4%	----
<b>Physical Tests (QC Lot: 174922)</b>											
CG2100550-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	494	508	2.79%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	494	508	2.79%	20%	----
<b>Anions and Nutrients (QC Lot: 169830)</b>											
CG2100540-012	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170048)</b>											
CG2100547-005	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170049)</b>											
CG2100547-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170050)</b>											
CG2100547-005	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170051)</b>											
CG2100547-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170052)</b>											
CG2100547-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170053)</b>											
CG2100547-005	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 171017)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 171017) - continued</b>											
CG2100540-014	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172852)</b>											
CG2100556-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172854)</b>											
CG2100544-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.133	0.172	0.039	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 173661)</b>											
CG2100544-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.28	2.36	0.08	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 173662)</b>											
CG2100544-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.42	2.94	0.51	Diff <2x LOR	----
<b>Total Metals (QC Lot: 170466)</b>											
CG2100544-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0071	0.0067	0.0003	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00018	0.00017	0.000004	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0218	0.0213	2.38%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.029	0.028	0.00004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0190 µg/L	0.0000178	0.0000012	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	281	288	2.56%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.89 µg/L	0.00089	0.000004	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.437	0.443	1.32%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0402	0.0418	3.80%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	155	156	0.536%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0905	0.0903	0.184%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000863	0.000824	4.72%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0103	0.0104	1.01%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	3.90	3.90	0.0207%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	1.42 µg/L	0.00140	1.11%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.68	4.66	0.410%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	7.92	8.09	2.13%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.412	0.417	1.04%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	353	353	0.0114%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 170466) - continued</b>											
CG2100544-001	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	0.000012	0.000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.000030	mg/L	<0.000030	<0.000030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00597	0.00594	0.510%	20%	----
		vanadium, total	7440-62-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0190	0.0192	0.0002	Diff <2x LOR	----
<b>Total Metals (QC Lot: 170467)</b>											
CG2100544-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 173076)</b>											
CG2100551-001	LC_PIZP1104_WG_Q1-20 21_N	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 170621)</b>											
CG2100548-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00018	0.00020	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 170622)</b>											
CG2100548-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0019	0.0007	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.000010	mg/L	0.00012	0.00012	0.000009	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.000010	mg/L	0.119	0.126	5.42%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0089 µg/L	0.0000079	0.0000010	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	68.4	66.0	3.59%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0050	0.0048	0.0001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.8	19.2	1.97%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00012	0.00025	0.00014	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00151	0.00137	9.33%	20%	----
		nickel, dissolved	7440-02-0	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.638	0.642	0.701%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	10.8 µg/L	0.00976	10.4%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.75	2.62	4.55%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 170622) - continued</b>											
CG2100548-001	Anonymous	sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.41	2.47	2.38%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.224	0.211	5.95%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	23.6	22.1	6.73%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000855	0.000806	5.92%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 172528)</b>											
CG2100549-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 170009)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 171845)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 171856)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 174170)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 174920)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 174922)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 169830)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 170048)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 170049)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 170050)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 170051)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 170052)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 170053)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 171017)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 172852)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 172854)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 172854) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 173661)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 173662)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 170466)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 170466) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 170467)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 173076)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 170621)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 170622)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Page : 10 of 17  
Work Order : CG2100551 Amendment 1  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 170622) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 172528)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 170009)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100	85.0	115	---
<b>Physical Tests (QCLot: 171845)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	99.2	85.0	115	---
<b>Physical Tests (QCLot: 171856)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	90.1	85.0	115	---
<b>Physical Tests (QCLot: 173144)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.6	95.4	104	---
<b>Physical Tests (QCLot: 174170)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 174920)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.6	90.0	110	---
<b>Physical Tests (QCLot: 174921)</b>									
pH	---	E108	---	pH units	7 pH units	99.8	98.6	101	---
<b>Physical Tests (QCLot: 174922)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 169830)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	97.0	80.0	120	---
<b>Anions and Nutrients (QCLot: 170048)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 170049)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 170050)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 170051)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 170052)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	95.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 170053)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 171017)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	84.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 172852)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 172852) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	114	85.0	115	----
<b>Anions and Nutrients (QCLot: 172854)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	92.1	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 173661)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 173662)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	108	80.0	120	----
<b>Total Metals (QCLot: 170466)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	105	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.8	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	94.7	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.9	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	95.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.2	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	90.3	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	94.2	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	93.8	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.5	80.0	120	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 170466) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	97.5	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 170467)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Total Metals (QCLot: 173076)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	99.1	80.0	120	----
<b>Dissolved Metals (QCLot: 170621)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	95.7	80.0	120	----
<b>Dissolved Metals (QCLot: 170622)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	94.8	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.7	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	94.0	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	94.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.1	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	92.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	93.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.4	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.2	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.6	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 170622) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.5	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	90.9	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.0	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	95.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.8	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 169830)</b>										
CG2100540-013	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0588 mg/L	0.05 mg/L	118	70.0	130	----
<b>Anions and Nutrients (QCLot: 171017)</b>										
CG2100540-015	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0565 mg/L	0.0676 mg/L	83.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 172852)</b>										
CG2100556-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 172854)</b>										
CG2100544-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.87 mg/L	2.5 mg/L	115	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 173661)</b>										
CG2100544-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	21.9 mg/L	23.9 mg/L	91.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 173662)</b>										
CG2100544-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.4 mg/L	23.9 mg/L	98.2	70.0	130	----
<b>Total Metals (QCLot: 170466)</b>										
CG2100544-001	Anonymous	aluminum, total	7429-90-5	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, total	7440-36-0	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0389 mg/L	0.04 mg/L	97.2	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00959 mg/L	0.01 mg/L	95.9	70.0	130	----
		boron, total	7440-42-8	E420	0.098 mg/L	0.1 mg/L	98.6	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		copper, total	7440-50-8	E420	0.0185 mg/L	0.02 mg/L	92.6	70.0	130	----
		iron, total	7439-89-6	E420	1.94 mg/L	2 mg/L	97.3	70.0	130	----
		lead, total	7439-92-1	E420	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0927 mg/L	0.1 mg/L	92.7	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		nickel, total	7440-02-0	E420	0.0372 mg/L	0.04 mg/L	93.0	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 170466) - continued</b>										
CG2100544-001	Anonymous	potassium, total	7440-09-7	E420	3.73 mg/L	4 mg/L	93.4	70.0	130	----
		selenium, total	7782-49-2	E420	0.0439 mg/L	0.04 mg/L	110	70.0	130	----
		silicon, total	7440-21-3	E420	8.99 mg/L	10 mg/L	89.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00390 mg/L	0.004 mg/L	97.5	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00382 mg/L	0.004 mg/L	95.4	70.0	130	----
		tin, total	7440-31-5	E420	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		titanium, total	7440-32-6	E420	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	95.9	70.0	130	----
<b>Total Metals (QCLot: 170467)</b>										
CG2100544-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
<b>Total Metals (QCLot: 173076)</b>										
CG2100557-001	Anonymous	mercury, total	7439-97-6	E508	0.0000991 mg/L	0.0001 mg/L	99.1	70.0	130	----
<b>Dissolved Metals (QCLot: 170621)</b>										
CG2100548-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
<b>Dissolved Metals (QCLot: 170622)</b>										
CG2100548-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.197 mg/L	0.2 mg/L	98.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00801 mg/L	0.01 mg/L	80.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 170622) - continued</b>										
CG2100548-001	Anonymous	manganese, dissolved	7439-96-5	E421	0.0183 mg/L	0.02 mg/L	91.6	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.01 mg/L	4 mg/L	100	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0441 mg/L	0.04 mg/L	110	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.66 mg/L	10 mg/L	96.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00396 mg/L	0.004 mg/L	99.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00383 mg/L	0.004 mg/L	95.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0389 mg/L	0.04 mg/L	97.4	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0996 mg/L	0.1 mg/L	99.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.395 mg/L	0.4 mg/L	98.8	70.0	130	----
<b>Dissolved Metals (QCLot: 172528)</b>										
CG2100549-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000107 mg/L	0.0001 mg/L	107	70.0	130	----

PROJECT/CLIENT INFO		LABORATORY				OTHER INFO											
Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD								
Project Manager	Tom Jeffery	Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	x	x								
Email	tom.jeffery@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	x	x								
Address	Box 2003	Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x								
	15km North Hwy 43					Email 4:	shanise.fossen@teck.com	x	x								
City	Sparwood	Province	BC			City	Calgary	Province	AB								
Postal Code	V0B 2G0	Country	Canada			Postal Code	T1Y 7B5	Country	Canada								
Phone Number	250-425-8478	Phone Number	403 407 1794			PO number	VPO00739930										
SAMPLE DETAILS				ANALYSIS REQUESTED													
Sample ID	Sample Location (sys_loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-Sulfide-T	ALS_Package-EPH
LC_PIZP1104_WG_Q1-2021_N	LC_PIZP1104	WG	No	3/24/2021	14:00	G	7	1	1	1	1	1	1	1	1		
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS				RELINQUISHED BY/AFFILIATION				DATE/TIME		ACCEPTED BY/AFFILIATION				DATE/TIME			
				D.Tymstra/S. Fossen				25-Mar									
SERVICE REQUEST (rush - subject to availability)																	
Regular (default) X				Sampler's Name				S. Fossen/D. Tymstra		Mobile #							
Priority (2-3 business days) - 50% surcharge				Sampler's Signature				S Fossen		Date/Time		March 25, 2021					
Emergency (1 Business Day) - 100% surcharge																	
For Emergency <1 Day, ASAP or Weekend - Contact ALS																	

Environmental Division  
CalgaryWork Order Reference  
**CG2100551**

Telephone : +1 403 407 1800



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100557**  
**Amendment** : **2**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : Q1 2021 ER4 AB  
**Sampler** : D.Nicholas/Bolu.O  
**Site** : ---  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 7  
  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Mar-2021 08:45  
**Date Analysis Commenced** : 26-Mar-2021  
**Issue Date** : 05-Nov-2021 12:12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta
Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).



## Analytical Results

Sub-Matrix: Water					Client sample ID		LC_MW_ER4A_	LC_MW_ER4B_	---	---	---
(Matrix: Water)					WG_Q1-2021_N	WG_Q1-2021_N					
Client sampling date / time					25-Mar-2021 10:40	25-Mar-2021 11:45	---	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100557-001	CG2100557-002	-----	-----	-----	-----	-----
					Result	Result	---	---	---	---	---
<b>Physical Tests</b>											
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	<2.0	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	182	185	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	223	226	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	182	185	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	444	493	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	262	279	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	376	401	---	---	---	---	---
pH	---	E108	0.10	pH units	7.83	7.79	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	266 <sup>DLHC</sup>	292 <sup>DLHC</sup>	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
turbidity	---	E121	0.10	NTU	0.95	<0.10	---	---	---	---	---
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0169	0.0097	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.76	3.43	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.098	0.118	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.095	0.335	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0304	3.34	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0012	0.0012	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	83.9	93.0	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	<0.50	<0.50	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	<0.50	<0.50	---	---	---	---	---
<b>Ion Balance</b>											



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_MW_ER4A_WG_Q1-2021_N	LC_MW_ER4B_WG_Q1-2021_N	---	---	---
(Matrix: Water)					Client sampling date / time	25-Mar-2021 10:40	25-Mar-2021 11:45	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100557-001	CG2100557-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	5.44	5.97	---	---	---	
cation sum	---	EC101	0.10	meq/L	5.36	5.71	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	98.5	95.6	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	0.741	2.23	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0467	0.0729	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	0.0155	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	72.6	74.5	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00016	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	0.138	<0.010	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0061	0.0076	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	18.3	21.5	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0464	<0.00010	---	---	---	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00381	0.00111	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	0.542	0.410	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	16.4	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	2.45	2.01	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	2.74	3.15	---	---	---	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.290	0.245	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_ER4A_WG_Q1-2021_N	LC_MW_ER4B_WG_Q1-2021_N	---	---	---
Client sampling date / time					25-Mar-2021 10:40	25-Mar-2021 11:45	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2100557-001	CG2100557-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	31.1	35.2	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000222	0.00106	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0010	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0511	0.0795	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0141	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	73.6	75.3	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00016	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00024	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.109	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0057	0.0068	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.9	22.1	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0472	<0.00010	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00388	0.00114	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.559	0.442	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	16.4	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.51	2.02	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_ER4A_ WG_Q1-2021_N	LC_MW_ER4B_ WG_Q1-2021_N	---	---	---
Client sampling date / time					25-Mar-2021 10:40	25-Mar-2021 11:45	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2100557-001	CG2100557-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.63	2.91	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.315	0.251	---	---	---	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	31.8	34.2	---	---	---	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000210	0.000986	---	---	---	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	---	---	---	
dissolved metals filtration location	----	EP421	-	-	Field	Field	---	---	---	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	<0.25	---	---	---	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	<0.40	---	---	---	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	<0.25	---	---	---	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	<0.25	---	---	---	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%	84.3	80.4	---	---	---	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100557</b>	Page	: 1 of 15
Amendment	: 2		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 26-Mar-2021 08:45
PO	: VPO00739930	Issue Date	: 05-Nov-2021 12:12
C-O-C number	: Q1 2021 ER4 AB		
Sampler	: D.Nicholas/Bolu.O		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q1-2021_N	E298	25-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	8 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q1-2021_N	E298	25-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	8 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_MW_ER4A_WG_Q1-2021_N	E235.Br-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_MW_ER4B_WG_Q1-2021_N	E235.Br-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_MW_ER4A_WG_Q1-2021_N	E235.Cl-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_MW_ER4B_WG_Q1-2021_N	E235.Cl-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_MW_ER4A_WG_Q1-2021_N	E378-U	25-Mar-2021	----	----	----		26-Mar-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_MW_ER4B_WG_Q1-2021_N	E378-U	25-Mar-2021	----	----	----		26-Mar-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_MW_ER4A_WG_Q1-2021_N	E235.F	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_MW_ER4B_WG_Q1-2021_N	E235.F	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_MW_ER4A_WG_Q1-2021_N	E235.NO3-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_MW_ER4B_WG_Q1-2021_N	E235.NO3-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_MW_ER4A_WG_Q1-2021_N	E235.NO2-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_MW_ER4B_WG_Q1-2021_N	E235.NO2-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_MW_ER4A_WG_Q1-2021_N	E235.SO4	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_MW_ER4B_WG_Q1-2021_N	E235.SO4	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q1-2021_N	E318	25-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q1-2021_N	E318	25-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q1-2021_N	E372-U	25-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q1-2021_N	E372-U	25-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4A_WG_Q1-2021_N	E421.Cr-L	25-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4B_WG_Q1-2021_N	E421.Cr-L	25-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_ER4A_WG_Q1-2021_N	E509	25-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_ER4B_WG_Q1-2021_N	E509	25-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4A_WG_Q1-2021_N	E421	25-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	4 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4B_WG_Q1-2021_N	E421	25-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	4 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_MW_ER4A_WG_Q1-2021_N	E601A	25-Mar-2021	29-Mar-2021	14 days	4 days	✓	30-Mar-2021	40 days	1 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_MW_ER4B_WG_Q1-2021_N	E601A	25-Mar-2021	29-Mar-2021	14 days	4 days	✓	30-Mar-2021	40 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_ER4A_WG_Q1-2021_N	E358-L	25-Mar-2021	05-Apr-2021	----	----		05-Apr-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_ER4B_WG_Q1-2021_N	E358-L	25-Mar-2021	05-Apr-2021	----	----		05-Apr-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q1-2021_N	E355-L	25-Mar-2021	05-Apr-2021	----	----		05-Apr-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q1-2021_N	E355-L	25-Mar-2021	05-Apr-2021	----	----		05-Apr-2021	28 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q1-2021_N	E283	25-Mar-2021	----	----	----		08-Apr-2021	14 days	14 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q1-2021_N	E283	25-Mar-2021	----	----	----		08-Apr-2021	14 days	14 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_MW_ER4A_WG_Q1-2021_N	E290	25-Mar-2021	----	----	----		07-Apr-2021	14 days	13 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_MW_ER4B_WG_Q1-2021_N	E290	25-Mar-2021	----	----	----		07-Apr-2021	14 days	13 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_MW_ER4A_WG_Q1-2021_N	E100	25-Mar-2021	----	----	----		07-Apr-2021	28 days	13 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_MW_ER4B_WG_Q1-2021_N	E100	25-Mar-2021	----	----	----		07-Apr-2021	28 days	13 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_MW_ER4B_WG_Q1-2021_N	E125	25-Mar-2021	----	----	----		03-Apr-2021	0.25 hrs	217 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_MW_ER4A_WG_Q1-2021_N	E125	25-Mar-2021	----	----	----		03-Apr-2021	0.25 hrs	218 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_MW_ER4B_WG_Q1-2021_N	E108	25-Mar-2021	----	----	----		07-Apr-2021	0.25 hrs	317 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_MW_ER4A_WG_Q1-2021_N	E108	25-Mar-2021	----	----	----		07-Apr-2021	0.25 hrs	318 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_MW_ER4A_WG_Q1-2021_N	E162	25-Mar-2021	----	----	----		01-Apr-2021	7 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q1-2021_N	E162	25-Mar-2021	----	----	----		01-Apr-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_MW_ER4A_WG_Q1-2021_N	E160-L	25-Mar-2021	----	----	----		01-Apr-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_MW_ER4B_WG_Q1-2021_N	E160-L	25-Mar-2021	----	----	----		01-Apr-2021	7 days	7 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q1-2021_N	E121	25-Mar-2021	----	----	----		27-Mar-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q1-2021_N	E121	25-Mar-2021	----	----	----		27-Mar-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_MW_ER4A_WG_Q1-2021_N	E420.Cr-L	25-Mar-2021	----	----	----		31-Mar-2021	180 days	6 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_MW_ER4B_WG_Q1-2021_N	E420.Cr-L	25-Mar-2021	----	----	----		31-Mar-2021	180 days	6 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_MW_ER4A_WG_Q1-2021_N	E508	25-Mar-2021	----	----	----		03-Apr-2021	28 days	9 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_MW_ER4B_WG_Q1-2021_N	E508	25-Mar-2021	----	----	----		03-Apr-2021	28 days	9 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_MW_ER4A_WG_Q1-2021_N	E420	25-Mar-2021	----	----	----		31-Mar-2021	180 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_MW_ER4B_WG_Q1-2021_N	E420	25-Mar-2021	----	----	----		31-Mar-2021	180 days	6 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	175428	1	18	5.5	5.0	✔
Alkalinity Species by Titration	E290	174925	1	12	8.3	5.0	✔
Ammonia by Fluorescence	E298	172852	2	32	6.2	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	170486	0	20	0.0	5.0	✖
Chloride in Water by IC (Low Level)	E235.Cl-L	170487	0	20	0.0	5.0	✖
Conductivity in Water	E100	174923	1	12	8.3	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	172528	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	170622	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173661	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169830	2	28	7.1	5.0	✔
Fluoride in Water by IC	E235.F	170485	0	20	0.0	5.0	✖
Nitrate in Water by IC (Low Level)	E235.NO3-L	170489	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	170490	1	20	5.0	5.0	✔
ORP by Electrode	E125	173144	2	30	6.6	5.0	✔
pH by Meter	E108	174924	1	12	8.3	5.0	✔
Sulfate in Water by IC	E235.SO4	170488	0	20	0.0	5.0	✖
TDS by Gravimetry	E162	172301	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	171121	1	9	11.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172855	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	173076	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	171120	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173662	2	21	9.5	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171018	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	170009	2	28	7.1	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	175428	1	18	5.5	5.0	✔
Alkalinity Species by Titration	E290	174925	1	12	8.3	5.0	✔
Ammonia by Fluorescence	E298	172852	2	32	6.2	5.0	✔
BC PHC - EPH by GC-FID	E601A	170768	1	12	8.3	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	170486	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	170487	1	20	5.0	5.0	✔
Conductivity in Water	E100	174923	1	12	8.3	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	172528	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	170622	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173661	1	20	5.0	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169830	2	28	7.1	5.0	✓
Fluoride in Water by IC	E235.F	170485	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	170489	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	170490	1	20	5.0	5.0	✓
ORP by Electrode	E125	173144	2	30	6.6	5.0	✓
pH by Meter	E108	174924	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	170488	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	172301	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	171121	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172855	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	173076	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	171120	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173662	2	21	9.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171018	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	172294	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	170009	2	28	7.1	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	175428	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	174925	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	172852	2	32	6.2	5.0	✓
BC PHC - EPH by GC-FID	E601A	170768	1	12	8.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	170486	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	170487	1	20	5.0	5.0	✓
Conductivity in Water	E100	174923	1	12	8.3	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	172528	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	170622	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173661	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169830	2	28	7.1	5.0	✓
Fluoride in Water by IC	E235.F	170485	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	170489	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	170490	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	170488	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	172301	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	171121	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172855	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	173076	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	171120	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173662	2	21	9.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171018	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	172294	1	20	5.0	5.0	✓





Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
Method Blanks (MB) - Continued							
Turbidity by Nephelometry	E121	170009	2	28	7.1	5.0	✔
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	172852	2	32	6.2	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	170486	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	170487	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	172528	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	170622	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173661	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169830	2	28	7.1	5.0	✔
Fluoride in Water by IC	E235.F	170485	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	170489	0	20	0.0	5.0	✖
Nitrite in Water by IC (Low Level)	E235.NO2-L	170490	0	20	0.0	5.0	✖
Sulfate in Water by IC	E235.SO4	170488	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	171121	1	9	11.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172855	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	173076	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	171120	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173662	2	21	9.5	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171018	1	20	5.0	5.0	✔





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
PHCs and PAHs Hexane Extraction	EP601  Calgary - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

## QUALITY CONTROL REPORT

**Work Order** : **CG2100557**

**Page** : 1 of 19

**Amendment** : **2**

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : Q1 2021 ER4 AB  
**Sampler** : D.Nicholas/Bolu.O  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Mar-2021 08:45  
**Date Analysis Commenced** : 26-Mar-2021  
**Issue Date** : 05-Nov-2021 12:12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta





## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 170009)</b>											
CG2100551-001	Anonymous	turbidity	----	E121	0.10	NTU	24.2	24.0	0.829%	15%	----
<b>Physical Tests (QC Lot: 170010)</b>											
CG2100557-002	LC_MW_ER4B_WG_Q1-2 021_N	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 172301)</b>											
CG2100540-021	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2990	3040	1.66%	20%	----
<b>Physical Tests (QC Lot: 173144)</b>											
CG2100540-021	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	402	399	0.649%	15%	----
<b>Physical Tests (QC Lot: 173145)</b>											
CG2100557-002	LC_MW_ER4B_WG_Q1-2 021_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	401	404	0.944%	15%	----
<b>Physical Tests (QC Lot: 174923)</b>											
CG2100561-001	Anonymous	conductivity	----	E100	2.0	µS/cm	3550	3450	2.92%	10%	----
<b>Physical Tests (QC Lot: 174924)</b>											
CG2100561-001	Anonymous	pH	----	E108	0.10	pH units	7.52	7.51	0.133%	4%	----
<b>Physical Tests (QC Lot: 174925)</b>											
CG2100561-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	128	153	18.2%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	128	124	2.70%	20%	----
<b>Physical Tests (QC Lot: 175428)</b>											
CG2100560-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	4.8	5.0	0.3	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 169830)</b>											
CG2100540-012	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 169831)</b>											
CG2100557-002	LC_MW_ER4B_WG_Q1-2 021_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0012	0.0013	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170489)</b>											
CG2100540-011	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170490)</b>											
CG2100540-011	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 171018)</b>											
CG2100552-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 172852)</b>											
CG2100556-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172853)</b>											
CG2100557-002	LC_MW_ER4B_WG_Q1-2 021_N	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0097	0.0092	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172855)</b>											
CG2100557-001	LC_MW_ER4A_WG_Q1-2 021_N	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.095	0.079	0.016	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 173661)</b>											
CG2100544-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.28	2.36	0.08	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 173662)</b>											
CG2100544-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.42	2.94	0.51	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 173663)</b>											
CG2100557-002	LC_MW_ER4B_WG_Q1-2 021_N	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 171120)</b>											
CG2100557-001	LC_MW_ER4A_WG_Q1-2 021_N	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0467	0.0484	3.67%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	<0.0050 µg/L	<0.000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	72.6	71.7	1.12%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.138	0.142	2.55%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0061	0.0061	0.00003	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	18.3	19.8	8.20%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0464	0.0490	5.42%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00381	0.00382	0.486%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.542	0.568	4.71%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.45	2.51	2.47%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 171120) - continued</b>											
CG2100557-001	LC_MW_ER4A_WG_Q1-2 021_N	silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	2.74	2.77	1.02%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.290	0.299	2.96%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	31.1	31.7	2.08%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000222	0.000226	1.50%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 171121)</b>											
CG2100557-001	LC_MW_ER4A_WG_Q1-2 021_N	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 173076)</b>											
CG2100551-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 170621)</b>											
CG2100548-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00018	0.00020	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 170622)</b>											
CG2100548-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0019	0.0007	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00012	0.000009	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.119	0.126	5.42%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0089 µg/L	0.0000079	0.0000010	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	68.4	66.0	3.59%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0050	0.0048	0.0001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.8	19.2	1.97%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00012	0.00025	0.00014	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00151	0.00137	9.33%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 170622) - continued</b>											
CG2100548-001	Anonymous	nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.638	0.642	0.701%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	10.8 µg/L	0.00976	10.4%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.75	2.62	4.55%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.41	2.47	2.38%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.224	0.211	5.95%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	23.6	22.1	6.73%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000855	0.000806	5.92%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 172528)</b>											
CG2100549-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 170009)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 170010)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 172294)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 172301)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 174923)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 174925)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 175428)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 169830)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 169831)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 170485)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 170486)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 170487)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 170488)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 170489)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 170490)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 171018)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 171018) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 172852)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 172853)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 172855)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Organic / Inorganic Carbon (QCLot: 173661)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 173662)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 173663)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Total Metals (QCLot: 171120)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 171120) - continued</b>						
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 171121)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 173076)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 170621)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 170622)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 170622) - continued</b>						
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 172528)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Hydrocarbons (QCLot: 170768)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 170009)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100	85.0	115	----
<b>Physical Tests (QCLot: 170010)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100	85.0	115	----
<b>Physical Tests (QCLot: 172294)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	92.7	85.0	115	----
<b>Physical Tests (QCLot: 172301)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.6	85.0	115	----
<b>Physical Tests (QCLot: 173144)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.6	95.4	104	----
<b>Physical Tests (QCLot: 173145)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.5	95.4	104	----
<b>Physical Tests (QCLot: 174923)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	----
<b>Physical Tests (QCLot: 174924)</b>									
pH	---	E108	---	pH units	7 pH units	99.8	98.6	101	----
<b>Physical Tests (QCLot: 174925)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	101	85.0	115	----
<b>Physical Tests (QCLot: 175428)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	111	85.0	115	----
<b>Anions and Nutrients (QCLot: 169830)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	97.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 169831)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	----
<b>Anions and Nutrients (QCLot: 170485)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	105	90.0	110	----
<b>Anions and Nutrients (QCLot: 170486)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	----
<b>Anions and Nutrients (QCLot: 170487)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.4	90.0	110	----
<b>Anions and Nutrients (QCLot: 170488)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.4	90.0	110	----
<b>Anions and Nutrients (QCLot: 170489)</b>									





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Anions and Nutrients (QCLot: 170489) - continued</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 170490)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 171018)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	87.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 172852)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	114	85.0	115	----
<b>Anions and Nutrients (QCLot: 172853)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	86.5	85.0	115	----
<b>Anions and Nutrients (QCLot: 172855)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	99.0	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 173661)</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 173662)</b>									
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	10 mg/L	108	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 173663)</b>									
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Total Metals (QCLot: 171120)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	96.2	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	96.5	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	95.0	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	96.0	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	99.7	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	96.5	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.3	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	95.5	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	98.3	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.2	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	96.4	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	97.1	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	96.7	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 171120) - continued</b>									
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	94.8	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	98.5	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	96.7	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	99.9	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	91.7	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	95.4	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	90.5	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	97.9	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	96.1	80.0	120	----
<b>Total Metals (QCLot: 171121)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	95.0	80.0	120	----
<b>Total Metals (QCLot: 173076)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	99.1	80.0	120	----
<b>Dissolved Metals (QCLot: 170621)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	95.7	80.0	120	----
<b>Dissolved Metals (QCLot: 170622)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	94.8	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.7	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	94.0	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	94.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.1	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	92.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.2	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 170622) - continued</b>									
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	93.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.4	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.2	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.5	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	90.9	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.0	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	95.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.8	80.0	120	----
<b>Hydrocarbons (QCLot: 170768)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	102	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	106	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	103	70.0	130	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 169830)</b>										
CG2100540-013	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0588 mg/L	0.05 mg/L	118	70.0	130	----
<b>Anions and Nutrients (QCLot: 169831)</b>										
CG2100558-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0559 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 170485)</b>										
CG2100540-011	Anonymous	fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 170486)</b>										
CG2100540-011	Anonymous	bromide	24959-67-9	E235.Br-L	0.557 mg/L	0.5 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 170487)</b>										
CG2100540-011	Anonymous	chloride	16887-00-6	E235.Cl-L	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 170488)</b>										
CG2100540-011	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 171018)</b>										
CG2100552-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0705 mg/L	0.0676 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 172852)</b>										
CG2100556-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 172853)</b>										
CG2100558-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 172855)</b>										
CG2100557-002	LC_MW_ER4B_WG_Q1-20 21_N	Kjeldahl nitrogen, total [TKN]	----	E318	3.00 mg/L	2.5 mg/L	120	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 173661)</b>										
CG2100544-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	21.9 mg/L	23.9 mg/L	91.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 173662)</b>										
CG2100544-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.4 mg/L	23.9 mg/L	98.2	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 173663)</b>										
CG2100557-002	LC_MW_ER4B_WG_Q1-20 21_N	carbon, total organic [TOC]	----	E355-L	24.8 mg/L	23.9 mg/L	104	70.0	130	----
<b>Total Metals (QCLot: 171120)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 171120) - continued</b>										
CG2100557-001	LC_MW_ER4A_WG_Q1-20 21_N	aluminum, total	7429-90-5	E420	0.195 mg/L	0.2 mg/L	97.4	70.0	130	----
		antimony, total	7440-36-0	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00952 mg/L	0.01 mg/L	95.2	70.0	130	----
		boron, total	7440-42-8	E420	0.110 mg/L	0.1 mg/L	110	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00388 mg/L	0.004 mg/L	96.9	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		copper, total	7440-50-8	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		iron, total	7439-89-6	E420	2.04 mg/L	2 mg/L	102	70.0	130	----
		lead, total	7439-92-1	E420	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		lithium, total	7439-93-2	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		nickel, total	7440-02-0	E420	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		potassium, total	7440-09-7	E420	4.07 mg/L	4 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0447 mg/L	0.04 mg/L	112	70.0	130	----
		silicon, total	7440-21-3	E420	9.72 mg/L	10 mg/L	97.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----		
thallium, total	7440-28-0	E420	0.00358 mg/L	0.004 mg/L	89.5	70.0	130	----		
tin, total	7440-31-5	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----		
titanium, total	7440-32-6	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----		
uranium, total	7440-61-1	E420	0.00391 mg/L	0.004 mg/L	97.7	70.0	130	----		
vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----		
zinc, total	7440-66-6	E420	0.382 mg/L	0.4 mg/L	95.6	70.0	130	----		
<b>Total Metals (QCLot: 171121)</b>										
CG2100557-001	LC_MW_ER4A_WG_Q1-20 21_N	chromium, total	7440-47-3	E420.Cr-L	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
<b>Total Metals (QCLot: 173076)</b>										
CG2100557-001	LC_MW_ER4A_WG_Q1-20 21_N	mercury, total	7439-97-6	E508	0.0000991 mg/L	0.0001 mg/L	99.1	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 170621)</b>										
CG2100548-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
<b>Dissolved Metals (QCLot: 170622)</b>										
CG2100548-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.197 mg/L	0.2 mg/L	98.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00801 mg/L	0.01 mg/L	80.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0183 mg/L	0.02 mg/L	91.6	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.01 mg/L	4 mg/L	100	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0441 mg/L	0.04 mg/L	110	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.66 mg/L	10 mg/L	96.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00396 mg/L	0.004 mg/L	99.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00383 mg/L	0.004 mg/L	95.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0389 mg/L	0.04 mg/L	97.4	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0996 mg/L	0.1 mg/L	99.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.395 mg/L	0.4 mg/L	98.8	70.0	130	----
<b>Dissolved Metals (QCLot: 172528)</b>										
CG2100549-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000107 mg/L	0.0001 mg/L	107	70.0	130	----



COC ID: **Q1 2021 ER4 AB**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	x	x	
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.c			x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.co	x	x	
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	x	x	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				
	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930			
				Phone Number	403 407 1794							

Environmental Division  
Calgary  
Work Order Reference  
**CG2100557**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PHIL	Y	N	Y	Y	N	N	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None		
								PRESERV.	H2SO4	NAHSO4	H2SO4	HCL	HCL	HNO3	HNO3	NONE	
								ANALYSIS	ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	
LC_MW_ER4A_WG_Q1-2021_N	LC_MW_ER4A	WG		3/25/2021	10:40	G	8		1	2	1	1	1	1	1	1	
LC_MW_ER4B_WG_Q1-2021_N	LC_MW_ER4B	WG		3/25/2021	11:45	G	8		1	2	1	1	1	1	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
PLEASE PREPARE SAMPLES TO AVOID DELAY FOR ANALYSIS	D.Nicholas	25-Mar	<i>[Signature]</i>	26/03 2021

SERVICE REQUEST (rush - subject to availability)			
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	D.Nicholas/Bolu.O	Mobile #	1-250-425-1101
Sampler's Signature		Date/Time	March 25, 2021

*[Handwritten Signature]*





TECK COAL LIMITED (LINE CREEK)  
ATTN: Paul Dore  
PO BOX 2003  
SPARWOOD BC V0B 2G0

Date Received: 30-JAN-21  
Report Date: 08-FEB-21 14:42 (MT)  
Version: FINAL

Client Phone: 250-425-4869

## Certificate of Analysis

Lab Work Order #: L2553074  
Project P.O. #: VPO00708036  
Job Reference: LINE CREEK OPERATION  
C of C Numbers: 20210129 - LCO GW  
Legal Site Desc:

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Lyudmyla Shvets, B.Sc.  
Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2553074-1	L2553074-2	L2553074-3	L2553074-4
		Description	WG	WG	WG	WG
		Sampled Date	29-JAN-21	29-JAN-21	29-JAN-21	29-JAN-21
		Sampled Time	14:10	11:50	15:00	
		Client ID	LC_PIZ1206C_WG_2021-01-25_NP	LC_PIZ1212_WG_2021-01-25_NP	LC_MT3_WG_2021-01-25_NP	LC_RD3_WG_2021-01-25_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		988	1300	<2.0	<2.0
	Hardness (as CaCO3) (mg/L)		623	869	<0.50	
	pH (pH)		8.04	8.01	5.38	5.36
	ORP (mV)		225	263	399	450
	Total Suspended Solids (mg/L)		<1.0	4.4	<1.0	<1.0
	Total Dissolved Solids (mg/L)		799 <sup>DLHC</sup>	1080 <sup>DLHC</sup>	<10	<10
	Turbidity (NTU)		1.40	4.24	<0.10	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		2.3	3.3	1.9	1.7
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		195	223	<1.0	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		195	223	<1.0	<1.0
	Ammonia as N (mg/L)		0.0050	<0.0050	<0.0050	<0.0050
	Bromide (Br) (mg/L)		<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.050	<0.050
	Chloride (Cl) (mg/L)		3.90 <sup>DLHC</sup>	8.46 <sup>DLHC</sup>	<0.10	<0.10
	Fluoride (F) (mg/L)		0.15 <sup>DLHC</sup>	0.14 <sup>DLHC</sup>	<0.020	<0.020
	Ion Balance (%)		112	114	0.0	0.0
	Nitrate (as N) (mg/L)		2.37 <sup>DLHC</sup>	18.8 <sup>DLHC</sup>	<0.0050	<0.0050
	Nitrite (as N) (mg/L)		<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		<0.050	<0.25	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)		0.0025	0.0029	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)		0.0059	0.0112	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)		368 <sup>DLHC</sup>	463 <sup>DLHC</sup>	<0.30	<0.30
	Anion Sum (meq/L)		11.8	15.7	<0.10	<0.10
	Cation Sum (meq/L)		13.3	17.9	<0.10	<0.10
	Cation - Anion Balance (%)		5.9	6.7	0.0	0.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		0.95	1.30	<0.50	
	Total Organic Carbon (mg/L)		1.26	1.24	<0.50	<0.50
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)		0.0702	0.127	<0.0030	<0.0030
	Antimony (Sb)-Total (mg/L)		0.00094	0.00035	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)		0.00013	0.00019	<0.00010	<0.00010
	Barium (Ba)-Total (mg/L)		0.0286	0.0572	<0.00010	<0.00010
	Beryllium (Be)-Total (ug/L)		<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Total (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)		0.017	0.016	<0.010	<0.010
	Cadmium (Cd)-Total (ug/L)		0.0582	0.105	<0.0050	<0.0050

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2553074-1	L2553074-2	L2553074-3	L2553074-4
		Description	WG	WG	WG	WG
		Sampled Date	29-JAN-21	29-JAN-21	29-JAN-21	29-JAN-21
		Sampled Time	14:10	11:50	15:00	
		Client ID	LC_PIZ1206C_WG_2021-01-25_NP	LC_PIZ1212_WG_2021-01-25_NP	LC_MT3_WG_2021-01-25_NP	LC_RD3_WG_2021-01-25_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)		143	185	<0.050	<0.050
	Chromium (Cr)-Total (mg/L)		0.00073	0.00042	<0.00010	<0.00010
	Cobalt (Co)-Total (ug/L)		<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Total (mg/L)		0.00256	0.00157	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)		0.068	0.144	<0.010	<0.010
	Lead (Pb)-Total (mg/L)		0.00155	0.000383	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)		0.0289	0.0733	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)		61.4	93.0	<0.10	<0.10
	Manganese (Mn)-Total (mg/L)		0.00410	0.00349	<0.00010	<0.00010
	Mercury (Hg)-Total (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)		0.00153	0.00231	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)		0.00078	0.00469	<0.00050	<0.00050
	Potassium (K)-Total (mg/L)		1.01	1.92	<0.050	<0.050
	Selenium (Se)-Total (ug/L)		60.7	118	<0.050	<0.050
	Silicon (Si)-Total (mg/L)		4.18	2.53	<0.10	<0.10
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		17.5	10.9	<0.050	<0.050
	Strontium (Sr)-Total (mg/L)		0.200	0.319	<0.00020	<0.00020
	Sulfur (S)-Total (mg/L)		140	181	<0.50	<0.50
	Thallium (Tl)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)		<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Total (mg/L)		0.00340	0.00686	<0.000010	<0.000010
	Vanadium (V)-Total (mg/L)		<0.00050	0.00072	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)		0.0082	0.0070	<0.0030	<0.0030
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	LAB
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)		0.00094	0.00030	<0.00010	
	Arsenic (As)-Dissolved (mg/L)		<0.00010	0.00010	<0.00010	
	Barium (Ba)-Dissolved (mg/L)		0.0284	0.0541	<0.00010	
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)		0.017	0.015	<0.010	
	Cadmium (Cd)-Dissolved (ug/L)		0.0555	0.0994	<0.0050	
	Calcium (Ca)-Dissolved (mg/L)		141	185	<0.050	<0.050
	Chromium (Cr)-Dissolved (mg/L)		0.00064	0.00016	<0.00010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2553074-1	L2553074-2	L2553074-3	L2553074-4
		Description	WG	WG	WG	WG
		Sampled Date	29-JAN-21	29-JAN-21	29-JAN-21	29-JAN-21
		Sampled Time	14:10	11:50	15:00	
		Client ID	LC_PIZ1206C_WG_2021-01-25_NP	LC_PIZ1212_WG_2021-01-25_NP	LC_MT3_WG_2021-01-25_NP	LC_RD3_WG_2021-01-25_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Cobalt (Co)-Dissolved (ug/L)		<0.10	<0.10	<0.10	
	Copper (Cu)-Dissolved (mg/L)		0.00190	0.00148	<0.00020	
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)		0.000245	0.000140	<0.000050	
	Lithium (Li)-Dissolved (mg/L)		0.0256	0.0735	<0.0010	
	Magnesium (Mg)-Dissolved (mg/L)		65.7	99.0	<0.10	<0.0050
	Manganese (Mn)-Dissolved (mg/L)		0.00113	0.00023	<0.00010	
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)		0.00156	0.00227	<0.000050	
	Nickel (Ni)-Dissolved (mg/L)		0.00071	0.00459	<0.00050	
	Potassium (K)-Dissolved (mg/L)		1.06	2.00	<0.050	<0.050
	Selenium (Se)-Dissolved (ug/L)		68.9	139	<0.050	
	Silicon (Si)-Dissolved (mg/L)		4.06	2.29	<0.050	
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)		19.2	12.0	<0.050	<0.050
	Strontium (Sr)-Dissolved (mg/L)		0.214	0.333	<0.00020	
	Sulfur (S)-Dissolved (mg/L)		141	176	<0.50	
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)		0.00326	0.00674	<0.000010	
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)		0.0089	0.0069	<0.0010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	Sodium (Na)-Dissolved	MES	L2553074-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2553074-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2553074-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2553074-1, -2, -3
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2553074-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2553074-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2553074-1, -2, -3
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2553074-1, -2, -3
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2553074-1, -2, -3
Matrix Spike	Barium (Ba)-Total	MS-B	L2553074-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Total	MS-B	L2553074-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2553074-1, -2, -3, -4
Matrix Spike	Selenium (Se)-Total	MS-B	L2553074-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Total	MS-B	L2553074-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Total	MS-B	L2553074-1, -2, -3, -4
Matrix Spike	Sulfur (S)-Total	MS-B	L2553074-1, -2, -3, -4
Matrix Spike	Uranium (U)-Total	MS-B	L2553074-1, -2, -3, -4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)

## Reference Information

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-L-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

## Reference Information

<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="margin-left: 20px;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
<p>This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.</p>			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
<p>This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.</p>			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20210129 - LCO GW

## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 1 of 16

Client: TECK COAL LIMITED (LINE CREEK)  
 PO BOX 2003  
 SPARWOOD BC V0B 2G0

Contact: Paul Dore

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5362576</b>							
<b>WG3483580-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			107.6		%		85-115	03-FEB-21
<b>WG3483580-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	03-FEB-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361163</b>							
<b>WG3482468-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.6		%		85-115	01-FEB-21
<b>WG3482468-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	01-FEB-21
<b>WG3482468-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-FEB-21
<b>WG3482468-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-FEB-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361561</b>							
<b>WG3482484-3</b>	<b>DUP</b>	<b>L2553074-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	03-FEB-21
<b>WG3482484-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.9		%		80-120	03-FEB-21
<b>WG3482484-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-FEB-21
<b>WG3482484-4</b>	<b>MS</b>	<b>L2553074-2</b>						
Beryllium (Be)-Dissolved			103.3		%		70-130	03-FEB-21
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361530</b>							
<b>WG3482419-3</b>	<b>DUP</b>	<b>L2553074-1</b>						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	03-FEB-21
<b>WG3482419-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			104.3		%		80-120	03-FEB-21
<b>WG3482419-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	03-FEB-21
<b>WG3482419-4</b>	<b>MS</b>	<b>L2553074-2</b>						
Beryllium (Be)-Total			106.4		%		70-130	03-FEB-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 2 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5360612</b>							
<b>WG3481773-3</b>	<b>DUP</b>	<b>L2553074-4</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-JAN-21
<b>WG3481773-2</b>	<b>LCS</b>							
Bromide (Br)			85.0		%		85-115	30-JAN-21
<b>WG3481773-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	30-JAN-21
<b>WG3481773-4</b>	<b>MS</b>	<b>L2553074-4</b>						
Bromide (Br)			87.0		%		75-125	30-JAN-21
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5365575</b>							
<b>WG3484747-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.9		%		80-120	05-FEB-21
<b>WG3484747-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-FEB-21
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5365575</b>							
<b>WG3484747-2</b>	<b>LCS</b>							
Total Organic Carbon			102.1		%		80-120	05-FEB-21
<b>WG3484747-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	05-FEB-21
<b>Batch</b>	<b>R5366579</b>							
<b>WG3485116-2</b>	<b>LCS</b>							
Total Organic Carbon			113.0		%		80-120	07-FEB-21
<b>WG3485116-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	07-FEB-21
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5360612</b>							
<b>WG3481773-3</b>	<b>DUP</b>	<b>L2553074-4</b>						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	30-JAN-21
<b>WG3481773-2</b>	<b>LCS</b>							
Chloride (Cl)			101.4		%		85-115	30-JAN-21
<b>WG3481773-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	30-JAN-21
<b>WG3481773-4</b>	<b>MS</b>	<b>L2553074-4</b>						
Chloride (Cl)			98.7		%		75-125	30-JAN-21
<b>EC-L-PCT-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 3 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5361163</b>							
<b>WG3482468-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.5		%		90-110	01-FEB-21
<b>WG3482468-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.4		%		90-110	01-FEB-21
<b>WG3482468-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	01-FEB-21
<b>WG3482468-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	01-FEB-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5360612</b>							
<b>WG3481773-3</b>	<b>DUP</b>	<b>L2553074-4</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	30-JAN-21
<b>WG3481773-2</b>	<b>LCS</b>							
Fluoride (F)			102.0		%		90-110	30-JAN-21
<b>WG3481773-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	30-JAN-21
<b>WG3481773-4</b>	<b>MS</b>	<b>L2553074-4</b>						
Fluoride (F)			92.8		%		75-125	30-JAN-21
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5361269</b>							
<b>WG3482592-3</b>	<b>DUP</b>	<b>L2553074-3</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	03-FEB-21
<b>WG3482592-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			104.4		%		80-120	03-FEB-21
<b>WG3482592-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	03-FEB-21
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5361269</b>							
<b>WG3482633-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			102.2		%		80-120	03-FEB-21
<b>WG3482633-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	03-FEB-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5365201</b>							
<b>WG3484652-6</b>	<b>LCS</b>	<b>TMRM</b>						
Calcium (Ca)-Dissolved			94.3		%		80-120	07-FEB-21
Magnesium (Mg)-Dissolved			100.5		%		80-120	07-FEB-21



## Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 4 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5365201</b>							
<b>WG3484652-6</b>	<b>LCS</b>	<b>TMRM</b>						
Potassium (K)-Dissolved			96.2		%		80-120	07-FEB-21
Sodium (Na)-Dissolved			97.1		%		80-120	07-FEB-21
<b>WG3484652-5</b>	<b>MB</b>							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-FEB-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-FEB-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-FEB-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-FEB-21
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361561</b>							
<b>WG3482484-3</b>	<b>DUP</b>	<b>L2553074-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	03-FEB-21
Antimony (Sb)-Dissolved		0.00094	0.00097		mg/L	2.5	20	03-FEB-21
Arsenic (As)-Dissolved		<0.00010	0.00011	RPD-NA	mg/L	N/A	20	03-FEB-21
Barium (Ba)-Dissolved		0.0284	0.0302		mg/L	6.1	20	03-FEB-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-FEB-21
Boron (B)-Dissolved		0.017	0.016		mg/L	4.6	20	03-FEB-21
Cadmium (Cd)-Dissolved		0.0000555	0.0000514		mg/L	7.6	20	03-FEB-21
Calcium (Ca)-Dissolved		141	146		mg/L	3.6	20	03-FEB-21
Chromium (Cr)-Dissolved		0.00064	0.00066		mg/L	2.8	20	03-FEB-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-FEB-21
Copper (Cu)-Dissolved		0.00190	0.00187		mg/L	2.0	20	03-FEB-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-FEB-21
Lead (Pb)-Dissolved		0.000245	0.000242		mg/L	0.9	20	03-FEB-21
Lithium (Li)-Dissolved		0.0256	0.0249		mg/L	2.7	20	03-FEB-21
Magnesium (Mg)-Dissolved		65.7	66.5		mg/L	1.1	20	03-FEB-21
Manganese (Mn)-Dissolved		0.00113	0.00113		mg/L	0.0	20	03-FEB-21
Molybdenum (Mo)-Dissolved		0.00156	0.00154		mg/L	1.1	20	03-FEB-21
Nickel (Ni)-Dissolved		0.00071	0.00071		mg/L	1.1	20	03-FEB-21
Potassium (K)-Dissolved		1.06	1.07		mg/L	0.6	20	03-FEB-21
Selenium (Se)-Dissolved		0.0689	0.0674		mg/L	2.3	20	03-FEB-21
Silicon (Si)-Dissolved		4.06	4.06		mg/L	0.2	20	03-FEB-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-FEB-21
Sodium (Na)-Dissolved		19.2	19.3		mg/L	0.8	20	03-FEB-21
Strontium (Sr)-Dissolved		0.214	0.215		mg/L	0.6	20	03-FEB-21



## Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 5 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361561</b>							
<b>WG3482484-3</b>	<b>DUP</b>	<b>L2553074-1</b>						
Sulfur (S)-Dissolved		141	138		mg/L	1.6	20	03-FEB-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-FEB-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-FEB-21
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-FEB-21
Uranium (U)-Dissolved		0.00326	0.00321		mg/L	1.4	20	03-FEB-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-FEB-21
Zinc (Zn)-Dissolved		0.0089	0.0084		mg/L	5.0	20	03-FEB-21
<b>WG3482484-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			106.8		%		80-120	03-FEB-21
Antimony (Sb)-Dissolved			111.2		%		80-120	03-FEB-21
Arsenic (As)-Dissolved			106.3		%		80-120	03-FEB-21
Barium (Ba)-Dissolved			105.4		%		80-120	03-FEB-21
Bismuth (Bi)-Dissolved			116.3		%		80-120	03-FEB-21
Boron (B)-Dissolved			96.4		%		80-120	03-FEB-21
Cadmium (Cd)-Dissolved			104.2		%		80-120	03-FEB-21
Calcium (Ca)-Dissolved			98.7		%		80-120	03-FEB-21
Chromium (Cr)-Dissolved			105.4		%		80-120	03-FEB-21
Cobalt (Co)-Dissolved			105.8		%		80-120	03-FEB-21
Copper (Cu)-Dissolved			105.8		%		80-120	03-FEB-21
Iron (Fe)-Dissolved			91.8		%		80-120	03-FEB-21
Lead (Pb)-Dissolved			107.7		%		80-120	03-FEB-21
Lithium (Li)-Dissolved			99.0		%		80-120	03-FEB-21
Magnesium (Mg)-Dissolved			107.7		%		80-120	03-FEB-21
Manganese (Mn)-Dissolved			106.6		%		80-120	03-FEB-21
Molybdenum (Mo)-Dissolved			111.7		%		80-120	03-FEB-21
Nickel (Ni)-Dissolved			108.1		%		80-120	03-FEB-21
Potassium (K)-Dissolved			103.9		%		80-120	03-FEB-21
Selenium (Se)-Dissolved			106.9		%		80-120	03-FEB-21
Silicon (Si)-Dissolved			98.6		%		60-140	03-FEB-21
Silver (Ag)-Dissolved			111.1		%		80-120	03-FEB-21
Sodium (Na)-Dissolved			122.2	MES	%		80-120	03-FEB-21
Strontium (Sr)-Dissolved			103.9		%		80-120	03-FEB-21
Sulfur (S)-Dissolved			102.9		%		80-120	03-FEB-21
Thallium (Tl)-Dissolved			107.4		%		80-120	03-FEB-21



## Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 6 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361561</b>							
<b>WG3482484-2</b>	<b>LCS</b>							
Tin (Sn)-Dissolved			103.9		%		80-120	03-FEB-21
Titanium (Ti)-Dissolved			99.2		%		80-120	03-FEB-21
Uranium (U)-Dissolved			106.2		%		80-120	03-FEB-21
Vanadium (V)-Dissolved			107.8		%		80-120	03-FEB-21
Zinc (Zn)-Dissolved			104.3		%		80-120	03-FEB-21
<b>WG3482484-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-FEB-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-FEB-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-FEB-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-FEB-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-FEB-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-FEB-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-FEB-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-FEB-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-FEB-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-FEB-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-FEB-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-FEB-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-FEB-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	03-FEB-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-FEB-21



## Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 7 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361561</b>							
<b>WG3482484-1</b>	<b>MB</b>	<b>NP</b>						
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-FEB-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-FEB-21
<b>WG3482484-4</b>	<b>MS</b>	<b>L2553074-2</b>						
Aluminum (Al)-Dissolved			107.7		%		70-130	03-FEB-21
Antimony (Sb)-Dissolved			110.5		%		70-130	03-FEB-21
Arsenic (As)-Dissolved			114.0		%		70-130	03-FEB-21
Barium (Ba)-Dissolved			N/A	MS-B	%		-	03-FEB-21
Bismuth (Bi)-Dissolved			86.3		%		70-130	03-FEB-21
Boron (B)-Dissolved			94.1		%		70-130	03-FEB-21
Cadmium (Cd)-Dissolved			103.6		%		70-130	03-FEB-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	03-FEB-21
Chromium (Cr)-Dissolved			105.9		%		70-130	03-FEB-21
Cobalt (Co)-Dissolved			101.0		%		70-130	03-FEB-21
Copper (Cu)-Dissolved			98.7		%		70-130	03-FEB-21
Iron (Fe)-Dissolved			99.4		%		70-130	03-FEB-21
Lead (Pb)-Dissolved			101.5		%		70-130	03-FEB-21
Lithium (Li)-Dissolved			103.2		%		70-130	03-FEB-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	03-FEB-21
Manganese (Mn)-Dissolved			104.5		%		70-130	03-FEB-21
Molybdenum (Mo)-Dissolved			109.6		%		70-130	03-FEB-21
Nickel (Ni)-Dissolved			101.0		%		70-130	03-FEB-21
Potassium (K)-Dissolved			119.3		%		70-130	03-FEB-21
Selenium (Se)-Dissolved			N/A	MS-B	%		-	03-FEB-21
Silicon (Si)-Dissolved			92.5		%		70-130	03-FEB-21
Silver (Ag)-Dissolved			105.5		%		70-130	03-FEB-21
Sodium (Na)-Dissolved			N/A	MS-B	%		-	03-FEB-21
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	03-FEB-21
Sulfur (S)-Dissolved			N/A	MS-B	%		-	03-FEB-21
Thallium (Tl)-Dissolved			98.8		%		70-130	03-FEB-21
Tin (Sn)-Dissolved			103.7		%		70-130	03-FEB-21
Titanium (Ti)-Dissolved			102.5		%		70-130	03-FEB-21
Uranium (U)-Dissolved			N/A	MS-B	%		-	03-FEB-21
Vanadium (V)-Dissolved			112.3		%		70-130	03-FEB-21



## Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 8 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361561</b>							
<b>WG3482484-4 MS</b>		<b>L2553074-2</b>						
Zinc (Zn)-Dissolved			101.3		%		70-130	03-FEB-21
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361530</b>							
<b>WG3482419-3 DUP</b>		<b>L2553074-1</b>						
Aluminum (Al)-Total		0.0702	0.0584		mg/L	18	20	03-FEB-21
Antimony (Sb)-Total		0.00094	0.00098		mg/L	3.4	20	03-FEB-21
Arsenic (As)-Total		0.00013	0.00012		mg/L	13	20	03-FEB-21
Barium (Ba)-Total		0.0286	0.0298		mg/L	4.2	20	03-FEB-21
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-FEB-21
Boron (B)-Total		0.017	0.017		mg/L	0.8	20	03-FEB-21
Cadmium (Cd)-Total		0.0000582	0.0000619		mg/L	6.1	20	03-FEB-21
Calcium (Ca)-Total		143	142		mg/L	0.8	20	03-FEB-21
Chromium (Cr)-Total		0.00073	0.00076		mg/L	4.1	20	03-FEB-21
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-FEB-21
Copper (Cu)-Total		0.00256	0.00267		mg/L	4.4	20	03-FEB-21
Iron (Fe)-Total		0.068	0.067		mg/L	1.5	20	03-FEB-21
Lead (Pb)-Total		0.00155	0.00154		mg/L	0.4	20	03-FEB-21
Lithium (Li)-Total		0.0289	0.0288		mg/L	0.4	20	03-FEB-21
Magnesium (Mg)-Total		61.4	62.4		mg/L	1.6	20	03-FEB-21
Manganese (Mn)-Total		0.00410	0.00412		mg/L	0.6	20	03-FEB-21
Molybdenum (Mo)-Total		0.00153	0.00155		mg/L	1.4	20	03-FEB-21
Nickel (Ni)-Total		0.00078	0.00081		mg/L	3.2	20	03-FEB-21
Potassium (K)-Total		1.01	1.03		mg/L	1.2	20	03-FEB-21
Selenium (Se)-Total		0.0607	0.0608		mg/L	0.2	20	03-FEB-21
Silicon (Si)-Total		4.18	4.21		mg/L	0.8	20	03-FEB-21
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-FEB-21
Sodium (Na)-Total		17.5	17.7		mg/L	1.0	20	03-FEB-21
Strontium (Sr)-Total		0.200	0.205		mg/L	2.5	20	03-FEB-21
Sulfur (S)-Total		140	143		mg/L	1.9	20	03-FEB-21
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-FEB-21
Tin (Sn)-Total		<0.00010	0.00011	RPD-NA	mg/L	N/A	20	03-FEB-21
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-FEB-21
Uranium (U)-Total		0.00340	0.00331		mg/L	2.6	20	03-FEB-21





## Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 9 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361530</b>							
<b>WG3482419-3</b>	<b>DUP</b>	<b>L2553074-1</b>						
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-FEB-21
Zinc (Zn)-Total		0.0082	0.0089		mg/L	7.5	20	03-FEB-21
<b>WG3482419-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			112.7		%		80-120	03-FEB-21
Antimony (Sb)-Total			113.8		%		80-120	03-FEB-21
Arsenic (As)-Total			105.8		%		80-120	03-FEB-21
Barium (Ba)-Total			109.2		%		80-120	03-FEB-21
Bismuth (Bi)-Total			110.0		%		80-120	03-FEB-21
Boron (B)-Total			99.1		%		80-120	03-FEB-21
Cadmium (Cd)-Total			109.0		%		80-120	03-FEB-21
Calcium (Ca)-Total			114.6		%		80-120	03-FEB-21
Chromium (Cr)-Total			108.5		%		80-120	03-FEB-21
Cobalt (Co)-Total			108.2		%		80-120	03-FEB-21
Copper (Cu)-Total			105.7		%		80-120	03-FEB-21
Iron (Fe)-Total			105.5		%		80-120	03-FEB-21
Lead (Pb)-Total			109.5		%		80-120	03-FEB-21
Lithium (Li)-Total			99.9		%		80-120	03-FEB-21
Magnesium (Mg)-Total			116.4		%		80-120	03-FEB-21
Manganese (Mn)-Total			109.7		%		80-120	03-FEB-21
Molybdenum (Mo)-Total			109.2		%		80-120	03-FEB-21
Nickel (Ni)-Total			106.0		%		80-120	03-FEB-21
Potassium (K)-Total			103.6		%		80-120	03-FEB-21
Selenium (Se)-Total			109.0		%		80-120	03-FEB-21
Silicon (Si)-Total			104.5		%		80-120	03-FEB-21
Silver (Ag)-Total			101.7		%		80-120	03-FEB-21
Sodium (Na)-Total			112.7		%		80-120	03-FEB-21
Strontium (Sr)-Total			106.1		%		80-120	03-FEB-21
Sulfur (S)-Total			112.6		%		80-120	03-FEB-21
Thallium (Tl)-Total			108.2		%		80-120	03-FEB-21
Tin (Sn)-Total			107.5		%		80-120	03-FEB-21
Titanium (Ti)-Total			107.2		%		80-120	03-FEB-21
Uranium (U)-Total			111.2		%		80-120	03-FEB-21
Vanadium (V)-Total			107.8		%		80-120	03-FEB-21
Zinc (Zn)-Total			107.9		%		80-120	03-FEB-21
<b>WG3482419-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 10 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361530</b>							
<b>WG3482419-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	03-FEB-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	03-FEB-21
Arsenic (As)-Total			<0.00010		mg/L		0.0001	03-FEB-21
Barium (Ba)-Total			<0.00010		mg/L		0.0001	03-FEB-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	03-FEB-21
Boron (B)-Total			<0.010		mg/L		0.01	03-FEB-21
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	03-FEB-21
Calcium (Ca)-Total			<0.050		mg/L		0.05	03-FEB-21
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	03-FEB-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	03-FEB-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	03-FEB-21
Iron (Fe)-Total			<0.010		mg/L		0.01	03-FEB-21
Lead (Pb)-Total			<0.000050		mg/L		0.00005	03-FEB-21
Lithium (Li)-Total			<0.0010		mg/L		0.001	03-FEB-21
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	03-FEB-21
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	03-FEB-21
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	03-FEB-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	03-FEB-21
Potassium (K)-Total			<0.050		mg/L		0.05	03-FEB-21
Selenium (Se)-Total			<0.000050		mg/L		0.00005	03-FEB-21
Silicon (Si)-Total			<0.10		mg/L		0.1	03-FEB-21
Silver (Ag)-Total			<0.000010		mg/L		0.00001	03-FEB-21
Sodium (Na)-Total			<0.050		mg/L		0.05	03-FEB-21
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	03-FEB-21
Sulfur (S)-Total			<0.50		mg/L		0.5	03-FEB-21
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	03-FEB-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	03-FEB-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	03-FEB-21
Uranium (U)-Total			<0.000010		mg/L		0.00001	03-FEB-21
Vanadium (V)-Total			<0.00050		mg/L		0.0005	03-FEB-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	03-FEB-21
<b>WG3482419-4</b>	<b>MS</b>	<b>L2553074-2</b>						
Aluminum (Al)-Total			93.4		%		70-130	03-FEB-21
Antimony (Sb)-Total			96.9		%		70-130	03-FEB-21



## Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 11 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361530</b>							
<b>WG3482419-4</b>	<b>MS</b>	<b>L2553074-2</b>						
Arsenic (As)-Total			102.5		%		70-130	03-FEB-21
Barium (Ba)-Total			N/A	MS-B	%		-	03-FEB-21
Bismuth (Bi)-Total			96.1		%		70-130	03-FEB-21
Boron (B)-Total			101.9		%		70-130	03-FEB-21
Cadmium (Cd)-Total			101.0		%		70-130	03-FEB-21
Calcium (Ca)-Total			N/A	MS-B	%		-	03-FEB-21
Chromium (Cr)-Total			104.7		%		70-130	03-FEB-21
Cobalt (Co)-Total			99.98		%		70-130	03-FEB-21
Copper (Cu)-Total			97.2		%		70-130	03-FEB-21
Iron (Fe)-Total			101.4		%		70-130	03-FEB-21
Lead (Pb)-Total			97.0		%		70-130	03-FEB-21
Lithium (Li)-Total			111.7		%		70-130	03-FEB-21
Magnesium (Mg)-Total			N/A	MS-B	%		-	03-FEB-21
Manganese (Mn)-Total			103.6		%		70-130	03-FEB-21
Molybdenum (Mo)-Total			105.5		%		70-130	03-FEB-21
Nickel (Ni)-Total			97.8		%		70-130	03-FEB-21
Potassium (K)-Total			106.6		%		70-130	03-FEB-21
Selenium (Se)-Total			N/A	MS-B	%		-	03-FEB-21
Silicon (Si)-Total			87.1		%		70-130	03-FEB-21
Silver (Ag)-Total			96.1		%		70-130	03-FEB-21
Sodium (Na)-Total			N/A	MS-B	%		-	03-FEB-21
Strontium (Sr)-Total			N/A	MS-B	%		-	03-FEB-21
Sulfur (S)-Total			N/A	MS-B	%		-	03-FEB-21
Thallium (Tl)-Total			96.7		%		70-130	03-FEB-21
Tin (Sn)-Total			104.8		%		70-130	03-FEB-21
Titanium (Ti)-Total			97.9		%		70-130	03-FEB-21
Uranium (U)-Total			N/A	MS-B	%		-	03-FEB-21
Vanadium (V)-Total			106.2		%		70-130	03-FEB-21
Zinc (Zn)-Total			96.0		%		70-130	03-FEB-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360589</b>							
<b>WG3481783-7</b>	<b>DUP</b>	<b>L2553074-3</b>						
Ammonia as N		<0.0050	0.0057	RPD-NA	mg/L	N/A	20	01-FEB-21
<b>WG3481783-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 12 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5360589</b>							
<b>WG3481783-2</b>	<b>LCS</b>							
Ammonia as N			88.9		%		85-115	01-FEB-21
<b>WG3481783-6</b>	<b>LCS</b>							
Ammonia as N			96.6		%		85-115	01-FEB-21
<b>WG3481783-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	01-FEB-21
<b>WG3481783-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	01-FEB-21
<b>WG3481783-8</b>	<b>MS</b>	<b>L2553074-3</b>						
Ammonia as N			98.6		%		75-125	01-FEB-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5360612</b>							
<b>WG3481773-3</b>	<b>DUP</b>	<b>L2553074-4</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-JAN-21
<b>WG3481773-2</b>	<b>LCS</b>							
Nitrite (as N)			103.7		%		90-110	30-JAN-21
<b>WG3481773-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	30-JAN-21
<b>WG3481773-4</b>	<b>MS</b>	<b>L2553074-4</b>						
Nitrite (as N)			101.2		%		75-125	30-JAN-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5360612</b>							
<b>WG3481773-3</b>	<b>DUP</b>	<b>L2553074-4</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	30-JAN-21
<b>WG3481773-2</b>	<b>LCS</b>							
Nitrate (as N)			102.1		%		90-110	30-JAN-21
<b>WG3481773-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	30-JAN-21
<b>WG3481773-4</b>	<b>MS</b>	<b>L2553074-4</b>						
Nitrate (as N)			98.5		%		75-125	30-JAN-21
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5365496</b>							
<b>WG3484704-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			225		mV		210-230	06-FEB-21
<b>P-T-L-COL-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 13 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch R5362296								
WG3483447-2	LCS							
Phosphorus (P)-Total			93.1		%		80-120	04-FEB-21
Batch R5362296								
WG3483447-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-FEB-21
<b>PH-CL</b>								
<b>Water</b>								
Batch R5361163								
WG3482468-11	LCS							
pH			6.98		pH		6.9-7.1	01-FEB-21
Batch R5361163								
WG3482468-8	LCS							
pH			6.98		pH		6.9-7.1	01-FEB-21
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch R5360052								
WG3481189-2	LCS							
Orthophosphate-Dissolved (as P)			100.3		%		80-120	30-JAN-21
Batch R5360052								
WG3481189-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	30-JAN-21
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch R5360612								
WG3481773-3	DUP	L2553074-4						
Sulfate (SO4)			<0.30	RPD-NA	mg/L	N/A	20	30-JAN-21
Batch R5360612								
WG3481773-2	LCS							
Sulfate (SO4)			102.2		%		90-110	30-JAN-21
Batch R5360612								
WG3481773-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	30-JAN-21
Batch R5360612								
WG3481773-4	MS	L2553074-4						
Sulfate (SO4)			94.4		%		75-125	30-JAN-21
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch R5363787								
WG3483670-2	LCS							
Total Dissolved Solids			104.5		%		85-115	04-FEB-21
Batch R5363787								
WG3483670-1	MB							
Total Dissolved Solids			<10		mg/L		10	04-FEB-21
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch R5361752								
WG3483074-13	DUP	L2553074-4						
Total Kjeldahl Nitrogen			<0.050	RPD-NA	mg/L	N/A	20	04-FEB-21
Batch R5361752								
WG3483074-2	LCS							



## Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 14 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361752</b>							
<b>WG3483074-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			86.8		%		75-125	03-FEB-21
<b>WG3483074-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			84.5		%		75-125	03-FEB-21
<b>WG3483074-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			83.9		%		75-125	03-FEB-21
<b>WG3483074-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-FEB-21
<b>WG3483074-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-FEB-21
<b>WG3483074-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-FEB-21
<b>WG3483074-14</b>	<b>MS</b>	<b>L2553074-4</b>						
Total Kjeldahl Nitrogen			91.4		%		70-130	04-FEB-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5363802</b>							
<b>WG3483669-2</b>	<b>LCS</b>							
Total Suspended Solids			98.4		%		85-115	04-FEB-21
<b>WG3483669-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	04-FEB-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360133</b>							
<b>WG3481267-3</b>	<b>DUP</b>	<b>L2553074-2</b>						
Turbidity		4.24	4.87		NTU	14	15	31-JAN-21
<b>WG3481267-2</b>	<b>LCS</b>							
Turbidity			98.0		%		85-115	31-JAN-21
<b>WG3481267-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	31-JAN-21

# Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 15 of 16

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2553074

Report Date: 08-FEB-21

Page 16 of 16

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	29-JAN-21 14:10	06-FEB-21 12:00	0.25	190	hours	EHTR-FM
	2	29-JAN-21 11:50	06-FEB-21 12:00	0.25	192	hours	EHTR-FM
	3	29-JAN-21 15:00	06-FEB-21 12:00	0.25	189	hours	EHTR-FM
	4	29-JAN-21	06-FEB-21 12:00	0.25	192	hours	EHTR-FM
pH	1	29-JAN-21 14:10	01-FEB-21 15:00	0.25	73	hours	EHTR-FM
	2	29-JAN-21 11:50	01-FEB-21 15:00	0.25	75	hours	EHTR-FM
	3	29-JAN-21 15:00	01-FEB-21 15:00	0.25	72	hours	EHTR-FM
	4	29-JAN-21	01-FEB-21 15:00	0.25	75	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2553074 were received on 30-JAN-21 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>COC ID:</b> 20210129 - LCO GW		<b>TURNAROUND TIME:</b> Regular		<b>RUSH:</b>			
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>	
Facility Name / Job# Line Creek Operation				Lab Name ALS Calgary		Report Format / Distribution	
Project Manager Paul Dore				Lab Contact Lyudmyla Shvets		Excel	PDF
Email paul.dore@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com		Email 1: paul.dore@teck.com	x
Address Box 2003				Address 2559 29 Street NE		Email 2: teckcoal@equisonline.com	x
15km North Hwy 43						Email 3: drake.tymstra@teck.com	x
City Sparwood		Province BC	City Calgary		Province AB	Email 4: gal_equis@golder.com	x
Postal Code V0B 2G0		Country Canada	Postal Code T1Y 7B5		Country Canada	PO number	VPO00708036
Phone Number 1-250-425-4869				Phone Number 403 407 1794			

SAMPLE DETAILS							ANALYSIS REQUESTED								
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	Y	N	Y	Y	N	N	N
								PREPARE	H2SO4	H2SO4	HCl	HNO3	HNO3	NONE	HCl
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	HG-T-CVAF-VA
LC_PIZ1206C_WG_2021-01-25_NP	LC_PIZ1206C	WG	NO	29-Jan	14:10	G	7		1	1	1	1	1	1	1
LC_PIZ1212_WG_2021-01-25_NP	LC_PIZ1212	WG	NO	29-Jan	11:50	G	7		1	1	1	1	1	1	1
LC_MT3_WG_2021-01-25_NP	LC_MT3	WG	NO	29-Jan	15:00	G	7		1	1	1	1	1	1	1
LC_RD3_WG_2021-01-25_NP	LC_RD3	WG	NO	29-Jan	0:00	G				1			1	1	1



L2553074-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
LC_RD3 is TRAVEL BLANK			<i>[Signature]</i>	1/30 0630

<b>SERVICE REQUEST (rush - subject to availability)</b>		<b>Sampler's Name</b>	<b>Mobile #</b>
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		<b>Sampler's Signature</b>	<b>Date/Time</b>
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

30L



TECK COAL LIMITED (LINE CREEK)  
ATTN: Chris Blurton  
PO BOX 2003  
SPARWOOD BC V0B 2G0

Date Received: 18-FEB-21  
Report Date: 04-NOV-21 16:11 (MT)  
Version: FINAL REV. 2

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2558906  
Project P.O. #: VPO00739930  
Job Reference: LINE CREEK OPERATION  
C of C Numbers: PIZP1103 20210217  
Legal Site Desc:

Comments: Additional analysis for Carbonate, Bicarbonate and Hydroxide on L2558906-1.

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Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2558906-1 LC_PIZP1103_WG_Q1-2021_NP							
Sampled By: CLIENT on 17-FEB-21 @ 15:00							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	498		5.0	mg/L		18-FEB-21	R5381914
Carbonate (CO3)	<5.0		5.0	mg/L		18-FEB-21	R5381914
Dissolved Organic Carbon	1.44		0.50	mg/L		24-FEB-21	R5390976
Hydroxide (OH)	<5.0		5.0	mg/L		18-FEB-21	R5381914
Total Kjeldahl Nitrogen	0.331	DLHC	0.050	mg/L		24-FEB-21	R5388258
Total Organic Carbon	1.64		0.50	mg/L		24-FEB-21	R5390976
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	20-FEB-21	20-FEB-21	R5383596
Dissolved Metals Filtration Location	FIELD					20-FEB-21	R5382719
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-FEB-21	23-FEB-21	R5387076
Dissolved Mercury Filtration Location	FIELD					23-FEB-21	R5387059
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					20-FEB-21	R5382719
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	20-FEB-21	20-FEB-21	R5383596
Antimony (Sb)-Dissolved	0.00012		0.00010	mg/L	20-FEB-21	20-FEB-21	R5383596
Arsenic (As)-Dissolved	0.00103		0.00010	mg/L	20-FEB-21	20-FEB-21	R5383596
Barium (Ba)-Dissolved	0.0746		0.00010	mg/L	20-FEB-21	20-FEB-21	R5383596
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-FEB-21	20-FEB-21	R5383596
Boron (B)-Dissolved	0.472		0.010	mg/L	20-FEB-21	20-FEB-21	R5383596
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	20-FEB-21	20-FEB-21	R5383596
Calcium (Ca)-Dissolved	28.2		0.050	mg/L	20-FEB-21	20-FEB-21	R5383596
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	20-FEB-21	20-FEB-21	R5383596
Cobalt (Co)-Dissolved	0.55		0.10	ug/L	20-FEB-21	20-FEB-21	R5383596
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	20-FEB-21	20-FEB-21	R5383596
Iron (Fe)-Dissolved	0.155		0.010	mg/L	20-FEB-21	20-FEB-21	R5383596
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-FEB-21	20-FEB-21	R5383596
Lithium (Li)-Dissolved	0.118		0.0010	mg/L	20-FEB-21	20-FEB-21	R5383596
Magnesium (Mg)-Dissolved	16.1		0.10	mg/L	20-FEB-21	20-FEB-21	R5383596
Manganese (Mn)-Dissolved	0.544		0.00010	mg/L	20-FEB-21	20-FEB-21	R5383596
Molybdenum (Mo)-Dissolved	0.0125		0.000050	mg/L	20-FEB-21	20-FEB-21	R5383596
Nickel (Ni)-Dissolved	0.00118		0.00050	mg/L	20-FEB-21	20-FEB-21	R5383596
Potassium (K)-Dissolved	1.70		0.050	mg/L	20-FEB-21	20-FEB-21	R5383596
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	20-FEB-21	20-FEB-21	R5383596
Silicon (Si)-Dissolved	4.17		0.050	mg/L	20-FEB-21	20-FEB-21	R5383596
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-FEB-21	20-FEB-21	R5383596
Sodium (Na)-Dissolved	148		0.050	mg/L	20-FEB-21	20-FEB-21	R5383596
Strontium (Sr)-Dissolved	0.801		0.00020	mg/L	20-FEB-21	20-FEB-21	R5383596
Sulfur (S)-Dissolved	11.1		0.50	mg/L	20-FEB-21	20-FEB-21	R5383596
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	20-FEB-21	20-FEB-21	R5383596
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	20-FEB-21	20-FEB-21	R5383596
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	20-FEB-21	20-FEB-21	R5383596
Uranium (U)-Dissolved	0.00207		0.000010	mg/L	20-FEB-21	20-FEB-21	R5383596
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	20-FEB-21	20-FEB-21	R5383596
Zinc (Zn)-Dissolved	0.0021		0.0010	mg/L	20-FEB-21	20-FEB-21	R5383596
<b>Hardness</b>							
Hardness (as CaCO3)	137		0.50	mg/L		21-FEB-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.130		0.020	ug/L		19-FEB-21	R5382576

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2558906-1 LC_PIZP1103_WG_Q1-2021_NP							
Sampled By: CLIENT on 17-FEB-21 @ 15:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	2.26		0.0030	mg/L		19-FEB-21	R5382576
Antimony (Sb)-Total	0.00022		0.00010	mg/L		19-FEB-21	R5382576
Arsenic (As)-Total	0.00178		0.00010	mg/L		19-FEB-21	R5382576
Barium (Ba)-Total	0.0945		0.00010	mg/L		19-FEB-21	R5382576
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		19-FEB-21	R5382576
Boron (B)-Total	0.607		0.010	mg/L		19-FEB-21	R5382576
Cadmium (Cd)-Total	0.146		0.0050	ug/L		19-FEB-21	R5382576
Calcium (Ca)-Total	34.0		0.050	mg/L		19-FEB-21	R5382576
Chromium (Cr)-Total	0.00330		0.00010	mg/L		19-FEB-21	R5382576
Cobalt (Co)-Total	1.59		0.10	ug/L		19-FEB-21	R5382576
Copper (Cu)-Total	0.0142		0.00050	mg/L		19-FEB-21	R5382576
Iron (Fe)-Total	2.64		0.010	mg/L		19-FEB-21	R5382576
Lead (Pb)-Total	0.00162		0.000050	mg/L		19-FEB-21	R5382576
Lithium (Li)-Total	0.121		0.0010	mg/L		19-FEB-21	R5382576
Magnesium (Mg)-Total	16.4		0.10	mg/L		19-FEB-21	R5382576
Manganese (Mn)-Total	0.621		0.00010	mg/L		19-FEB-21	R5382576
Molybdenum (Mo)-Total	0.0129		0.000050	mg/L		19-FEB-21	R5382576
Nickel (Ni)-Total	0.00385		0.00050	mg/L		19-FEB-21	R5382576
Potassium (K)-Total	2.48		0.050	mg/L		19-FEB-21	R5382576
Selenium (Se)-Total	0.178		0.050	ug/L		19-FEB-21	R5382576
Silicon (Si)-Total	7.72		0.10	mg/L		19-FEB-21	R5382576
Silver (Ag)-Total	0.000028		0.000010	mg/L		19-FEB-21	R5382576
Sodium (Na)-Total	140		0.050	mg/L		19-FEB-21	R5382576
Strontium (Sr)-Total	0.862		0.00020	mg/L		19-FEB-21	R5382576
Sulfur (S)-Total	10.2		0.50	mg/L		19-FEB-21	R5382576
Thallium (Tl)-Total	0.000050		0.000010	mg/L		19-FEB-21	R5382576
Tin (Sn)-Total	0.00030		0.0010	mg/L		19-FEB-21	R5382576
Titanium (Ti)-Total	0.041		0.010	mg/L		19-FEB-21	R5382576
Uranium (U)-Total	0.00212		0.000010	mg/L		19-FEB-21	R5382576
Vanadium (V)-Total	0.00495		0.00050	mg/L		19-FEB-21	R5382576
Zinc (Zn)-Total	0.0210		0.0030	mg/L		19-FEB-21	R5382576
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	7.0		1.0	mg/L		18-FEB-21	R5381977
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	408		1.0	mg/L		18-FEB-21	R5381914
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		18-FEB-21	R5381914
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-FEB-21	R5381914
Alkalinity, Total (as CaCO3)	408		1.0	mg/L		18-FEB-21	R5381914
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.149		0.0050	mg/L		22-FEB-21	R5385161
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		18-FEB-21	R5382883
<b>Chloride in Water by IC</b>							
Chloride (Cl)	4.00		0.10	mg/L		18-FEB-21	R5382883
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	743		2.0	uS/cm		18-FEB-21	R5381914
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.254		0.020	mg/L		18-FEB-21	R5382883
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	2.3			%		21-FEB-21	
Anion Sum	8.83			meq/L		21-FEB-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2558906-1 LC_PIZP1103_WG_Q1-2021_NP							
Sampled By: CLIENT on 17-FEB-21 @ 15:00							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation Sum	9.25			meq/L		21-FEB-21	
<b>Ion Balance Calculation</b>							
Ion Balance	105		-100	%		21-FEB-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0080		0.0050	mg/L		18-FEB-21	R5382883
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0029		0.0010	mg/L		18-FEB-21	R5382883
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0493		0.0010	mg/L		18-FEB-21	R5380496
<b>Oxidation redution potential by elect.</b>							
ORP	242		-1000	mV		24-FEB-21	R5388780
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.154	DLHC	0.010	mg/L		21-FEB-21	R5384052
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	26.4		0.30	mg/L		18-FEB-21	R5382883
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	528	DLHC	20	mg/L		22-FEB-21	R5386017
<b>Total Suspended Solids</b>							
Total Suspended Solids	36.8		1.0	mg/L		22-FEB-21	R5385736
<b>Turbidity</b>							
Turbidity	60.9		0.10	NTU		18-FEB-21	R5380356
<b>pH</b>							
pH	7.80		0.10	pH		18-FEB-21	R5381914

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

PIZP1103 20210217

## GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample  
 mg/kg wwt - milligrams per kilogram based on wet weight of sample  
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.





## Quality Control Report

Workorder: L2558906

Report Date: 04-NOV-21

Page 1 of 11

Client: TECK COAL LIMITED (LINE CREEK)  
 PO BOX 2003  
 SPARWOOD BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R5381977							
<b>WG3490455-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			107.6		%		85-115	18-FEB-21
<b>WG3490455-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	18-FEB-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R5381914							
<b>WG3490344-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.9		%		85-115	18-FEB-21
<b>WG3490344-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-FEB-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R5383596							
<b>WG3490615-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.9		%		80-120	20-FEB-21
<b>WG3490615-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	20-FEB-21
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R5382576							
<b>WG3490459-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			97.5		%		80-120	19-FEB-21
<b>WG3490459-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	19-FEB-21
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R5381914							
<b>WG3490344-4</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	18-MAR-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R5382883							
<b>WG3490677-2</b>	<b>LCS</b>							
Bromide (Br)			102.6		%		85-115	18-FEB-21
<b>WG3490677-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	18-FEB-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2558906

Report Date: 04-NOV-21

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5390976							
<b>WG3493344-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			85.7		%		80-120	24-FEB-21
<b>WG3493344-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-FEB-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5390976							
<b>WG3493344-2</b>	<b>LCS</b>							
Total Organic Carbon			88.9		%		80-120	24-FEB-21
<b>WG3493344-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	24-FEB-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5382883							
<b>WG3490677-2</b>	<b>LCS</b>							
Chloride (Cl)			104.0		%		85-115	18-FEB-21
<b>WG3490677-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	18-FEB-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5381914							
<b>WG3490344-4</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	18-MAR-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5381914							
<b>WG3490344-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.3		%		90-110	18-FEB-21
<b>WG3490344-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	18-FEB-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5382883							
<b>WG3490677-2</b>	<b>LCS</b>							
Fluoride (F)			102.7		%		90-110	18-FEB-21
<b>WG3490677-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	18-FEB-21
<b>HG-D-CVAA-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2558906

Report Date: 04-NOV-21

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5387076</b>							
<b>WG3491912-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.8		%		80-120	23-FEB-21
<b>WG3491912-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	23-FEB-21
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5383596</b>							
<b>WG3490615-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			106.7		%		80-120	20-FEB-21
Antimony (Sb)-Dissolved			101.2		%		80-120	20-FEB-21
Arsenic (As)-Dissolved			103.4		%		80-120	20-FEB-21
Barium (Ba)-Dissolved			105.1		%		80-120	20-FEB-21
Bismuth (Bi)-Dissolved			101.3		%		80-120	20-FEB-21
Boron (B)-Dissolved			90.0		%		80-120	20-FEB-21
Cadmium (Cd)-Dissolved			103.8		%		80-120	20-FEB-21
Calcium (Ca)-Dissolved			102.0		%		80-120	20-FEB-21
Chromium (Cr)-Dissolved			104.3		%		80-120	20-FEB-21
Cobalt (Co)-Dissolved			104.9		%		80-120	20-FEB-21
Copper (Cu)-Dissolved			102.2		%		80-120	20-FEB-21
Iron (Fe)-Dissolved			106.6		%		80-120	20-FEB-21
Lead (Pb)-Dissolved			101.8		%		80-120	20-FEB-21
Lithium (Li)-Dissolved			98.7		%		80-120	20-FEB-21
Magnesium (Mg)-Dissolved			105.6		%		80-120	20-FEB-21
Manganese (Mn)-Dissolved			105.4		%		80-120	20-FEB-21
Molybdenum (Mo)-Dissolved			100.8		%		80-120	20-FEB-21
Nickel (Ni)-Dissolved			102.6		%		80-120	20-FEB-21
Potassium (K)-Dissolved			106.2		%		80-120	20-FEB-21
Selenium (Se)-Dissolved			104.9		%		80-120	20-FEB-21
Silicon (Si)-Dissolved			94.9		%		60-140	20-FEB-21
Silver (Ag)-Dissolved			99.8		%		80-120	20-FEB-21
Sodium (Na)-Dissolved			108.8		%		80-120	20-FEB-21
Strontium (Sr)-Dissolved			99.9		%		80-120	20-FEB-21
Sulfur (S)-Dissolved			98.7		%		80-120	20-FEB-21
Thallium (Tl)-Dissolved			103.2		%		80-120	20-FEB-21
Tin (Sn)-Dissolved			99.4		%		80-120	20-FEB-21
Titanium (Ti)-Dissolved			103.5		%		80-120	20-FEB-21



## Quality Control Report

Workorder: L2558906

Report Date: 04-NOV-21

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5383596</b>							
<b>WG3490615-2</b>	<b>LCS</b>							
Uranium (U)-Dissolved			100.2		%		80-120	20-FEB-21
Vanadium (V)-Dissolved			107.0		%		80-120	20-FEB-21
Zinc (Zn)-Dissolved			102.5		%		80-120	20-FEB-21
<b>WG3490615-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	20-FEB-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	20-FEB-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	20-FEB-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	20-FEB-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	20-FEB-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	20-FEB-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	20-FEB-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	20-FEB-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	20-FEB-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	20-FEB-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	20-FEB-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	20-FEB-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	20-FEB-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	20-FEB-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	20-FEB-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	20-FEB-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	20-FEB-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	20-FEB-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	20-FEB-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	20-FEB-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	20-FEB-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	20-FEB-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	20-FEB-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	20-FEB-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	20-FEB-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	20-FEB-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	20-FEB-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	20-FEB-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	20-FEB-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	20-FEB-21



## Quality Control Report

Workorder: L2558906

Report Date: 04-NOV-21

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5383596</b>							
<b>WG3490615-1</b>	<b>MB</b>	<b>NP</b>						
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	20-FEB-21
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5382576</b>							
<b>WG3490459-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			102.6		%		80-120	19-FEB-21
Antimony (Sb)-Total			105.3		%		80-120	19-FEB-21
Arsenic (As)-Total			103.3		%		80-120	19-FEB-21
Barium (Ba)-Total			104.8		%		80-120	19-FEB-21
Bismuth (Bi)-Total			105.9		%		80-120	19-FEB-21
Boron (B)-Total			95.9		%		80-120	19-FEB-21
Cadmium (Cd)-Total			104.7		%		80-120	19-FEB-21
Calcium (Ca)-Total			102.6		%		80-120	19-FEB-21
Chromium (Cr)-Total			102.1		%		80-120	19-FEB-21
Cobalt (Co)-Total			102.6		%		80-120	19-FEB-21
Copper (Cu)-Total			101.2		%		80-120	19-FEB-21
Iron (Fe)-Total			99.9		%		80-120	19-FEB-21
Lead (Pb)-Total			104.7		%		80-120	19-FEB-21
Lithium (Li)-Total			91.5		%		80-120	19-FEB-21
Magnesium (Mg)-Total			99.0		%		80-120	19-FEB-21
Manganese (Mn)-Total			102.9		%		80-120	19-FEB-21
Molybdenum (Mo)-Total			99.3		%		80-120	19-FEB-21
Nickel (Ni)-Total			105.0		%		80-120	19-FEB-21
Potassium (K)-Total			104.8		%		80-120	19-FEB-21
Selenium (Se)-Total			101.6		%		80-120	19-FEB-21
Silicon (Si)-Total			97.1		%		80-120	19-FEB-21
Silver (Ag)-Total			96.4		%		80-120	19-FEB-21
Sodium (Na)-Total			106.6		%		80-120	19-FEB-21
Strontium (Sr)-Total			99.6		%		80-120	19-FEB-21
Sulfur (S)-Total			109.9		%		80-120	19-FEB-21
Thallium (Tl)-Total			105.4		%		80-120	19-FEB-21
Tin (Sn)-Total			94.2		%		80-120	19-FEB-21
Titanium (Ti)-Total			95.5		%		80-120	19-FEB-21
Uranium (U)-Total			97.3		%		80-120	19-FEB-21



## Quality Control Report

Workorder: L2558906

Report Date: 04-NOV-21

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5382576</b>							
<b>WG3490459-2</b>	<b>LCS</b>							
Vanadium (V)-Total			104.0		%		80-120	19-FEB-21
Zinc (Zn)-Total			103.4		%		80-120	19-FEB-21
<b>WG3490459-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	19-FEB-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	19-FEB-21
Arsenic (As)-Total			<0.00010		mg/L		0.0001	19-FEB-21
Barium (Ba)-Total			<0.00010		mg/L		0.0001	19-FEB-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	19-FEB-21
Boron (B)-Total			<0.010		mg/L		0.01	19-FEB-21
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	19-FEB-21
Calcium (Ca)-Total			<0.050		mg/L		0.05	19-FEB-21
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	19-FEB-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	19-FEB-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	19-FEB-21
Iron (Fe)-Total			<0.010		mg/L		0.01	19-FEB-21
Lead (Pb)-Total			<0.000050		mg/L		0.00005	19-FEB-21
Lithium (Li)-Total			<0.0010		mg/L		0.001	19-FEB-21
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	20-FEB-21
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	19-FEB-21
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	19-FEB-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	20-FEB-21
Potassium (K)-Total			<0.050		mg/L		0.05	19-FEB-21
Selenium (Se)-Total			<0.000050		mg/L		0.00005	19-FEB-21
Silicon (Si)-Total			<0.10		mg/L		0.1	19-FEB-21
Silver (Ag)-Total			<0.000010		mg/L		0.00001	19-FEB-21
Sodium (Na)-Total			<0.050		mg/L		0.05	19-FEB-21
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	19-FEB-21
Sulfur (S)-Total			<0.50		mg/L		0.5	19-FEB-21
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	19-FEB-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	19-FEB-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	19-FEB-21
Uranium (U)-Total			<0.000010		mg/L		0.00001	19-FEB-21
Vanadium (V)-Total			<0.00050		mg/L		0.0005	19-FEB-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	19-FEB-21



## Quality Control Report

Workorder: L2558906

Report Date: 04-NOV-21

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Batch R5385161</b>								
<b>WG3491394-3</b>	<b>DUP</b>	<b>L2558906-1</b>						
Ammonia as N		0.149	0.144		mg/L	3.1	20	22-FEB-21
<b>WG3491394-2</b>	<b>LCS</b>							
Ammonia as N			92.8		%		85-115	22-FEB-21
<b>WG3491394-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	22-FEB-21
<b>WG3491394-4</b>	<b>MS</b>	<b>L2558906-1</b>						
Ammonia as N			N/A	MS-B	%		-	22-FEB-21
<b>NO2-L-IC-N-CL</b>								
<b>Batch R5382883</b>								
<b>WG3490677-2</b>	<b>LCS</b>							
Nitrite (as N)			104.8		%		90-110	18-FEB-21
<b>WG3490677-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	18-FEB-21
<b>NO3-L-IC-N-CL</b>								
<b>Batch R5382883</b>								
<b>WG3490677-2</b>	<b>LCS</b>							
Nitrate (as N)			104.0		%		90-110	18-FEB-21
<b>WG3490677-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	18-FEB-21
<b>OH-CL</b>								
<b>Batch R5381914</b>								
<b>WG3490344-4</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	18-MAR-21
<b>ORP-CL</b>								
<b>Batch R5388780</b>								
<b>WG3492639-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	24-FEB-21
<b>P-T-L-COL-CL</b>								
<b>Batch R5384052</b>								
<b>WG3490873-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			89.7		%		80-120	21-FEB-21
<b>WG3490873-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-FEB-21
<b>PH-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2558906

Report Date: 04-NOV-21

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R5381914							
WG3490344-5	LCS							
pH			6.98		pH		6.9-7.1	18-FEB-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5380496							
WG3489842-6	LCS							
Orthophosphate-Dissolved (as P)			98.7		%		80-120	18-FEB-21
WG3489842-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	18-FEB-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5382883							
WG3490677-2	LCS							
Sulfate (SO4)			103.3		%		90-110	18-FEB-21
WG3490677-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	18-FEB-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5386017							
WG3491102-2	LCS							
Total Dissolved Solids			99.95		%		85-115	22-FEB-21
WG3491102-1	MB							
Total Dissolved Solids			<10		mg/L		10	22-FEB-21
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5388258							
WG3491657-6	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	24-FEB-21
WG3491657-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-FEB-21
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5385736							
WG3491101-2	LCS							
Total Suspended Solids			97.5		%		85-115	22-FEB-21
WG3491101-1	MB							
Total Suspended Solids			<1.0		mg/L		1	22-FEB-21
<b>TURBIDITY-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2558906

Report Date: 04-NOV-21

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5380356</b>							
<b>WG3489944-11</b>	<b>LCS</b>							
Turbidity			102.5		%		85-115	18-FEB-21
<b>WG3489944-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	18-FEB-21

# Quality Control Report

Workorder: L2558906

Report Date: 04-NOV-21

Page 10 of 11

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

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# Quality Control Report

Workorder: L2558906

Report Date: 04-NOV-21

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	17-FEB-21 15:00	24-FEB-21 07:00	0.25	160	hours	EHTR-FM
pH	1	17-FEB-21 15:00	18-FEB-21 14:00	0.25	23	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2558906 were received on 18-FEB-21 11:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **PIZP1103 20210217**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Chris Blurton			Lab Contact	Lyudmyla Shvets			Email 1:	chris.blurton@teck.com	x	x	
Email	chris.blurton@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x	
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	x	x	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930			
Phone Number	250-425-8478			Phone Number	403 407 1794							

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	N	Y	Y	N	Y	N	N	N	N	N	N	N	
								PRESERV	H2SO4	HCl	NONE	HNO3	HNO3	NONE	NaOH/Zn Ac	H2SO4					
								ANALYSIS	ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-Sulfide-T	ALS_Package-TKN/TOC				
LC_PIZP1103_WG_Q1-2021_NP	LC_PIZP1103	WG		17-Feb	15:00	G	6			1	1		1	1	1		1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S.Fossen	17-Feb		2/18/20

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	<input checked="" type="checkbox"/>	Sampler's Name	S. Fossen/D. Tymstra	
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	S Fossen	Mobile #
Emergency (1 Business Day) - 100% surcharge		Date/Time	February 17, 2021	
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

8



TECK COAL LIMITED (LINE CREEK)  
ATTN: Chris Blurton  
PO BOX 2003  
SPARWOOD BC V0B 2G0

Date Received: 11-MAR-21  
Report Date: 04-NOV-21 15:33 (MT)  
Version: FINAL REV. 2

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2566083  
Project P.O. #: VPO00739930  
Job Reference: LINE CREEK OPERATION  
C of C Numbers: DC\_GW\_20210310  
Legal Site Desc:

Comments: Additional analysis for Carbonate, Bicarbonate and Hydroxide on L2566083-1 and -2.

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Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2566083-1 LC_PIZDC1307_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 10-MAR-21 @ 12:45							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	274		5.0	mg/L		16-MAR-21	R5402546
Carbonate (CO3)	<5.0		5.0	mg/L		16-MAR-21	R5402546
Dissolved Organic Carbon	1.55		0.50	mg/L		18-MAR-21	R5403881
Hydroxide (OH)	<5.0		5.0	mg/L		16-MAR-21	R5402546
Total Kjeldahl Nitrogen	0.233		0.050	mg/L		13-MAR-21	R5400826
Total Organic Carbon	1.81		0.50	mg/L		18-MAR-21	R5403881
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	15-MAR-21	15-MAR-21	R5401490
Dissolved Metals Filtration Location	FIELD					15-MAR-21	R5401145
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	16-MAR-21	16-MAR-21	R5401618
Dissolved Mercury Filtration Location	FIELD					16-MAR-21	R5401585
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					15-MAR-21	R5401145
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	15-MAR-21	15-MAR-21	R5401490
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	15-MAR-21	15-MAR-21	R5401490
Arsenic (As)-Dissolved	0.00169		0.00010	mg/L	15-MAR-21	15-MAR-21	R5401490
Barium (Ba)-Dissolved	1.54		0.00010	mg/L	15-MAR-21	15-MAR-21	R5401490
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	15-MAR-21	15-MAR-21	R5401490
Boron (B)-Dissolved	0.023		0.010	mg/L	15-MAR-21	15-MAR-21	R5401490
Cadmium (Cd)-Dissolved	<0.015	DLM	0.015	ug/L	15-MAR-21	15-MAR-21	R5401490
Calcium (Ca)-Dissolved	41.5		0.050	mg/L	15-MAR-21	15-MAR-21	R5401490
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	15-MAR-21	15-MAR-21	R5401490
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	15-MAR-21	15-MAR-21	R5401490
Copper (Cu)-Dissolved	0.00127		0.00020	mg/L	15-MAR-21	15-MAR-21	R5401490
Iron (Fe)-Dissolved	0.779		0.010	mg/L	15-MAR-21	15-MAR-21	R5401490
Lead (Pb)-Dissolved	0.000068		0.000050	mg/L	15-MAR-21	15-MAR-21	R5401490
Lithium (Li)-Dissolved	0.0730		0.0010	mg/L	15-MAR-21	15-MAR-21	R5401490
Magnesium (Mg)-Dissolved	19.8		0.10	mg/L	15-MAR-21	15-MAR-21	R5401490
Manganese (Mn)-Dissolved	0.00808		0.00010	mg/L	15-MAR-21	15-MAR-21	R5401490
Molybdenum (Mo)-Dissolved	0.0322		0.000050	mg/L	15-MAR-21	15-MAR-21	R5401490
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	15-MAR-21	15-MAR-21	R5401490
Potassium (K)-Dissolved	4.90		0.050	mg/L	15-MAR-21	15-MAR-21	R5401490
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	15-MAR-21	15-MAR-21	R5401490
Silicon (Si)-Dissolved	2.81		0.050	mg/L	15-MAR-21	15-MAR-21	R5401490
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	15-MAR-21	15-MAR-21	R5401490
Sodium (Na)-Dissolved	13.9		0.050	mg/L	15-MAR-21	15-MAR-21	R5401490
Strontium (Sr)-Dissolved	0.140		0.00020	mg/L	15-MAR-21	15-MAR-21	R5401490
Sulfur (S)-Dissolved	<0.50		0.50	mg/L	15-MAR-21	15-MAR-21	R5401490
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	15-MAR-21	15-MAR-21	R5401490
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	15-MAR-21	15-MAR-21	R5401490
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	15-MAR-21	15-MAR-21	R5401490
Uranium (U)-Dissolved	0.000033		0.000010	mg/L	15-MAR-21	15-MAR-21	R5401490
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	15-MAR-21	15-MAR-21	R5401490
Zinc (Zn)-Dissolved	0.0019		0.0010	mg/L	15-MAR-21	15-MAR-21	R5401490
<b>Hardness</b>							
Hardness (as CaCO3)	185		0.50	mg/L		15-MAR-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		15-MAR-21	R5401273

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2566083-1 LC_PIZDC1307_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 10-MAR-21 @ 12:45							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0075		0.0030	mg/L		15-MAR-21	R5401273
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		15-MAR-21	R5401273
Arsenic (As)-Total	0.00180		0.00010	mg/L		15-MAR-21	R5401273
Barium (Ba)-Total	1.62		0.00010	mg/L		15-MAR-21	R5401273
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		15-MAR-21	R5401273
Boron (B)-Total	0.024		0.010	mg/L		15-MAR-21	R5401273
Cadmium (Cd)-Total	<0.015	DLM	0.015	ug/L		15-MAR-21	R5401273
Calcium (Ca)-Total	38.8		0.050	mg/L		15-MAR-21	R5401273
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		15-MAR-21	R5401273
Cobalt (Co)-Total	<0.10		0.10	ug/L		15-MAR-21	R5401273
Copper (Cu)-Total	<0.00050		0.00050	mg/L		15-MAR-21	R5401273
Iron (Fe)-Total	1.30		0.010	mg/L		15-MAR-21	R5401273
Lead (Pb)-Total	0.000067		0.000050	mg/L		15-MAR-21	R5401273
Lithium (Li)-Total	0.0758		0.0010	mg/L		15-MAR-21	R5401273
Magnesium (Mg)-Total	21.0		0.10	mg/L		15-MAR-21	R5401273
Manganese (Mn)-Total	0.00948		0.00010	mg/L		15-MAR-21	R5401273
Molybdenum (Mo)-Total	0.0346		0.000050	mg/L		15-MAR-21	R5401273
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		15-MAR-21	R5401273
Potassium (K)-Total	5.35		0.050	mg/L		15-MAR-21	R5401273
Selenium (Se)-Total	<0.050		0.050	ug/L		15-MAR-21	R5401273
Silicon (Si)-Total	3.08		0.10	mg/L		15-MAR-21	R5401273
Silver (Ag)-Total	<0.000010		0.000010	mg/L		15-MAR-21	R5401273
Sodium (Na)-Total	14.8		0.050	mg/L		15-MAR-21	R5401273
Strontium (Sr)-Total	0.150		0.00020	mg/L		15-MAR-21	R5401273
Sulfur (S)-Total	<0.50		0.50	mg/L		15-MAR-21	R5401273
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		15-MAR-21	R5401273
Tin (Sn)-Total	0.00011		0.0010	mg/L		15-MAR-21	R5401273
Titanium (Ti)-Total	<0.010		0.010	mg/L		15-MAR-21	R5401273
Uranium (U)-Total	0.000034		0.000010	mg/L		15-MAR-21	R5401273
Vanadium (V)-Total	<0.00050		0.00050	mg/L		15-MAR-21	R5401273
Zinc (Zn)-Total	0.0044		0.0030	mg/L		15-MAR-21	R5401273
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.5		1.0	mg/L		17-MAR-21	R5402567
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	224		1.0	mg/L		16-MAR-21	R5402546
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		16-MAR-21	R5402546
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		16-MAR-21	R5402546
Alkalinity, Total (as CaCO3)	224		1.0	mg/L		16-MAR-21	R5402546
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.104		0.0050	mg/L		16-MAR-21	R5401928
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		11-MAR-21	R5403084
<b>Chloride in Water by IC</b>							
Chloride (Cl)	0.23		0.10	mg/L		11-MAR-21	R5403084
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	375		2.0	uS/cm		16-MAR-21	R5402546
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.406		0.020	mg/L		11-MAR-21	R5403084
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.4			%		18-MAR-21	
Anion Sum	4.51			meq/L		18-MAR-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2566083-1 LC_PIZDC1307_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 10-MAR-21 @ 12:45							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation Sum	4.48			meq/L		18-MAR-21	
<b>Ion Balance Calculation</b>							
Ion Balance	99.2		-100	%		18-MAR-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0113		0.0050	mg/L		11-MAR-21	R5403084
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		11-MAR-21	R5403084
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		11-MAR-21	R5400330
<b>Oxidation redution potential by elect.</b>							
ORP	336		-1000	mV		18-MAR-21	R5403231
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0116		0.0020	mg/L		14-MAR-21	R5400935
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		11-MAR-21	R5403084
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	191	DLHC	20	mg/L		17-MAR-21	R5402871
<b>Total Suspended Solids</b>							
Total Suspended Solids	2.5		1.0	mg/L		17-MAR-21	R5402882
<b>Turbidity</b>							
Turbidity	6.45		0.10	NTU		13-MAR-21	R5400830
<b>pH</b>							
pH	8.28		0.10	pH		16-MAR-21	R5402546
L2566083-2 LC_PIZDC1308_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 10-MAR-21 @ 14:15							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	325		5.0	mg/L		16-MAR-21	R5402546
Carbonate (CO3)	<5.0		5.0	mg/L		16-MAR-21	R5402546
Dissolved Organic Carbon	2.27		0.50	mg/L		18-MAR-21	R5403881
Hydroxide (OH)	<5.0		5.0	mg/L		16-MAR-21	R5402546
Total Kjeldahl Nitrogen	0.163		0.050	mg/L		13-MAR-21	R5400826
Total Organic Carbon	2.09		0.50	mg/L		18-MAR-21	R5403881
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	15-MAR-21	15-MAR-21	R5401490
Dissolved Metals Filtration Location	FIELD					15-MAR-21	R5401145
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	16-MAR-21	16-MAR-21	R5401618
Dissolved Mercury Filtration Location	FIELD					16-MAR-21	R5401585
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					15-MAR-21	R5401145
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	15-MAR-21	15-MAR-21	R5401490
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	15-MAR-21	15-MAR-21	R5401490
Arsenic (As)-Dissolved	0.00031		0.00010	mg/L	15-MAR-21	15-MAR-21	R5401490
Barium (Ba)-Dissolved	0.503		0.00010	mg/L	15-MAR-21	15-MAR-21	R5401490
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	15-MAR-21	15-MAR-21	R5401490
Boron (B)-Dissolved	0.015		0.010	mg/L	15-MAR-21	15-MAR-21	R5401490
Cadmium (Cd)-Dissolved	<0.010	DLM	0.010	ug/L	15-MAR-21	15-MAR-21	R5401490
Calcium (Ca)-Dissolved	63.4		0.050	mg/L	15-MAR-21	15-MAR-21	R5401490
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	15-MAR-21	15-MAR-21	R5401490

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2566083-2 LC_PIZDC1308_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 10-MAR-21 @ 14:15							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Cobalt (Co)-Dissolved	0.99		0.10	ug/L	15-MAR-21	15-MAR-21	R5401490
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	15-MAR-21	15-MAR-21	R5401490
Iron (Fe)-Dissolved	0.730		0.010	mg/L	15-MAR-21	15-MAR-21	R5401490
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	15-MAR-21	15-MAR-21	R5401490
Lithium (Li)-Dissolved	0.0246		0.0010	mg/L	15-MAR-21	15-MAR-21	R5401490
Magnesium (Mg)-Dissolved	21.0		0.10	mg/L	15-MAR-21	15-MAR-21	R5401490
Manganese (Mn)-Dissolved	0.0822		0.00010	mg/L	15-MAR-21	15-MAR-21	R5401490
Molybdenum (Mo)-Dissolved	0.00952		0.000050	mg/L	15-MAR-21	15-MAR-21	R5401490
Nickel (Ni)-Dissolved	0.00223		0.00050	mg/L	15-MAR-21	15-MAR-21	R5401490
Potassium (K)-Dissolved	2.77		0.050	mg/L	15-MAR-21	15-MAR-21	R5401490
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	15-MAR-21	15-MAR-21	R5401490
Silicon (Si)-Dissolved	4.00		0.050	mg/L	15-MAR-21	15-MAR-21	R5401490
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	15-MAR-21	15-MAR-21	R5401490
Sodium (Na)-Dissolved	6.53		0.050	mg/L	15-MAR-21	15-MAR-21	R5401490
Strontium (Sr)-Dissolved	0.113		0.00020	mg/L	15-MAR-21	15-MAR-21	R5401490
Sulfur (S)-Dissolved	0.89		0.50	mg/L	15-MAR-21	15-MAR-21	R5401490
Thallium (Tl)-Dissolved	0.000036		0.000010	mg/L	15-MAR-21	15-MAR-21	R5401490
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	15-MAR-21	15-MAR-21	R5401490
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	15-MAR-21	15-MAR-21	R5401490
Uranium (U)-Dissolved	0.000577		0.000010	mg/L	15-MAR-21	15-MAR-21	R5401490
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	15-MAR-21	15-MAR-21	R5401490
Zinc (Zn)-Dissolved	0.0020		0.0010	mg/L	15-MAR-21	15-MAR-21	R5401490
<b>Hardness</b>							
Hardness (as CaCO3)	245		0.50	mg/L		15-MAR-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		15-MAR-21	R5401273
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0061		0.0030	mg/L		15-MAR-21	R5401273
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		15-MAR-21	R5401273
Arsenic (As)-Total	0.00036		0.00010	mg/L		15-MAR-21	R5401273
Barium (Ba)-Total	0.525		0.00010	mg/L		15-MAR-21	R5401273
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		15-MAR-21	R5401273
Boron (B)-Total	0.015		0.010	mg/L		15-MAR-21	R5401273
Cadmium (Cd)-Total	0.0460		0.0050	ug/L		15-MAR-21	R5401273
Calcium (Ca)-Total	59.7		0.050	mg/L		15-MAR-21	R5401273
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		15-MAR-21	R5401273
Cobalt (Co)-Total	1.07		0.10	ug/L		15-MAR-21	R5401273
Copper (Cu)-Total	<0.00050		0.00050	mg/L		15-MAR-21	R5401273
Iron (Fe)-Total	0.922		0.010	mg/L		15-MAR-21	R5401273
Lead (Pb)-Total	<0.000050		0.000050	mg/L		15-MAR-21	R5401273
Lithium (Li)-Total	0.0266		0.0010	mg/L		15-MAR-21	R5401273
Magnesium (Mg)-Total	22.2		0.10	mg/L		15-MAR-21	R5401273
Manganese (Mn)-Total	0.0882		0.00010	mg/L		15-MAR-21	R5401273
Molybdenum (Mo)-Total	0.00961		0.000050	mg/L		15-MAR-21	R5401273
Nickel (Ni)-Total	0.00243		0.00050	mg/L		15-MAR-21	R5401273
Potassium (K)-Total	2.97		0.050	mg/L		15-MAR-21	R5401273
Selenium (Se)-Total	<0.050		0.050	ug/L		15-MAR-21	R5401273
Silicon (Si)-Total	4.17		0.10	mg/L		15-MAR-21	R5401273
Silver (Ag)-Total	<0.000010		0.000010	mg/L		15-MAR-21	R5401273
Sodium (Na)-Total	6.95		0.050	mg/L		15-MAR-21	R5401273
Strontium (Sr)-Total	0.114		0.00020	mg/L		15-MAR-21	R5401273

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2566083-2 LC_PIZDC1308_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 10-MAR-21 @ 14:15							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Sulfur (S)-Total	0.95		0.50	mg/L		15-MAR-21	R5401273
Thallium (Tl)-Total	0.000040		0.000010	mg/L		15-MAR-21	R5401273
Tin (Sn)-Total	<0.00010		0.00010	mg/L		15-MAR-21	R5401273
Titanium (Ti)-Total	<0.010		0.010	mg/L		15-MAR-21	R5401273
Uranium (U)-Total	0.000605		0.000010	mg/L		15-MAR-21	R5401273
Vanadium (V)-Total	<0.00050		0.00050	mg/L		15-MAR-21	R5401273
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		15-MAR-21	R5401273
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	9.3		1.0	mg/L		17-MAR-21	R5402567
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	267		1.0	mg/L		16-MAR-21	R5402546
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		16-MAR-21	R5402546
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		16-MAR-21	R5402546
Alkalinity, Total (as CaCO3)	267		1.0	mg/L		16-MAR-21	R5402546
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0583		0.0050	mg/L		16-MAR-21	R5401928
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		11-MAR-21	R5403084
<b>Chloride in Water by IC</b>							
Chloride (Cl)	0.31		0.10	mg/L		11-MAR-21	R5403084
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	448		2.0	uS/cm		16-MAR-21	R5402546
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.183		0.020	mg/L		11-MAR-21	R5403084
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.8			%		18-MAR-21	
Anion Sum	5.38			meq/L		18-MAR-21	
Cation Sum	5.29			meq/L		18-MAR-21	
<b>Ion Balance Calculation</b>							
Ion Balance	98.3		-100	%		18-MAR-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0143		0.0050	mg/L		11-MAR-21	R5403084
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		11-MAR-21	R5403084
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		11-MAR-21	R5400330
<b>Oxidation reduction potential by elect.</b>							
ORP	277		-1000	mV		18-MAR-21	R5403231
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		14-MAR-21	R5400935
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	1.84		0.30	mg/L		11-MAR-21	R5403084
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	242	DLHC	20	mg/L		17-MAR-21	R5402871
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		17-MAR-21	R5402882
<b>Turbidity</b>							
Turbidity	4.21		0.10	NTU		13-MAR-21	R5400830
<b>pH</b>							
pH	8.12		0.10	pH		16-MAR-21	R5402546

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions)			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
			should be near-zero.
			Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:  Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)  This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric  This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer  This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

DC\_GW\_20210310

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample  
mg/kg wwt - milligrams per kilogram based on wet weight of sample  
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
mg/L - unit of concentration based on volume, parts per million.  
< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2566083

Report Date: 04-NOV-21

Page 1 of 14

Client: TECK COAL LIMITED (LINE CREEK)  
 PO BOX 2003  
 SPARWOOD BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5402567</b>							
<b>WG3503709-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.6		%		85-115	17-MAR-21
<b>WG3503709-13</b>	<b>MB</b>							
Acidity (as CaCO3)			2.0		mg/L		2	17-MAR-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5402546</b>							
<b>WG3503715-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			103.8		%		85-115	16-MAR-21
<b>WG3503715-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	16-MAR-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5401490</b>							
<b>WG3502244-3</b>	<b>DUP</b>	<b>L2566083-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	15-MAR-21
<b>WG3502244-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.0		%		80-120	15-MAR-21
<b>WG3502244-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-MAR-21
<b>WG3502244-4</b>	<b>MS</b>	<b>L2566083-2</b>						
Beryllium (Be)-Dissolved			105.3		%		70-130	15-MAR-21
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5401273</b>							
<b>WG3501886-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			94.3		%		80-120	15-MAR-21
<b>WG3501886-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	15-MAR-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5402546</b>							
<b>WG3503715-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	16-MAR-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5403084</b>							
<b>WG3504543-10</b>	<b>LCS</b>							
Bromide (Br)			106.3		%		85-115	11-MAR-21
<b>WG3504543-6</b>	<b>LCS</b>							
Bromide (Br)			88.1		%		85-115	11-MAR-21



## Quality Control Report

Workorder: L2566083

Report Date: 04-NOV-21

Page 2 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5403084							
<b>WG3504543-5 MB</b>								
Bromide (Br)			<0.050		mg/L		0.05	11-MAR-21
<b>WG3504543-9 MB</b>								
Bromide (Br)			<0.050		mg/L		0.05	11-MAR-21
Bromide (Br)			<0.050		mg/L		0.05	11-MAR-21
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5403881							
<b>WG3505062-10 LCS</b>								
Dissolved Organic Carbon			100.4		%		80-120	18-MAR-21
<b>WG3505062-9 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-MAR-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5403881							
<b>WG3505062-10 LCS</b>								
Total Organic Carbon			105.1		%		80-120	18-MAR-21
<b>WG3505062-9 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	18-MAR-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5403084							
<b>WG3504543-10 LCS</b>								
Chloride (Cl)			107.2		%		85-115	11-MAR-21
<b>WG3504543-6 LCS</b>								
Chloride (Cl)			107.2		%		85-115	11-MAR-21
<b>WG3504543-5 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	11-MAR-21
<b>WG3504543-9 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	11-MAR-21
Chloride (Cl)			<0.10		mg/L		0.1	11-MAR-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5402546							
<b>WG3503715-13 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	16-MAR-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2566083

Report Date: 04-NOV-21

Page 3 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>		<b>Water</b>						
Batch	R5402546							
<b>WG3503715-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.9		%		90-110	16-MAR-21
<b>WG3503715-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	16-MAR-21
<b>F-IC-N-CL</b>		<b>Water</b>						
Batch	R5403084							
<b>WG3504543-10</b>	<b>LCS</b>							
Fluoride (F)			96.0		%		90-110	11-MAR-21
<b>WG3504543-6</b>	<b>LCS</b>							
Fluoride (F)			96.1		%		90-110	11-MAR-21
<b>WG3504543-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	11-MAR-21
<b>WG3504543-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	11-MAR-21
Fluoride (F)			<0.020		mg/L		0.02	11-MAR-21
<b>HG-D-CVAA-VA</b>		<b>Water</b>						
Batch	R5401618							
<b>WG3502695-3</b>	<b>DUP</b>	<b>L2566083-2</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	16-MAR-21
<b>WG3502695-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			95.4		%		80-120	16-MAR-21
<b>WG3502695-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	16-MAR-21
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
Batch	R5401490							
<b>WG3502244-3</b>	<b>DUP</b>	<b>L2566083-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	15-MAR-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-MAR-21
Arsenic (As)-Dissolved		0.00169	0.00173		mg/L	2.0	20	15-MAR-21
Barium (Ba)-Dissolved		1.54	1.56		mg/L	1.1	20	15-MAR-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	15-MAR-21
Boron (B)-Dissolved		0.023	0.024		mg/L	3.6	20	15-MAR-21
Cadmium (Cd)-Dissolved		<0.000015	<0.000015	RPD-NA	mg/L	N/A	20	15-MAR-21
Calcium (Ca)-Dissolved		41.5	42.5		mg/L	2.5	20	15-MAR-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-MAR-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-MAR-21
Copper (Cu)-Dissolved		0.00127	0.00131		mg/L	3.0	20	15-MAR-21





## Quality Control Report

Workorder: L2566083

Report Date: 04-NOV-21

Page 4 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5401490</b>							
<b>WG3502244-3</b>	<b>DUP</b>	<b>L2566083-1</b>						
Iron (Fe)-Dissolved		0.779	0.786		mg/L	0.9	20	15-MAR-21
Lead (Pb)-Dissolved		0.000068	0.000068		mg/L	0.7	20	15-MAR-21
Lithium (Li)-Dissolved		0.0730	0.0742		mg/L	1.6	20	15-MAR-21
Magnesium (Mg)-Dissolved		19.8	19.8		mg/L	0.2	20	15-MAR-21
Manganese (Mn)-Dissolved		0.00808	0.00828		mg/L	2.4	20	15-MAR-21
Molybdenum (Mo)-Dissolved		0.0322	0.0328		mg/L	2.1	20	15-MAR-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	15-MAR-21
Potassium (K)-Dissolved		4.90	5.00		mg/L	2.0	20	15-MAR-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	15-MAR-21
Silicon (Si)-Dissolved		2.81	2.83		mg/L	0.4	20	15-MAR-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	15-MAR-21
Sodium (Na)-Dissolved		13.9	13.9		mg/L	0.2	20	15-MAR-21
Strontium (Sr)-Dissolved		0.140	0.140		mg/L	0.3	20	15-MAR-21
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	15-MAR-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	15-MAR-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-MAR-21
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	15-MAR-21
Uranium (U)-Dissolved		0.000033	0.000029		mg/L	12	20	15-MAR-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	15-MAR-21
Zinc (Zn)-Dissolved		0.0019	0.0018		mg/L	7.9	20	15-MAR-21
<b>WG3502244-2</b>								
	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.0		%		80-120	15-MAR-21
Antimony (Sb)-Dissolved			103.6		%		80-120	15-MAR-21
Arsenic (As)-Dissolved			101.0		%		80-120	15-MAR-21
Barium (Ba)-Dissolved			103.5		%		80-120	15-MAR-21
Bismuth (Bi)-Dissolved			102.5		%		80-120	15-MAR-21
Boron (B)-Dissolved			96.6		%		80-120	15-MAR-21
Cadmium (Cd)-Dissolved			100.2		%		80-120	15-MAR-21
Calcium (Ca)-Dissolved			103.3		%		80-120	15-MAR-21
Chromium (Cr)-Dissolved			96.3		%		80-120	15-MAR-21
Cobalt (Co)-Dissolved			99.9		%		80-120	15-MAR-21
Copper (Cu)-Dissolved			99.8		%		80-120	15-MAR-21
Iron (Fe)-Dissolved			95.0		%		80-120	15-MAR-21
Lead (Pb)-Dissolved			106.5		%		80-120	15-MAR-21



## Quality Control Report

Workorder: L2566083

Report Date: 04-NOV-21

Page 5 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5401490</b>							
<b>WG3502244-2</b>	<b>LCS</b>							
Lithium (Li)-Dissolved			91.9		%		80-120	15-MAR-21
Magnesium (Mg)-Dissolved			100.1		%		80-120	15-MAR-21
Manganese (Mn)-Dissolved			96.6		%		80-120	15-MAR-21
Molybdenum (Mo)-Dissolved			101.6		%		80-120	15-MAR-21
Nickel (Ni)-Dissolved			100.0		%		80-120	15-MAR-21
Potassium (K)-Dissolved			98.9		%		80-120	15-MAR-21
Selenium (Se)-Dissolved			98.7		%		80-120	15-MAR-21
Silicon (Si)-Dissolved			95.9		%		60-140	15-MAR-21
Silver (Ag)-Dissolved			99.9		%		80-120	15-MAR-21
Sodium (Na)-Dissolved			100.1		%		80-120	15-MAR-21
Strontium (Sr)-Dissolved			101.0		%		80-120	15-MAR-21
Sulfur (S)-Dissolved			99.95		%		80-120	15-MAR-21
Thallium (Tl)-Dissolved			105.4		%		80-120	15-MAR-21
Tin (Sn)-Dissolved			98.6		%		80-120	15-MAR-21
Titanium (Ti)-Dissolved			96.1		%		80-120	15-MAR-21
Uranium (U)-Dissolved			100.5		%		80-120	15-MAR-21
Vanadium (V)-Dissolved			102.7		%		80-120	15-MAR-21
Zinc (Zn)-Dissolved			102.6		%		80-120	15-MAR-21
<b>WG3502244-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-MAR-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-MAR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-MAR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-MAR-21



## Quality Control Report

Workorder: L2566083

Report Date: 04-NOV-21

Page 6 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5401490</b>							
<b>WG3502244-1</b>	<b>MB</b>	<b>NP</b>						
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-MAR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-MAR-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	15-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-MAR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-MAR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-MAR-21
<b>WG3502244-4</b>	<b>MS</b>	<b>L2566083-2</b>						
Aluminum (Al)-Dissolved			98.7		%		70-130	15-MAR-21
Antimony (Sb)-Dissolved			107.6		%		70-130	15-MAR-21
Arsenic (As)-Dissolved			111.0		%		70-130	15-MAR-21
Barium (Ba)-Dissolved			N/A	MS-B	%		-	15-MAR-21
Bismuth (Bi)-Dissolved			82.6		%		70-130	15-MAR-21
Boron (B)-Dissolved			104.9		%		70-130	15-MAR-21
Cadmium (Cd)-Dissolved			101.0		%		70-130	15-MAR-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	15-MAR-21
Chromium (Cr)-Dissolved			97.4		%		70-130	15-MAR-21
Cobalt (Co)-Dissolved			92.9		%		70-130	15-MAR-21
Copper (Cu)-Dissolved			91.8		%		70-130	15-MAR-21
Iron (Fe)-Dissolved			89.4		%		70-130	15-MAR-21
Lead (Pb)-Dissolved			98.7		%		70-130	15-MAR-21
Lithium (Li)-Dissolved			101.9		%		70-130	15-MAR-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	15-MAR-21
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	15-MAR-21
Molybdenum (Mo)-Dissolved			102.1		%		70-130	15-MAR-21



## Quality Control Report

Workorder: L2566083

Report Date: 04-NOV-21

Page 7 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5401490</b>							
<b>WG3502244-4 MS</b>		<b>L2566083-2</b>						
Nickel (Ni)-Dissolved			93.4		%		70-130	15-MAR-21
Potassium (K)-Dissolved			94.3		%		70-130	15-MAR-21
Selenium (Se)-Dissolved			116.7		%		70-130	15-MAR-21
Silicon (Si)-Dissolved			90.2		%		70-130	15-MAR-21
Silver (Ag)-Dissolved			101.6		%		70-130	15-MAR-21
Sodium (Na)-Dissolved			N/A	MS-B	%		-	15-MAR-21
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	15-MAR-21
Sulfur (S)-Dissolved			101.9		%		70-130	15-MAR-21
Thallium (Tl)-Dissolved			97.8		%		70-130	15-MAR-21
Tin (Sn)-Dissolved			98.7		%		70-130	15-MAR-21
Titanium (Ti)-Dissolved			95.7		%		70-130	15-MAR-21
Uranium (U)-Dissolved			100.5		%		70-130	15-MAR-21
Vanadium (V)-Dissolved			102.7		%		70-130	15-MAR-21
Zinc (Zn)-Dissolved			97.7		%		70-130	15-MAR-21
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5401273</b>							
<b>WG3501886-2 LCS</b>								
Aluminum (Al)-Total			101.2		%		80-120	15-MAR-21
Antimony (Sb)-Total			103.2		%		80-120	15-MAR-21
Arsenic (As)-Total			102.8		%		80-120	15-MAR-21
Barium (Ba)-Total			107.1		%		80-120	15-MAR-21
Bismuth (Bi)-Total			106.0		%		80-120	15-MAR-21
Boron (B)-Total			93.7		%		80-120	15-MAR-21
Cadmium (Cd)-Total			102.5		%		80-120	15-MAR-21
Calcium (Ca)-Total			100.2		%		80-120	15-MAR-21
Chromium (Cr)-Total			103.4		%		80-120	15-MAR-21
Cobalt (Co)-Total			100.6		%		80-120	15-MAR-21
Copper (Cu)-Total			99.7		%		80-120	15-MAR-21
Iron (Fe)-Total			101.5		%		80-120	15-MAR-21
Lead (Pb)-Total			102.0		%		80-120	15-MAR-21
Lithium (Li)-Total			98.0		%		80-120	15-MAR-21
Magnesium (Mg)-Total			101.4		%		80-120	15-MAR-21
Manganese (Mn)-Total			102.1		%		80-120	15-MAR-21
Molybdenum (Mo)-Total			102.2		%		80-120	15-MAR-21



## Quality Control Report

Workorder: L2566083

Report Date: 04-NOV-21

Page 8 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5401273</b>							
<b>WG3501886-2</b>	<b>LCS</b>							
Nickel (Ni)-Total			97.8		%		80-120	15-MAR-21
Potassium (K)-Total			101.8		%		80-120	15-MAR-21
Selenium (Se)-Total			104.1		%		80-120	15-MAR-21
Silicon (Si)-Total			105.5		%		80-120	15-MAR-21
Silver (Ag)-Total			103.1		%		80-120	15-MAR-21
Sodium (Na)-Total			106.5		%		80-120	15-MAR-21
Strontium (Sr)-Total			108.9		%		80-120	15-MAR-21
Sulfur (S)-Total			108.5		%		80-120	15-MAR-21
Thallium (Tl)-Total			103.8		%		80-120	15-MAR-21
Tin (Sn)-Total			99.0		%		80-120	15-MAR-21
Titanium (Ti)-Total			101.3		%		80-120	15-MAR-21
Uranium (U)-Total			103.8		%		80-120	15-MAR-21
Vanadium (V)-Total			102.2		%		80-120	15-MAR-21
Zinc (Zn)-Total			104.1		%		80-120	15-MAR-21
<b>WG3501886-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	15-MAR-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	15-MAR-21
Arsenic (As)-Total			<0.00010		mg/L		0.0001	15-MAR-21
Barium (Ba)-Total			<0.00010		mg/L		0.0001	15-MAR-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	15-MAR-21
Boron (B)-Total			<0.010		mg/L		0.01	15-MAR-21
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	15-MAR-21
Calcium (Ca)-Total			<0.050		mg/L		0.05	15-MAR-21
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	15-MAR-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	15-MAR-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	15-MAR-21
Iron (Fe)-Total			<0.010		mg/L		0.01	15-MAR-21
Lead (Pb)-Total			<0.000050		mg/L		0.00005	15-MAR-21
Lithium (Li)-Total			<0.0010		mg/L		0.001	15-MAR-21
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	15-MAR-21
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	15-MAR-21
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	15-MAR-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	15-MAR-21
Potassium (K)-Total			<0.050		mg/L		0.05	15-MAR-21



## Quality Control Report

Workorder: L2566083

Report Date: 04-NOV-21

Page 9 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R5401273</b>							
<b>WG3501886-1</b>	<b>MB</b>							
Selenium (Se)-Total			<0.000050		mg/L		0.00005	15-MAR-21
Silicon (Si)-Total			<0.10		mg/L		0.1	15-MAR-21
Silver (Ag)-Total			<0.000010		mg/L		0.00001	15-MAR-21
Sodium (Na)-Total			<0.050		mg/L		0.05	15-MAR-21
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	15-MAR-21
Sulfur (S)-Total			<0.50		mg/L		0.5	15-MAR-21
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	15-MAR-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	15-MAR-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	15-MAR-21
Uranium (U)-Total			<0.000010		mg/L		0.00001	15-MAR-21
Vanadium (V)-Total			<0.00050		mg/L		0.0005	15-MAR-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	15-MAR-21
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5401928</b>							
<b>WG3503059-18</b>	<b>LCS</b>							
Ammonia as N			104.4		%		85-115	16-MAR-21
<b>WG3503059-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	16-MAR-21
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5403084</b>							
<b>WG3504543-10</b>	<b>LCS</b>							
Nitrite (as N)			108.4		%		90-110	11-MAR-21
<b>WG3504543-6</b>	<b>LCS</b>							
Nitrite (as N)			108.7		%		90-110	11-MAR-21
<b>WG3504543-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	11-MAR-21
<b>WG3504543-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	11-MAR-21
Nitrite (as N)			<0.0010		mg/L		0.001	11-MAR-21
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5403084</b>							
<b>WG3504543-10</b>	<b>LCS</b>							
Nitrate (as N)			109.8		%		90-110	11-MAR-21
<b>WG3504543-6</b>	<b>LCS</b>							
Nitrate (as N)			108.2		%		90-110	11-MAR-21
<b>WG3504543-5</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2566083

Report Date: 04-NOV-21

Page 11 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5403084</b>							
<b>WG3504543-6</b>	<b>LCS</b>							
Sulfate (SO4)			107.6		%		90-110	11-MAR-21
<b>WG3504543-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	11-MAR-21
<b>WG3504543-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	11-MAR-21
Sulfate (SO4)			<0.30		mg/L		0.3	11-MAR-21
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5402871</b>							
<b>WG3503511-2</b>	<b>LCS</b>							
Total Dissolved Solids			90.7		%		85-115	17-MAR-21
<b>WG3503511-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	17-MAR-21
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5400826</b>							
<b>WG3501751-16</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			80.0		%		75-125	13-MAR-21
<b>WG3501751-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			115.0		%		75-125	13-MAR-21
<b>WG3501751-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			85.0		%		75-125	13-MAR-21
<b>WG3501751-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-MAR-21
<b>WG3501751-15</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-MAR-21
<b>WG3501751-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-MAR-21
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5402882</b>							
<b>WG3503512-2</b>	<b>LCS</b>							
Total Suspended Solids			111.7		%		85-115	17-MAR-21
<b>WG3503512-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	17-MAR-21
<b>TURBIDITY-CL</b>		<b>Water</b>						





## Quality Control Report

Workorder: L2566083

Report Date: 04-NOV-21

Page 12 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5400830</b>							
<b>WG3501872-2</b>	<b>LCS</b>							
Turbidity			101.0		%		85-115	13-MAR-21
<b>WG3501872-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	13-MAR-21

# Quality Control Report

Workorder: L2566083

Report Date: 04-NOV-21

Page 13 of 14

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2566083

Report Date: 04-NOV-21

Page 14 of 14

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	10-MAR-21 12:45	18-MAR-21 08:45	0.25	188	hours	EHTR-FM
	2	10-MAR-21 14:15	18-MAR-21 08:45	0.25	186	hours	EHTR-FM
pH	1	10-MAR-21 12:45	16-MAR-21 12:00	0.25	143	hours	EHTR-FM
	2	10-MAR-21 14:15	16-MAR-21 12:00	0.25	142	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

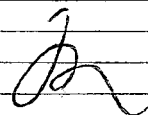
### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2566083 were received on 11-MAR-21 12:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b> DC_GW_20210310		<b>TURNAROUND TIME:</b>				<b>RUSH:</b>																											
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>				<b>OTHER INFO</b>																									
Facility Name / Job#		Line Creek Operation		Lab Name		ALS Calgary		Report Format / Distribution		Excel	PDF	EDD																					
Project Manager		Chris Blurton		Lab Contact		Lyudmyla Shvets		Email 1:		chris.blurton@teck.com	x	x																					
Email		chris.blurton@teck.com		Email		Lyudmyla.Shvets@ALSGlobal.com		Email 2:		teckcoal@equisonline.com		x																					
Address		Box 2003		Address		2559 29 Street NE		Email 3:		drake.tymstra@teck.com	x	x																					
		15km North Hwy 43						Email 4:		shanise.fossen@teck.com	x	x																					
City		Sparwood		Province		BC		City		Calgary		Province		AB																			
Postal Code		V0B 2G0		Country		Canada		Postal Code		T1Y 7B5		Country		Canada																			
Phone Number		250-425-8478		Phone Number		403 407 1794		PO number		VPO00739930																							
<b>SAMPLE DETAILS</b>								<b>ANALYSIS REQUESTED</b>																									
								Filtered - F: Field, L: Lab, FL: Field & Lab, N: None																									
<b>Sample ID</b>		<b>Sample Location (sys loc code)</b>		<b>Field Matrix</b>		<b>Hazardous Material (Yes/No)</b>		<b>Date</b>		<b>Time (24hr)</b>		<b>G=Grab C=Comp</b>		<b># Of Cont.</b>		<b>ALS_Package-BOD</b>		<b>ALS_Package-DOC</b>		<b>HG-D-CVAF-VA</b>		<b>HG-T-CVAF-VA</b>		<b>TECKCOAL-MET-D-VA</b>		<b>TECKCOAL-MET-T-VA</b>		<b>TECKCOAL-ROUTINE-VA</b>		<b>ALS_Package-TKN/TOC</b>		<b>ALS_Package-Sulfide-T</b>	
LC_PIZDC1307_WG_Q4-2020_NP		LC_PIZDC1307		WG		No		3/10/2021		12:45		G		6		1		1															
LC_PIZDC1308_WG_Q4-2020_NP		LC_PIZDC1308		WG		No		3/10/2021		14:15		G		6		1		1															
<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>								<b>RELINQUISHED BY/AFFILIATION</b>				<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>				<b>DATE/TIME</b>															
								D.Tymstra/S. Fossen				10-Mar						3/11/2021															
<b>SERVICE REQUEST (rush - subject to availability)</b>																																	
Regular (default) X								<b>Sampler's Name</b>		S. Fossen/D. Tymstra				<b>Mobile #</b>																			
Priority (2-3 business days) - 50% surcharge								<b>Sampler's Signature</b>		S Fossen				<b>Date/Time</b>		March 10, 2021																	
Emergency (1 Business Day) - 100% surcharge																																	
For Emergency <1 Day, ASAP or Weekend - Contact ALS																																	



L2566083-COFC



TECK COAL LIMITED (LINE CREEK)  
ATTN: Tom Jeffery  
PO BOX 2003  
SPARWOOD BC V0B 2G0

Date Received: 18-MAR-21  
Report Date: 04-NOV-21 15:37 (MT)  
Version: FINAL REV. 2

Client Phone: 250-425-8478

## Certificate of Analysis

Lab Work Order #: L2568459  
Project P.O. #: VPO00739930  
Job Reference: LINE CREEK OPERATION  
C of C Numbers: DC\_GW\_20210317  
Legal Site Desc:

Comments: Additional analysis for Carbonate, Bicarbonate and Hydroxide on L2568459-1 and -2.

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Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2568459-1 LC_PIZDC1404D_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 17-MAR-21 @ 13:15							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	498		5.0	mg/L		26-MAR-21	R5415943
Carbonate (CO3)	<5.0		5.0	mg/L		26-MAR-21	R5415943
Dissolved Organic Carbon	3.79		0.50	mg/L		24-MAR-21	R5415158
Hydroxide (OH)	<5.0		5.0	mg/L		26-MAR-21	R5415943
Total Kjeldahl Nitrogen	2.09		0.050	mg/L		25-MAR-21	R5415290
Total Organic Carbon	3.25		0.50	mg/L		24-MAR-21	R5415158
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	22-MAR-21	22-MAR-21	R5410261
Dissolved Metals Filtration Location	FIELD					22-MAR-21	R5408209
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-MAR-21	23-MAR-21	R5409077
Dissolved Mercury Filtration Location	FIELD					23-MAR-21	R5408913
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					23-MAR-21	R5411216
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	22-MAR-21	22-MAR-21	R5410261
Antimony (Sb)-Dissolved	0.00015		0.00010	mg/L	22-MAR-21	22-MAR-21	R5410261
Arsenic (As)-Dissolved	0.00150		0.00010	mg/L	22-MAR-21	22-MAR-21	R5410261
Barium (Ba)-Dissolved	4.06		0.00010	mg/L	22-MAR-21	22-MAR-21	R5410261
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	22-MAR-21	22-MAR-21	R5410261
Boron (B)-Dissolved	0.023		0.010	mg/L	22-MAR-21	22-MAR-21	R5410261
Cadmium (Cd)-Dissolved	<0.020	DLM	0.020	ug/L	22-MAR-21	22-MAR-21	R5410261
Calcium (Ca)-Dissolved	58.9		0.050	mg/L	22-MAR-21	22-MAR-21	R5410261
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	22-MAR-21	22-MAR-21	R5410261
Cobalt (Co)-Dissolved	1.10		0.10	ug/L	22-MAR-21	22-MAR-21	R5410261
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	22-MAR-21	22-MAR-21	R5410261
Iron (Fe)-Dissolved	1.48		0.010	mg/L	22-MAR-21	22-MAR-21	R5410261
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	22-MAR-21	22-MAR-21	R5410261
Lithium (Li)-Dissolved	0.561		0.0010	mg/L	22-MAR-21	22-MAR-21	R5410261
Magnesium (Mg)-Dissolved	38.9		0.10	mg/L	22-MAR-21	22-MAR-21	R5410261
Manganese (Mn)-Dissolved	0.0342		0.00010	mg/L	22-MAR-21	22-MAR-21	R5410261
Molybdenum (Mo)-Dissolved	0.0200		0.000050	mg/L	22-MAR-21	22-MAR-21	R5410261
Nickel (Ni)-Dissolved	0.00061		0.00050	mg/L	22-MAR-21	22-MAR-21	R5410261
Potassium (K)-Dissolved	26.9		0.050	mg/L	22-MAR-21	22-MAR-21	R5410261
Selenium (Se)-Dissolved	0.053		0.050	ug/L	22-MAR-21	22-MAR-21	R5410261
Silicon (Si)-Dissolved	2.71		0.050	mg/L	22-MAR-21	22-MAR-21	R5410261
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	22-MAR-21	22-MAR-21	R5410261
Sodium (Na)-Dissolved	35.2		0.050	mg/L	22-MAR-21	22-MAR-21	R5410261
Strontium (Sr)-Dissolved	0.243		0.00020	mg/L	22-MAR-21	22-MAR-21	R5410261
Sulfur (S)-Dissolved	<0.50		0.50	mg/L	22-MAR-21	22-MAR-21	R5410261
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	22-MAR-21	22-MAR-21	R5410261
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	23-MAR-21	23-MAR-21	R5413544
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	22-MAR-21	22-MAR-21	R5410261
Uranium (U)-Dissolved	0.000121		0.000010	mg/L	22-MAR-21	22-MAR-21	R5410261
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	22-MAR-21	22-MAR-21	R5410261
Zinc (Zn)-Dissolved	0.0035		0.0010	mg/L	22-MAR-21	22-MAR-21	R5410261
<b>Hardness</b>							
Hardness (as CaCO3)	307		0.50	mg/L		24-MAR-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		22-MAR-21	R5408862

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2568459-1 LC_PIZDC1404D_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 17-MAR-21 @ 13:15							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		22-MAR-21	R5408862
Antimony (Sb)-Total	0.00014		0.00010	mg/L		22-MAR-21	R5408862
Arsenic (As)-Total	0.00139		0.00010	mg/L		22-MAR-21	R5408862
Barium (Ba)-Total	3.87		0.00010	mg/L		22-MAR-21	R5408862
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		22-MAR-21	R5408862
Boron (B)-Total	0.024		0.010	mg/L		22-MAR-21	R5408862
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		22-MAR-21	R5408862
Calcium (Ca)-Total	54.5		0.050	mg/L		22-MAR-21	R5408862
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		22-MAR-21	R5408862
Cobalt (Co)-Total	1.09		0.10	ug/L		22-MAR-21	R5408862
Copper (Cu)-Total	<0.00050		0.00050	mg/L		22-MAR-21	R5408862
Iron (Fe)-Total	1.57		0.010	mg/L		22-MAR-21	R5408862
Lead (Pb)-Total	<0.000050		0.000050	mg/L		22-MAR-21	R5408862
Lithium (Li)-Total	0.538		0.0010	mg/L		22-MAR-21	R5408862
Magnesium (Mg)-Total	33.9		0.10	mg/L		22-MAR-21	R5408862
Manganese (Mn)-Total	0.0336		0.00010	mg/L		22-MAR-21	R5408862
Molybdenum (Mo)-Total	0.0209		0.000050	mg/L		22-MAR-21	R5408862
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		22-MAR-21	R5408862
Potassium (K)-Total	23.4		0.050	mg/L		22-MAR-21	R5408862
Selenium (Se)-Total	<0.050		0.050	ug/L		22-MAR-21	R5408862
Silicon (Si)-Total	2.76		0.10	mg/L		22-MAR-21	R5408862
Silver (Ag)-Total	<0.000010		0.000010	mg/L		22-MAR-21	R5408862
Sodium (Na)-Total	31.8		0.050	mg/L		22-MAR-21	R5408862
Strontium (Sr)-Total	0.239		0.00020	mg/L		22-MAR-21	R5408862
Sulfur (S)-Total	<0.50		0.50	mg/L		22-MAR-21	R5408862
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		22-MAR-21	R5408862
Tin (Sn)-Total	<0.00010		0.0010	mg/L		22-MAR-21	R5408862
Titanium (Ti)-Total	<0.010		0.010	mg/L		22-MAR-21	R5408862
Uranium (U)-Total	0.000132		0.000010	mg/L		22-MAR-21	R5408862
Vanadium (V)-Total	<0.00050		0.00050	mg/L		22-MAR-21	R5408862
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		22-MAR-21	R5408862
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		23-MAR-21	R5413535
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	408		1.0	mg/L		26-MAR-21	R5415943
Alkalinity, Carbonate (as CaCO3)	2.6		1.0	mg/L		26-MAR-21	R5415943
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-MAR-21	R5415943
Alkalinity, Total (as CaCO3)	411		1.0	mg/L		26-MAR-21	R5415943
<b>Ammonia, Total (as N)</b>							
Ammonia as N	2.26	DLM	0.050	mg/L		22-MAR-21	R5409176
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<1.0	DLHC	1.0	mg/L		19-MAR-21	R5410996
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.6	DLHC	2.0	mg/L		19-MAR-21	R5410996
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	670		2.0	uS/cm		26-MAR-21	R5415943
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.40	DLHC	0.40	mg/L		19-MAR-21	R5410996
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	1.9			%		26-MAR-21	
Anion Sum	8.28			meq/L		26-MAR-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2568459-1 LC_PIZDC1404D_WG_Q4-2020_NP Sampled By: S. Fossen/D. Tymstra on 17-MAR-21 @ 13:15 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation Sum	8.60			meq/L		26-MAR-21	
<b>Ion Balance Calculation</b>							
Ion Balance	104		-100	%		26-MAR-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.10	DLHC	0.10	mg/L		19-MAR-21	R5410996
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.020	DLHC	0.020	mg/L		19-MAR-21	R5410996
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		19-MAR-21	R5404296
<b>Oxidation redution potential by elect.</b>							
ORP	459		-1000	mV		24-MAR-21	R5413358
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		22-MAR-21	R5407760
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<6.0	DLHC	6.0	mg/L		19-MAR-21	R5410996
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	390	DLHC	20	mg/L		24-MAR-21	R5414324
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		24-MAR-21	R5415147
<b>Turbidity</b>							
Turbidity	10.1		0.10	NTU		19-MAR-21	R5405650
<b>pH</b>							
pH	8.29		0.10	pH		26-MAR-21	R5415943
L2568459-2 LC_PIZDC1404S_WG_Q4-2020_NP Sampled By: S. Fossen/D. Tymstra on 17-MAR-21 @ 11:50 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	248		5.0	mg/L		26-MAR-21	R5415943
Carbonate (CO3)	<5.0		5.0	mg/L		26-MAR-21	R5415943
Dissolved Organic Carbon	2.14		0.50	mg/L		23-MAR-21	R5410817
Hydroxide (OH)	<5.0		5.0	mg/L		26-MAR-21	R5415943
Total Kjeldahl Nitrogen	0.159		0.050	mg/L		25-MAR-21	R5415290
Total Organic Carbon	1.98		0.50	mg/L		23-MAR-21	R5410817
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	22-MAR-21	22-MAR-21	R5410261
Dissolved Metals Filtration Location	FIELD					22-MAR-21	R5408209
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-MAR-21	23-MAR-21	R5409077
Dissolved Mercury Filtration Location	FIELD					23-MAR-21	R5408913
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					23-MAR-21	R5411216
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	22-MAR-21	22-MAR-21	R5410261
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	22-MAR-21	22-MAR-21	R5410261
Arsenic (As)-Dissolved	0.00213		0.00010	mg/L	22-MAR-21	22-MAR-21	R5410261
Barium (Ba)-Dissolved	0.233		0.00010	mg/L	22-MAR-21	22-MAR-21	R5410261
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	22-MAR-21	22-MAR-21	R5410261
Boron (B)-Dissolved	<0.010		0.010	mg/L	22-MAR-21	22-MAR-21	R5410261
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	22-MAR-21	22-MAR-21	R5410261
Calcium (Ca)-Dissolved	48.9		0.050	mg/L	22-MAR-21	22-MAR-21	R5410261
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	22-MAR-21	22-MAR-21	R5410261

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2568459-2 LC_PIZDC1404S_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 17-MAR-21 @ 11:50							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Cobalt (Co)-Dissolved	0.33		0.10	ug/L	22-MAR-21	22-MAR-21	R5410261
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	22-MAR-21	22-MAR-21	R5410261
Iron (Fe)-Dissolved	1.04		0.010	mg/L	22-MAR-21	22-MAR-21	R5410261
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	22-MAR-21	22-MAR-21	R5410261
Lithium (Li)-Dissolved	0.0051		0.0010	mg/L	22-MAR-21	22-MAR-21	R5410261
Magnesium (Mg)-Dissolved	18.5		0.10	mg/L	22-MAR-21	22-MAR-21	R5410261
Manganese (Mn)-Dissolved	0.0290		0.00010	mg/L	22-MAR-21	22-MAR-21	R5410261
Molybdenum (Mo)-Dissolved	0.00336		0.000050	mg/L	22-MAR-21	22-MAR-21	R5410261
Nickel (Ni)-Dissolved	0.00120		0.00050	mg/L	22-MAR-21	22-MAR-21	R5410261
Potassium (K)-Dissolved	1.55		0.050	mg/L	22-MAR-21	22-MAR-21	R5410261
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	22-MAR-21	22-MAR-21	R5410261
Silicon (Si)-Dissolved	3.49		0.050	mg/L	22-MAR-21	22-MAR-21	R5410261
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	22-MAR-21	22-MAR-21	R5410261
Sodium (Na)-Dissolved	1.08		0.050	mg/L	22-MAR-21	22-MAR-21	R5410261
Strontium (Sr)-Dissolved	0.0473		0.00020	mg/L	22-MAR-21	22-MAR-21	R5410261
Sulfur (S)-Dissolved	1.61		0.50	mg/L	22-MAR-21	22-MAR-21	R5410261
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	22-MAR-21	22-MAR-21	R5410261
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	23-MAR-21	23-MAR-21	R5413544
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	22-MAR-21	22-MAR-21	R5410261
Uranium (U)-Dissolved	0.000555		0.000010	mg/L	22-MAR-21	22-MAR-21	R5410261
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	22-MAR-21	22-MAR-21	R5410261
Zinc (Zn)-Dissolved	0.0024		0.0010	mg/L	22-MAR-21	22-MAR-21	R5410261
<b>Hardness</b>							
Hardness (as CaCO3)	198		0.50	mg/L		24-MAR-21	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		22-MAR-21	R5408862
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		22-MAR-21	R5408862
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		22-MAR-21	R5408862
Arsenic (As)-Total	0.00211		0.00010	mg/L		22-MAR-21	R5408862
Barium (Ba)-Total	0.228		0.00010	mg/L		22-MAR-21	R5408862
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		22-MAR-21	R5408862
Boron (B)-Total	<0.010		0.010	mg/L		22-MAR-21	R5408862
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		22-MAR-21	R5408862
Calcium (Ca)-Total	46.4		0.050	mg/L		22-MAR-21	R5408862
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		22-MAR-21	R5408862
Cobalt (Co)-Total	0.32		0.10	ug/L		22-MAR-21	R5408862
Copper (Cu)-Total	<0.00050		0.00050	mg/L		22-MAR-21	R5408862
Iron (Fe)-Total	1.04		0.010	mg/L		22-MAR-21	R5408862
Lead (Pb)-Total	<0.000050		0.000050	mg/L		22-MAR-21	R5408862
Lithium (Li)-Total	0.0058		0.0010	mg/L		22-MAR-21	R5408862
Magnesium (Mg)-Total	17.1		0.10	mg/L		22-MAR-21	R5408862
Manganese (Mn)-Total	0.0290		0.00010	mg/L		22-MAR-21	R5408862
Molybdenum (Mo)-Total	0.00357		0.000050	mg/L		22-MAR-21	R5408862
Nickel (Ni)-Total	0.00136		0.00050	mg/L		22-MAR-21	R5408862
Potassium (K)-Total	1.48		0.050	mg/L		22-MAR-21	R5408862
Selenium (Se)-Total	<0.050		0.050	ug/L		22-MAR-21	R5408862
Silicon (Si)-Total	3.57		0.10	mg/L		22-MAR-21	R5408862
Silver (Ag)-Total	<0.000010		0.000010	mg/L		22-MAR-21	R5408862
Sodium (Na)-Total	1.03		0.050	mg/L		22-MAR-21	R5408862
Strontium (Sr)-Total	0.0473		0.00020	mg/L		22-MAR-21	R5408862

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2568459-2 LC_PIZDC1404S_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 17-MAR-21 @ 11:50							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Sulfur (S)-Total	1.80		0.50	mg/L		22-MAR-21	R5408862
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		22-MAR-21	R5408862
Tin (Sn)-Total	<0.00010		0.00010	mg/L		22-MAR-21	R5408862
Titanium (Ti)-Total	<0.010		0.010	mg/L		22-MAR-21	R5408862
Uranium (U)-Total	0.000573		0.000010	mg/L		22-MAR-21	R5408862
Vanadium (V)-Total	<0.00050		0.00050	mg/L		22-MAR-21	R5408862
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		22-MAR-21	R5408862
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		23-MAR-21	R5413535
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	203		1.0	mg/L		26-MAR-21	R5415943
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-MAR-21	R5415943
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-MAR-21	R5415943
Alkalinity, Total (as CaCO3)	203		1.0	mg/L		26-MAR-21	R5415943
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0063		0.0050	mg/L		23-MAR-21	R5409176
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		19-MAR-21	R5410996
<b>Chloride in Water by IC</b>							
Chloride (Cl)	0.19		0.10	mg/L		19-MAR-21	R5410996
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	335		2.0	uS/cm		26-MAR-21	R5415943
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.069		0.020	mg/L		19-MAR-21	R5410996
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.9			%		26-MAR-21	
Anion Sum	4.18			meq/L		26-MAR-21	
Cation Sum	4.10			meq/L		26-MAR-21	
<b>Ion Balance Calculation</b>							
Ion Balance	98.2		-100	%		26-MAR-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0072		0.0050	mg/L		19-MAR-21	R5410996
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0010		0.0010	mg/L		19-MAR-21	R5410996
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		19-MAR-21	R5404296
<b>Oxidation reduction potential by elect.</b>							
ORP	484		-1000	mV		24-MAR-21	R5413358
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0039		0.0020	mg/L		22-MAR-21	R5407760
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	5.37		0.30	mg/L		19-MAR-21	R5410996
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	208	DLHC	20	mg/L		24-MAR-21	R5414324
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		24-MAR-21	R5415147
<b>Turbidity</b>							
Turbidity	4.62		0.10	NTU		19-MAR-21	R5405650
<b>pH</b>							
pH	8.14		0.10	pH		26-MAR-21	R5415943

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions)			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
			should be near-zero.
			Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:  Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)  This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric  This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer  This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

DC\_GW\_20210317

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample  
mg/kg wwt - milligrams per kilogram based on wet weight of sample  
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 1 of 15

Client: TECK COAL LIMITED (LINE CREEK)  
 PO BOX 2003  
 SPARWOOD BC V0B 2G0

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5413535</b>							
<b>WG3507838-6</b>	<b>DUP</b>	<b>L2568459-2</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	23-MAR-21
<b>WG3507838-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.0		%		85-115	23-MAR-21
<b>WG3507838-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	23-MAR-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415943</b>							
<b>WG3508596-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.9		%		85-115	26-MAR-21
<b>WG3508596-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-MAR-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5410261</b>							
<b>WG3506220-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.7		%		80-120	22-MAR-21
<b>WG3506220-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	22-MAR-21
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5408862</b>							
<b>WG3506156-3</b>	<b>DUP</b>	<b>L2568459-1</b>						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	22-MAR-21
<b>WG3506156-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			95.4		%		80-120	22-MAR-21
<b>WG3506156-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	22-MAR-21
<b>WG3506156-4</b>	<b>MS</b>	<b>L2568459-2</b>						
Beryllium (Be)-Total			95.3		%		70-130	22-MAR-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415943</b>							
<b>WG3508596-10</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	26-MAR-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 2 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5410996</b>							
<b>WG3506749-10</b>	<b>LCS</b>							
Bromide (Br)			112.4		%		85-115	19-MAR-21
<b>WG3506749-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	19-MAR-21
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5410817</b>							
<b>WG3507014-3</b>	<b>DUP</b>	<b>L2568459-2</b>						
Dissolved Organic Carbon		2.14	2.32		mg/L	8.2	20	23-MAR-21
<b>WG3507014-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			88.6		%		80-120	23-MAR-21
<b>WG3507014-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-MAR-21
<b>WG3507014-4</b>	<b>MS</b>	<b>L2568459-2</b>						
Dissolved Organic Carbon			87.7		%		70-130	23-MAR-21
<b>Batch</b>	<b>R5415158</b>							
<b>WG3508404-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.0		%		80-120	24-MAR-21
<b>WG3508404-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-MAR-21
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5410817</b>							
<b>WG3507014-3</b>	<b>DUP</b>	<b>L2568459-2</b>						
Total Organic Carbon		1.98	1.91		mg/L	3.5	20	23-MAR-21
<b>WG3507014-2</b>	<b>LCS</b>							
Total Organic Carbon			90.8		%		80-120	23-MAR-21
<b>WG3507014-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	23-MAR-21
<b>WG3507014-4</b>	<b>MS</b>	<b>L2568459-2</b>						
Total Organic Carbon			91.2		%		70-130	23-MAR-21
<b>Batch</b>	<b>R5415158</b>							
<b>WG3508404-2</b>	<b>LCS</b>							
Total Organic Carbon			104.9		%		80-120	24-MAR-21
<b>WG3508404-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	24-MAR-21
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 3 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-L-IC-N-CL</b>								
Batch R5410996								
WG3506749-10 LCS								
Chloride (Cl)								
			100.8		%		85-115	19-MAR-21
WG3506749-9 MB								
Chloride (Cl)								
			<0.10		mg/L		0.1	19-MAR-21
<b>CO3-CL</b>								
Batch R5415943								
WG3508596-10 MB								
Carbonate (CO3)								
			<5.0		mg/L		5	26-MAR-21
<b>EC-L-PCT-CL</b>								
Batch R5415943								
WG3508596-11 LCS								
Conductivity (@ 25C)								
			97.1		%		90-110	26-MAR-21
WG3508596-10 MB								
Conductivity (@ 25C)								
			<2.0		uS/cm		2	26-MAR-21
<b>F-IC-N-CL</b>								
Batch R5410996								
WG3506749-10 LCS								
Fluoride (F)								
			107.6		%		90-110	19-MAR-21
WG3506749-9 MB								
Fluoride (F)								
			<0.020		mg/L		0.02	19-MAR-21
<b>HG-D-CVAA-VA</b>								
Batch R5409077								
WG3506419-3 DUP								
Mercury (Hg)-Dissolved								
		L2568459-2	<0.0000050	<0.0000050	mg/L	RPD-NA	20	23-MAR-21
WG3506419-2 LCS								
Mercury (Hg)-Dissolved								
			100.0		%		80-120	23-MAR-21
WG3506419-1 MB								
Mercury (Hg)-Dissolved								
		NP	<0.0000050		mg/L		0.000005	23-MAR-21
<b>MET-D-CCMS-VA</b>								
Batch R5410261								
WG3506220-2 LCS								
Aluminum (Al)-Dissolved								
			100.5		%		80-120	22-MAR-21
Antimony (Sb)-Dissolved								
			103.0		%		80-120	22-MAR-21
Arsenic (As)-Dissolved								
			102.8		%		80-120	22-MAR-21
Barium (Ba)-Dissolved								
			103.6		%		80-120	22-MAR-21
Bismuth (Bi)-Dissolved								
			104.6		%		80-120	22-MAR-21





## Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 4 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5410261</b>							
<b>WG3506220-2</b>	<b>LCS</b>							
Boron (B)-Dissolved			97.0		%		80-120	22-MAR-21
Cadmium (Cd)-Dissolved			103.8		%		80-120	22-MAR-21
Calcium (Ca)-Dissolved			104.5		%		80-120	22-MAR-21
Chromium (Cr)-Dissolved			104.7		%		80-120	22-MAR-21
Cobalt (Co)-Dissolved			104.1		%		80-120	22-MAR-21
Copper (Cu)-Dissolved			102.1		%		80-120	22-MAR-21
Iron (Fe)-Dissolved			100.8		%		80-120	22-MAR-21
Lead (Pb)-Dissolved			99.3		%		80-120	22-MAR-21
Lithium (Li)-Dissolved			97.1		%		80-120	22-MAR-21
Magnesium (Mg)-Dissolved			109.2		%		80-120	22-MAR-21
Manganese (Mn)-Dissolved			106.0		%		80-120	22-MAR-21
Molybdenum (Mo)-Dissolved			101.9		%		80-120	22-MAR-21
Nickel (Ni)-Dissolved			100.4		%		80-120	22-MAR-21
Potassium (K)-Dissolved			106.6		%		80-120	22-MAR-21
Selenium (Se)-Dissolved			110.9		%		80-120	22-MAR-21
Silicon (Si)-Dissolved			101.6		%		60-140	22-MAR-21
Silver (Ag)-Dissolved			100.1		%		80-120	22-MAR-21
Sodium (Na)-Dissolved			109.9		%		80-120	22-MAR-21
Strontium (Sr)-Dissolved			105.8		%		80-120	22-MAR-21
Sulfur (S)-Dissolved			98.1		%		80-120	22-MAR-21
Thallium (Tl)-Dissolved			99.0		%		80-120	22-MAR-21
Titanium (Ti)-Dissolved			94.9		%		80-120	22-MAR-21
Uranium (U)-Dissolved			104.0		%		80-120	22-MAR-21
Vanadium (V)-Dissolved			104.7		%		80-120	22-MAR-21
Zinc (Zn)-Dissolved			102.9		%		80-120	22-MAR-21
<b>WG3506220-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	22-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	22-MAR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	22-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	22-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	22-MAR-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	22-MAR-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	22-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	22-MAR-21



## Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 5 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5410261</b>							
<b>WG3506220-1</b>	<b>MB</b>	<b>NP</b>						
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	22-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	22-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	22-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	22-MAR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	22-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	22-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	22-MAR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	22-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	22-MAR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	22-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	22-MAR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	22-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	22-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	22-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	22-MAR-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	22-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	22-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	22-MAR-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	22-MAR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	22-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	22-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	22-MAR-21
<b>Batch</b>	<b>R5413544</b>							
<b>WG3507053-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			105.0		%		80-120	23-MAR-21
Antimony (Sb)-Dissolved			99.4		%		80-120	23-MAR-21
Arsenic (As)-Dissolved			100.2		%		80-120	23-MAR-21
Barium (Ba)-Dissolved			95.7		%		80-120	23-MAR-21
Bismuth (Bi)-Dissolved			102.6		%		80-120	23-MAR-21
Boron (B)-Dissolved			99.7		%		80-120	23-MAR-21
Cadmium (Cd)-Dissolved			98.9		%		80-120	23-MAR-21
Calcium (Ca)-Dissolved			101.2		%		80-120	23-MAR-21
Chromium (Cr)-Dissolved			105.1		%		80-120	23-MAR-21
Cobalt (Co)-Dissolved			102.9		%		80-120	23-MAR-21



## Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 6 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5413544</b>							
<b>WG3507053-2</b>	<b>LCS</b>							
Copper (Cu)-Dissolved			107.1		%		80-120	23-MAR-21
Iron (Fe)-Dissolved			101.7		%		80-120	23-MAR-21
Lead (Pb)-Dissolved			98.4		%		80-120	23-MAR-21
Lithium (Li)-Dissolved			99.8		%		80-120	23-MAR-21
Magnesium (Mg)-Dissolved			99.5		%		80-120	23-MAR-21
Manganese (Mn)-Dissolved			102.5		%		80-120	23-MAR-21
Molybdenum (Mo)-Dissolved			101.2		%		80-120	23-MAR-21
Nickel (Ni)-Dissolved			101.9		%		80-120	23-MAR-21
Potassium (K)-Dissolved			103.1		%		80-120	23-MAR-21
Selenium (Se)-Dissolved			99.8		%		80-120	23-MAR-21
Silicon (Si)-Dissolved			98.2		%		60-140	23-MAR-21
Silver (Ag)-Dissolved			95.1		%		80-120	23-MAR-21
Sodium (Na)-Dissolved			107.2		%		80-120	23-MAR-21
Strontium (Sr)-Dissolved			100.2		%		80-120	23-MAR-21
Sulfur (S)-Dissolved			107.2		%		80-120	23-MAR-21
Thallium (Tl)-Dissolved			100.7		%		80-120	23-MAR-21
Tin (Sn)-Dissolved			96.8		%		80-120	23-MAR-21
Titanium (Ti)-Dissolved			99.5		%		80-120	23-MAR-21
Uranium (U)-Dissolved			103.7		%		80-120	23-MAR-21
Vanadium (V)-Dissolved			104.5		%		80-120	23-MAR-21
Zinc (Zn)-Dissolved			113.6		%		80-120	23-MAR-21
<b>WG3507053-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-MAR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-MAR-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-MAR-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-MAR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-MAR-21



## Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 7 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5413544</b>							
<b>WG3507053-1</b>	<b>MB</b>	<b>NP</b>						
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-MAR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-MAR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-MAR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-MAR-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	23-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-MAR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-MAR-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-MAR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-MAR-21
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5408862</b>							
<b>WG3506156-3</b>	<b>DUP</b>	<b>L2568459-1</b>						
Aluminum (Al)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	22-MAR-21
Antimony (Sb)-Total		0.00014	0.00014		mg/L	2.2	20	22-MAR-21
Arsenic (As)-Total		0.00139	0.00136		mg/L	2.0	20	22-MAR-21
Barium (Ba)-Total		3.87	3.95		mg/L	1.8	20	22-MAR-21
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-MAR-21
Boron (B)-Total		0.024	0.025		mg/L	2.8	20	22-MAR-21
Cadmium (Cd)-Total		<0.0000050	0.0000074	RPD-NA	mg/L	N/A	20	22-MAR-21
Calcium (Ca)-Total		54.5	55.1		mg/L	1.0	20	22-MAR-21
Chromium (Cr)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-MAR-21
Cobalt (Co)-Total		0.00109	0.00112		mg/L	2.3	20	22-MAR-21
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-MAR-21
Iron (Fe)-Total		1.57	1.59		mg/L	1.4	20	22-MAR-21



## Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 8 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5408862</b>							
<b>WG3506156-3</b>	<b>DUP</b>	<b>L2568459-1</b>						
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-MAR-21
Lithium (Li)-Total		0.538	0.546		mg/L	1.5	20	22-MAR-21
Magnesium (Mg)-Total		33.9	34.6		mg/L	1.8	20	22-MAR-21
Manganese (Mn)-Total		0.0336	0.0341		mg/L	1.6	20	22-MAR-21
Molybdenum (Mo)-Total		0.0209	0.0207		mg/L	1.2	20	22-MAR-21
Nickel (Ni)-Total		<0.00050	0.00050	RPD-NA	mg/L	N/A	20	22-MAR-21
Potassium (K)-Total		23.4	24.3		mg/L	3.6	20	22-MAR-21
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-MAR-21
Silicon (Si)-Total		2.76	2.88		mg/L	4.1	20	22-MAR-21
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-MAR-21
Sodium (Na)-Total		31.8	32.6		mg/L	2.5	20	22-MAR-21
Strontium (Sr)-Total		0.239	0.238		mg/L	0.2	20	22-MAR-21
Sulfur (S)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	22-MAR-21
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-MAR-21
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-MAR-21
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	22-MAR-21
Uranium (U)-Total		0.000132	0.000131		mg/L	0.8	20	22-MAR-21
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-MAR-21
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	22-MAR-21
<b>WG3506156-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			94.5		%		80-120	22-MAR-21
Antimony (Sb)-Total			104.3		%		80-120	22-MAR-21
Arsenic (As)-Total			101.0		%		80-120	22-MAR-21
Barium (Ba)-Total			100.6		%		80-120	22-MAR-21
Bismuth (Bi)-Total			104.1		%		80-120	22-MAR-21
Boron (B)-Total			92.5		%		80-120	22-MAR-21
Cadmium (Cd)-Total			100.0		%		80-120	22-MAR-21
Calcium (Ca)-Total			96.4		%		80-120	22-MAR-21
Chromium (Cr)-Total			99.7		%		80-120	22-MAR-21
Cobalt (Co)-Total			100.9		%		80-120	22-MAR-21
Copper (Cu)-Total			97.4		%		80-120	22-MAR-21
Iron (Fe)-Total			95.6		%		80-120	22-MAR-21
Lead (Pb)-Total			101.9		%		80-120	22-MAR-21
Lithium (Li)-Total			97.3		%		80-120	22-MAR-21



## Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 9 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5408862</b>							
<b>WG3506156-2</b>	<b>LCS</b>							
Magnesium (Mg)-Total			98.2		%		80-120	22-MAR-21
Manganese (Mn)-Total			99.3		%		80-120	22-MAR-21
Molybdenum (Mo)-Total			104.2		%		80-120	22-MAR-21
Nickel (Ni)-Total			99.5		%		80-120	22-MAR-21
Potassium (K)-Total			99.8		%		80-120	22-MAR-21
Selenium (Se)-Total			94.9		%		80-120	22-MAR-21
Silicon (Si)-Total			102.5		%		80-120	22-MAR-21
Silver (Ag)-Total			99.6		%		80-120	22-MAR-21
Sodium (Na)-Total			99.5		%		80-120	22-MAR-21
Strontium (Sr)-Total			106.5		%		80-120	22-MAR-21
Sulfur (S)-Total			103.6		%		80-120	22-MAR-21
Thallium (Tl)-Total			103.2		%		80-120	22-MAR-21
Tin (Sn)-Total			101.5		%		80-120	22-MAR-21
Titanium (Ti)-Total			99.0		%		80-120	22-MAR-21
Uranium (U)-Total			101.6		%		80-120	22-MAR-21
Vanadium (V)-Total			101.0		%		80-120	22-MAR-21
Zinc (Zn)-Total			109.4		%		80-120	22-MAR-21
<b>WG3506156-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	22-MAR-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	22-MAR-21
Arsenic (As)-Total			<0.00010		mg/L		0.0001	22-MAR-21
Barium (Ba)-Total			<0.00010		mg/L		0.0001	22-MAR-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	22-MAR-21
Boron (B)-Total			<0.010		mg/L		0.01	22-MAR-21
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	22-MAR-21
Calcium (Ca)-Total			<0.050		mg/L		0.05	22-MAR-21
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	22-MAR-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	22-MAR-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	22-MAR-21
Iron (Fe)-Total			<0.010		mg/L		0.01	22-MAR-21
Lead (Pb)-Total			<0.000050		mg/L		0.00005	22-MAR-21
Lithium (Li)-Total			<0.0010		mg/L		0.001	22-MAR-21
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	22-MAR-21
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	22-MAR-21



## Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 10 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5408862</b>							
<b>WG3506156-1</b>	<b>MB</b>							
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	22-MAR-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	22-MAR-21
Potassium (K)-Total			<0.050		mg/L		0.05	22-MAR-21
Selenium (Se)-Total			<0.000050		mg/L		0.00005	22-MAR-21
Silicon (Si)-Total			<0.10		mg/L		0.1	22-MAR-21
Silver (Ag)-Total			<0.000010		mg/L		0.00001	22-MAR-21
Sodium (Na)-Total			<0.050		mg/L		0.05	22-MAR-21
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	22-MAR-21
Sulfur (S)-Total			<0.50		mg/L		0.5	22-MAR-21
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	22-MAR-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	22-MAR-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	22-MAR-21
Uranium (U)-Total			<0.000010		mg/L		0.00001	22-MAR-21
Vanadium (V)-Total			<0.00050		mg/L		0.0005	22-MAR-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	22-MAR-21
<b>WG3506156-4</b>	<b>MS</b>	<b>L2568459-2</b>						
Aluminum (Al)-Total			98.0		%		70-130	22-MAR-21
Antimony (Sb)-Total			97.3		%		70-130	22-MAR-21
Arsenic (As)-Total			98.8		%		70-130	22-MAR-21
Barium (Ba)-Total			N/A	MS-B	%		-	22-MAR-21
Bismuth (Bi)-Total			98.9		%		70-130	22-MAR-21
Boron (B)-Total			97.9		%		70-130	22-MAR-21
Cadmium (Cd)-Total			100.6		%		70-130	22-MAR-21
Calcium (Ca)-Total			N/A	MS-B	%		-	22-MAR-21
Chromium (Cr)-Total			97.3		%		70-130	22-MAR-21
Cobalt (Co)-Total			95.7		%		70-130	22-MAR-21
Copper (Cu)-Total			93.6		%		70-130	22-MAR-21
Iron (Fe)-Total			93.1		%		70-130	22-MAR-21
Lead (Pb)-Total			98.5		%		70-130	22-MAR-21
Lithium (Li)-Total			95.2		%		70-130	22-MAR-21
Magnesium (Mg)-Total			N/A	MS-B	%		-	22-MAR-21
Manganese (Mn)-Total			N/A	MS-B	%		-	22-MAR-21
Molybdenum (Mo)-Total			98.0		%		70-130	22-MAR-21
Nickel (Ni)-Total			96.1		%		70-130	22-MAR-21



## Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 11 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5408862</b>							
<b>WG3506156-4</b>	<b>MS</b>	<b>L2568459-2</b>						
Potassium (K)-Total			94.5		%		70-130	22-MAR-21
Selenium (Se)-Total			99.3		%		70-130	22-MAR-21
Silicon (Si)-Total			89.1		%		70-130	22-MAR-21
Silver (Ag)-Total			99.9		%		70-130	22-MAR-21
Sodium (Na)-Total			97.0		%		70-130	22-MAR-21
Strontium (Sr)-Total			N/A	MS-B	%		-	22-MAR-21
Sulfur (S)-Total			100.7		%		70-130	22-MAR-21
Thallium (Tl)-Total			97.6		%		70-130	22-MAR-21
Tin (Sn)-Total			101.2		%		70-130	22-MAR-21
Titanium (Ti)-Total			94.4		%		70-130	22-MAR-21
Uranium (U)-Total			100.0		%		70-130	22-MAR-21
Vanadium (V)-Total			99.4		%		70-130	22-MAR-21
Zinc (Zn)-Total			101.0		%		70-130	22-MAR-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5409176</b>							
<b>WG3506487-6</b>	<b>LCS</b>							
Ammonia as N			107.5		%		85-115	22-MAR-21
<b>WG3506487-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	22-MAR-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5410996</b>							
<b>WG3506749-10</b>	<b>LCS</b>							
Nitrite (as N)			102.9		%		90-110	19-MAR-21
<b>WG3506749-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	19-MAR-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5410996</b>							
<b>WG3506749-10</b>	<b>LCS</b>							
Nitrate (as N)			104.0		%		90-110	19-MAR-21
<b>WG3506749-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	19-MAR-21
<b>OH-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 12 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>OH-CL</b>	<b>Water</b>							
Batch R5415943								
<b>WG3508596-10 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	26-MAR-21
<b>ORP-CL</b>	<b>Water</b>							
Batch R5413358								
<b>WG3507787-3 CRM</b>		<b>CL-ORP</b>						
ORP			226		mV		210-230	24-MAR-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch R5407760								
<b>WG3505880-10 LCS</b>								
Phosphorus (P)-Total			97.4		%		80-120	22-MAR-21
<b>WG3505880-9 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	22-MAR-21
<b>PH-CL</b>	<b>Water</b>							
Batch R5415943								
<b>WG3508596-11 LCS</b>								
pH			6.99		pH		6.9-7.1	26-MAR-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch R5404296								
<b>WG3504948-18 LCS</b>								
Orthophosphate-Dissolved (as P)			97.9		%		80-120	19-MAR-21
<b>WG3504948-17 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	19-MAR-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch R5410996								
<b>WG3506749-10 LCS</b>								
Sulfate (SO4)			103.3		%		90-110	19-MAR-21
<b>WG3506749-9 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	19-MAR-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch R5414324								
<b>WG3507277-5 LCS</b>								
Total Dissolved Solids			101.0		%		85-115	24-MAR-21
<b>WG3507277-8 LCS</b>								
Total Dissolved Solids			91.4		%		85-115	24-MAR-21



## Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 13 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R5414324							
<b>WG3507277-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	24-MAR-21
<b>WG3507277-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	24-MAR-21
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R5415290							
<b>WG3508565-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			105.5		%		75-125	25-MAR-21
<b>WG3508565-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAR-21
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R5415147							
<b>WG3507275-4</b>	<b>LCS</b>							
Total Suspended Solids			95.9		%		85-115	24-MAR-21
<b>WG3507275-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	24-MAR-21
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R5405650							
<b>WG3505409-5</b>	<b>LCS</b>							
Turbidity			99.96		%		85-115	19-MAR-21
<b>WG3505409-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	19-MAR-21

# Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 14 of 15

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2568459

Report Date: 04-NOV-21

Page 15 of 15

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	17-MAR-21 13:15	24-MAR-21 08:15	0.25	163	hours	EHTR-FM
	2	17-MAR-21 11:50	24-MAR-21 08:15	0.25	164	hours	EHTR-FM
pH							
	1	17-MAR-21 13:15	26-MAR-21 00:00	0.25	203	hours	EHTR-FM
	2	17-MAR-21 11:50	26-MAR-21 00:00	0.25	204	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2568459 were received on 18-MAR-21 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **DC\_GW\_20210317**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com		x	x
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com		x	x
	15km North Hwy 43							Email 4:	shanise.fossen@teck.com		x	x
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				
Postal Code	VOB 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930			
Phone Number	250-425-8478			Phone Number	403 407 1794							

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**      Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED													
								ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-Sulfide-T					
LC_PIZDC1404D_WG_Q4-2020_NP	LC_PIZDC1404D	WG	No	3/17/2021	13:15	G	6		1	1		1	1	1	1						
LC_PIZDC1404S_WG_Q4-2020_NP	LC_PIZDC1404S	WG	No	3/17/2021	11:50	G	6		1	1		1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S. Fossen	17-Mar	<i>[Signature]</i>	<i>[Signature]</i>

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	S. Fossen/D. Tymstra	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
	Sampler's Signature	S Fossen	Date/Time
			March 17, 2021

*[Handwritten mark]*



TECK COAL LIMITED (LINE CREEK)  
ATTN: Tom Jeffery  
PO BOX 2003  
SPARWOOD BC V0B 2G0

Date Received: 23-MAR-21  
Report Date: 04-NOV-21 15:39 (MT)  
Version: FINAL REV. 2

Client Phone: 250-425-8478

## Certificate of Analysis

Lab Work Order #: L2569714  
Project P.O. #: VPO00739930  
Job Reference: LINE CREEK OPERATION  
C of C Numbers: LC\_GW\_20210322  
Legal Site Desc:

Comments: Additional analysis for Carbonate, Bicarbonate and Hydroxide on L2569714-1 and -2.

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2569714-1 LC_PIZP1101_WG_Q1-2021_N							
Sampled By: S. Fossen/D. Tymstra on 22-MAR-21 @ 14:05							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	240		5.0	mg/L		29-MAR-21	R5417355
Carbonate (CO3)	<5.0		5.0	mg/L		29-MAR-21	R5417355
Dissolved Organic Carbon	<0.50		0.50	mg/L		29-MAR-21	R5417009
Hydroxide (OH)	<5.0		5.0	mg/L		29-MAR-21	R5417355
Total Kjeldahl Nitrogen	0.647		0.050	mg/L		01-APR-21	R5417789
Total Organic Carbon	<5.0	DLM	5.0	mg/L		29-MAR-21	R5417009
<b>EPH Testing for teck Coal</b>							
<b>EPH (C10-C19) &amp; EPH (C19-C32)</b>							
EPH10-19	<0.25		0.25	mg/L	29-MAR-21	29-MAR-21	R5417188
EPH19-32	<0.25		0.25	mg/L	29-MAR-21	29-MAR-21	R5417188
Surrogate: 2-Bromobenzotrifluoride	84.8		60-140	%	29-MAR-21	29-MAR-21	R5417188
<b>Sum of EPH (10-32)</b>							
EPH (C10-C32)	<0.50		0.50	mg/L		30-MAR-21	
<b>TEH (C10-C30)</b>							
TEH (C10-C30)	<0.25		0.25	mg/L	29-MAR-21	29-MAR-21	R5417188
Surrogate: 2-Bromobenzotrifluoride	84.8		60-140	%	29-MAR-21	29-MAR-21	R5417188
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	25-MAR-21	27-MAR-21	R5415898
Dissolved Metals Filtration Location	FIELD					25-MAR-21	R5415097
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	26-MAR-21	26-MAR-21	R5415464
Dissolved Mercury Filtration Location	FIELD					26-MAR-21	R5415437
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					25-MAR-21	R5415097
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	25-MAR-21	27-MAR-21	R5415898
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	25-MAR-21	27-MAR-21	R5415898
Arsenic (As)-Dissolved	0.00107		0.00010	mg/L	25-MAR-21	27-MAR-21	R5415898
Barium (Ba)-Dissolved	0.540		0.00010	mg/L	25-MAR-21	27-MAR-21	R5415898
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-MAR-21	27-MAR-21	R5415898
Boron (B)-Dissolved	0.021		0.010	mg/L	25-MAR-21	27-MAR-21	R5415898
Cadmium (Cd)-Dissolved	<0.010	DLM	0.010	ug/L	25-MAR-21	27-MAR-21	R5415898
Calcium (Ca)-Dissolved	28.4		0.050	mg/L	25-MAR-21	27-MAR-21	R5415898
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	25-MAR-21	27-MAR-21	R5415898
Cobalt (Co)-Dissolved	0.17		0.10	ug/L	25-MAR-21	27-MAR-21	R5415898
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	25-MAR-21	27-MAR-21	R5415898
Iron (Fe)-Dissolved	0.017		0.010	mg/L	25-MAR-21	27-MAR-21	R5415898
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-MAR-21	27-MAR-21	R5415898
Lithium (Li)-Dissolved	0.0092		0.0010	mg/L	25-MAR-21	27-MAR-21	R5415898
Magnesium (Mg)-Dissolved	15.0		0.10	mg/L	25-MAR-21	27-MAR-21	R5415898
Manganese (Mn)-Dissolved	0.247		0.00010	mg/L	25-MAR-21	27-MAR-21	R5415898
Molybdenum (Mo)-Dissolved	0.0111		0.000050	mg/L	25-MAR-21	27-MAR-21	R5415898
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	25-MAR-21	27-MAR-21	R5415898
Potassium (K)-Dissolved	0.841		0.050	mg/L	25-MAR-21	27-MAR-21	R5415898
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	25-MAR-21	27-MAR-21	R5415898
Silicon (Si)-Dissolved	3.70		0.050	mg/L	25-MAR-21	27-MAR-21	R5415898
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	25-MAR-21	27-MAR-21	R5415898
Sodium (Na)-Dissolved	21.5		0.050	mg/L	25-MAR-21	27-MAR-21	R5415898
Strontium (Sr)-Dissolved	0.222		0.00020	mg/L	25-MAR-21	27-MAR-21	R5415898
Sulfur (S)-Dissolved	1.47		0.50	mg/L	25-MAR-21	27-MAR-21	R5415898
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-MAR-21	27-MAR-21	R5415898

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2569714-1 LC_PIZP1101_WG_Q1-2021_N							
Sampled By: S. Fossen/D. Tymstra on 22-MAR-21 @ 14:05							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Tin (Sn)-Dissolved	0.00012		0.00010	mg/L	25-MAR-21	27-MAR-21	R5415898
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	25-MAR-21	27-MAR-21	R5415898
Uranium (U)-Dissolved	0.00137		0.000010	mg/L	25-MAR-21	27-MAR-21	R5415898
Vanadium (V)-Dissolved	0.00056		0.00050	mg/L	25-MAR-21	27-MAR-21	R5415898
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	25-MAR-21	27-MAR-21	R5415898
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	133		0.50	mg/L		30-MAR-21	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.563		0.020	ug/L		26-MAR-21	R5415946
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.000050	DLM	0.000050	mg/L		26-MAR-21	R5415464
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	8.65		0.0030	mg/L		26-MAR-21	R5415946
Antimony (Sb)-Total	0.00030		0.00010	mg/L		26-MAR-21	R5415946
Arsenic (As)-Total	0.00428		0.00010	mg/L		26-MAR-21	R5415946
Barium (Ba)-Total	0.721		0.00010	mg/L		26-MAR-21	R5415946
Bismuth (Bi)-Total	0.000157		0.000050	mg/L		26-MAR-21	R5415946
Boron (B)-Total	0.033		0.010	mg/L		26-MAR-21	R5415946
Cadmium (Cd)-Total	1.49		0.0050	ug/L		26-MAR-21	R5415946
Calcium (Ca)-Total	69.9		0.050	mg/L		26-MAR-21	R5415946
Chromium (Cr)-Total	0.0131		0.00010	mg/L		26-MAR-21	R5415946
Cobalt (Co)-Total	5.26		0.10	ug/L		26-MAR-21	R5415946
Copper (Cu)-Total	0.0407		0.00050	mg/L		26-MAR-21	R5415946
Iron (Fe)-Total	11.8		0.010	mg/L		26-MAR-21	R5415946
Lead (Pb)-Total	0.00705		0.000050	mg/L		26-MAR-21	R5415946
Lithium (Li)-Total	0.0203		0.0010	mg/L		26-MAR-21	R5415946
Magnesium (Mg)-Total	21.6		0.10	mg/L		26-MAR-21	R5415946
Manganese (Mn)-Total	0.789		0.00010	mg/L		26-MAR-21	R5415946
Molybdenum (Mo)-Total	0.00931		0.000050	mg/L		26-MAR-21	R5415946
Nickel (Ni)-Total	0.0200		0.00050	mg/L		26-MAR-21	R5415946
Potassium (K)-Total	3.47		0.050	mg/L		26-MAR-21	R5415946
Selenium (Se)-Total	3.20		0.050	ug/L		26-MAR-21	R5415946
Silicon (Si)-Total	16.9		0.10	mg/L		26-MAR-21	R5415946
Silver (Ag)-Total	0.000593		0.000010	mg/L		26-MAR-21	R5415946
Sodium (Na)-Total	19.6		0.050	mg/L		26-MAR-21	R5415946
Strontium (Sr)-Total	0.286		0.00020	mg/L		26-MAR-21	R5415946
Sulfur (S)-Total	1.23		0.50	mg/L		26-MAR-21	R5415946
Thallium (Tl)-Total	0.000541		0.000010	mg/L		26-MAR-21	R5415946
Tin (Sn)-Total	0.00033		0.00010	mg/L		26-MAR-21	R5415946
Titanium (Ti)-Total	0.029		0.010	mg/L		26-MAR-21	R5415946
Uranium (U)-Total	0.00197		0.000010	mg/L		26-MAR-21	R5415946
Vanadium (V)-Total	0.0255		0.00050	mg/L		26-MAR-21	R5415946
Zinc (Zn)-Total	0.118		0.0030	mg/L		26-MAR-21	R5415946
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		01-APR-21	R5418703
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	197		1.0	mg/L		29-MAR-21	R5417355
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-MAR-21	R5417355
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-MAR-21	R5417355
Alkalinity, Total (as CaCO3)	197		1.0	mg/L		29-MAR-21	R5417355

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2569714-1 LC_PIZP1101_WG_Q1-2021_N							
Sampled By: S. Fossen/D. Tymstra on 22-MAR-21 @ 14:05							
Matrix: WG							
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0287		0.0050	mg/L		29-MAR-21	R5417039
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		25-MAR-21	R5415184
<b>Chloride in Water by IC</b>							
Chloride (Cl)	0.65		0.10	mg/L		25-MAR-21	R5415184
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	291		2.0	uS/cm		29-MAR-21	R5417355
<b>Fluoride in Water by IC</b>							
Fluoride (F)	1.81		0.020	mg/L		25-MAR-21	R5415184
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-6.5			%		02-APR-21	
Anion Sum	4.12			meq/L		02-APR-21	
Cation Sum	3.62			meq/L		02-APR-21	
<b>Ion Balance Calculation</b>							
Ion Balance	87.7		-100	%		02-APR-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0095		0.0050	mg/L		25-MAR-21	R5415184
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		25-MAR-21	R5415184
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0107		0.0010	mg/L		24-MAR-21	R5413456
<b>Oxidation redution potential by elect.</b>							
ORP	280		-1000	mV		30-MAR-21	R5417081
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.551	DLHC	0.050	mg/L		29-MAR-21	R5416520
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	3.26		0.30	mg/L		25-MAR-21	R5415184
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	376	DLHC	20	mg/L		29-MAR-21	R5417099
<b>Total Suspended Solids</b>							
Total Suspended Solids	300		1.0	mg/L		29-MAR-21	R5416976
<b>Turbidity</b>							
Turbidity	472		0.10	NTU		24-MAR-21	R5413256
<b>pH</b>							
pH	7.92		0.10	pH		29-MAR-21	R5417355
L2569714-2 WG_Q1-2021_010							
Sampled By: S. Fossen/D. Tymstra on 22-MAR-21 @ 14:05							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	229		5.0	mg/L		29-MAR-21	R5417355
Carbonate (CO3)	<5.0		5.0	mg/L		29-MAR-21	R5417355
Dissolved Organic Carbon	<0.50		0.50	mg/L		29-MAR-21	R5417009
Hydroxide (OH)	<5.0		5.0	mg/L		29-MAR-21	R5417355
Total Kjeldahl Nitrogen	0.506		0.050	mg/L		30-MAR-21	R5417789
Total Organic Carbon	6.5	DLM	5.0	mg/L		29-MAR-21	R5417009
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	25-MAR-21	27-MAR-21	R5415898
Dissolved Metals Filtration Location	FIELD					25-MAR-21	R5415097
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	0.0000964		0.0000050	mg/L	26-MAR-21	26-MAR-21	R5415464

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2569714-2 WG_Q1-2021_010							
Sampled By: S. Fossen/D. Tymstra on 22-MAR-21 @ 14:05							
Matrix: WG							
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Dissolved Mercury Filtration Location	FIELD					26-MAR-21	R5415437
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					25-MAR-21	R5415097
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	25-MAR-21	27-MAR-21	R5415898
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	25-MAR-21	27-MAR-21	R5415898
Arsenic (As)-Dissolved	0.00109		0.00010	mg/L	25-MAR-21	27-MAR-21	R5415898
Barium (Ba)-Dissolved	0.527		0.00010	mg/L	25-MAR-21	27-MAR-21	R5415898
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-MAR-21	27-MAR-21	R5415898
Boron (B)-Dissolved	0.021		0.010	mg/L	25-MAR-21	27-MAR-21	R5415898
Cadmium (Cd)-Dissolved	<0.010	DLM	0.010	ug/L	25-MAR-21	27-MAR-21	R5415898
Calcium (Ca)-Dissolved	28.2		0.050	mg/L	25-MAR-21	27-MAR-21	R5415898
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	25-MAR-21	27-MAR-21	R5415898
Cobalt (Co)-Dissolved	0.17		0.10	ug/L	25-MAR-21	27-MAR-21	R5415898
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	25-MAR-21	27-MAR-21	R5415898
Iron (Fe)-Dissolved	0.017		0.010	mg/L	25-MAR-21	27-MAR-21	R5415898
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-MAR-21	27-MAR-21	R5415898
Lithium (Li)-Dissolved	0.0093		0.0010	mg/L	25-MAR-21	27-MAR-21	R5415898
Magnesium (Mg)-Dissolved	14.5		0.10	mg/L	25-MAR-21	27-MAR-21	R5415898
Manganese (Mn)-Dissolved	0.246		0.00010	mg/L	25-MAR-21	27-MAR-21	R5415898
Molybdenum (Mo)-Dissolved	0.0111		0.000050	mg/L	25-MAR-21	27-MAR-21	R5415898
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	25-MAR-21	27-MAR-21	R5415898
Potassium (K)-Dissolved	0.845		0.050	mg/L	25-MAR-21	27-MAR-21	R5415898
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	25-MAR-21	27-MAR-21	R5415898
Silicon (Si)-Dissolved	3.64		0.050	mg/L	25-MAR-21	27-MAR-21	R5415898
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	25-MAR-21	27-MAR-21	R5415898
Sodium (Na)-Dissolved	21.3		0.050	mg/L	25-MAR-21	27-MAR-21	R5415898
Strontium (Sr)-Dissolved	0.226		0.00020	mg/L	25-MAR-21	27-MAR-21	R5415898
Sulfur (S)-Dissolved	1.26		0.50	mg/L	25-MAR-21	27-MAR-21	R5415898
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-MAR-21	27-MAR-21	R5415898
Tin (Sn)-Dissolved	0.00012		0.00010	mg/L	25-MAR-21	27-MAR-21	R5415898
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	25-MAR-21	27-MAR-21	R5415898
Uranium (U)-Dissolved	0.00133		0.000010	mg/L	25-MAR-21	27-MAR-21	R5415898
Vanadium (V)-Dissolved	0.00060		0.00050	mg/L	25-MAR-21	27-MAR-21	R5415898
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	25-MAR-21	27-MAR-21	R5415898
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	130		0.50	mg/L		30-MAR-21	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.595		0.020	ug/L		26-MAR-21	R5415946
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.000050	DLM	0.000050	mg/L		26-MAR-21	R5415464
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	8.50		0.0030	mg/L		26-MAR-21	R5415946
Antimony (Sb)-Total	0.00030		0.00010	mg/L		26-MAR-21	R5415946
Arsenic (As)-Total	0.00424		0.00010	mg/L		26-MAR-21	R5415946
Barium (Ba)-Total	0.716		0.00010	mg/L		26-MAR-21	R5415946
Bismuth (Bi)-Total	0.000161		0.000050	mg/L		26-MAR-21	R5415946
Boron (B)-Total	0.033		0.010	mg/L		26-MAR-21	R5415946
Cadmium (Cd)-Total	1.47		0.0050	ug/L		26-MAR-21	R5415946
Calcium (Ca)-Total	70.9		0.050	mg/L		26-MAR-21	R5415946
Chromium (Cr)-Total	0.0131		0.00010	mg/L		26-MAR-21	R5415946
Cobalt (Co)-Total	5.26		0.10	ug/L		26-MAR-21	R5415946

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2569714-2 WG_Q1-2021_010							
Sampled By: S. Fossen/D. Tymstra on 22-MAR-21 @ 14:05							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Total	0.0398		0.00050	mg/L		26-MAR-21	R5415946
Iron (Fe)-Total	11.6		0.010	mg/L		26-MAR-21	R5415946
Lead (Pb)-Total	0.00723		0.000050	mg/L		26-MAR-21	R5415946
Lithium (Li)-Total	0.0205		0.0010	mg/L		26-MAR-21	R5415946
Magnesium (Mg)-Total	21.8		0.10	mg/L		26-MAR-21	R5415946
Manganese (Mn)-Total	0.768		0.00010	mg/L		26-MAR-21	R5415946
Molybdenum (Mo)-Total	0.00910		0.000050	mg/L		26-MAR-21	R5415946
Nickel (Ni)-Total	0.0197		0.00050	mg/L		26-MAR-21	R5415946
Potassium (K)-Total	3.45		0.050	mg/L		26-MAR-21	R5415946
Selenium (Se)-Total	3.03		0.050	ug/L		26-MAR-21	R5415946
Silicon (Si)-Total	16.7		0.10	mg/L		26-MAR-21	R5415946
Silver (Ag)-Total	0.000596		0.000010	mg/L		26-MAR-21	R5415946
Sodium (Na)-Total	19.7		0.050	mg/L		26-MAR-21	R5415946
Strontium (Sr)-Total	0.295		0.00020	mg/L		26-MAR-21	R5415946
Sulfur (S)-Total	1.30		0.50	mg/L		26-MAR-21	R5415946
Thallium (Tl)-Total	0.000555		0.000010	mg/L		26-MAR-21	R5415946
Tin (Sn)-Total	0.00031		0.00010	mg/L		26-MAR-21	R5415946
Titanium (Ti)-Total	0.028		0.010	mg/L		26-MAR-21	R5415946
Uranium (U)-Total	0.00200		0.000010	mg/L		26-MAR-21	R5415946
Vanadium (V)-Total	0.0252		0.00050	mg/L		26-MAR-21	R5415946
Zinc (Zn)-Total	0.118		0.0030	mg/L		26-MAR-21	R5415946
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		01-APR-21	R5418703
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	187		1.0	mg/L		29-MAR-21	R5417355
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-MAR-21	R5417355
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-MAR-21	R5417355
Alkalinity, Total (as CaCO3)	187		1.0	mg/L		29-MAR-21	R5417355
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0216		0.0050	mg/L		29-MAR-21	R5417039
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		25-MAR-21	R5415184
<b>Chloride in Water by IC</b>							
Chloride (Cl)	0.63		0.10	mg/L		25-MAR-21	R5415184
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	289		2.0	uS/cm		29-MAR-21	R5417355
<b>Fluoride in Water by IC</b>							
Fluoride (F)	1.80		0.020	mg/L		25-MAR-21	R5415184
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-4.9			%		02-APR-21	
Anion Sum	3.92			meq/L		02-APR-21	
Cation Sum	3.56			meq/L		02-APR-21	
<b>Ion Balance Calculation</b>							
Ion Balance	90.7		-100	%		02-APR-21	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0079		0.0050	mg/L		25-MAR-21	R5415184
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		25-MAR-21	R5415184
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0063		0.0010	mg/L		24-MAR-21	R5413456
<b>Oxidation redution potential by elect.</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2569714-2    WG_Q1-2021_010 Sampled By:    S. Fossen/D. Tymstra on 22-MAR-21 @ 14:05 Matrix:        WG							
<b>Oxidation redution potential by elect.</b> ORP	271		-1000	mV		30-MAR-21	R5417081
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.568	DLHC	0.050	mg/L		29-MAR-21	R5416520
<b>Sulfate in Water by IC</b> Sulfate (SO4)	3.23		0.30	mg/L		25-MAR-21	R5415184
<b>Total Dissolved Solids</b> Total Dissolved Solids	380	DLHC	20	mg/L		29-MAR-21	R5417099
<b>Total Suspended Solids</b> Total Suspended Solids	292		1.0	mg/L		29-MAR-21	R5416976
<b>Turbidity</b> Turbidity	450		0.10	NTU		24-MAR-21	R5413256
<b>pH</b> pH	8.04		0.10	pH		29-MAR-21	R5417355

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
EPH(10-32)-CALC-CL	Water	Sum of EPH (10-32)	Sum of EPH - Auto Calculated
The sum of EPH(C10-C19) and EPH(C19-C32)			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

LC\_GW\_20210322

## GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample  
 mg/kg wwt - milligrams per kilogram based on wet weight of sample  
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
 mg/L - unit of concentration based on volume, parts per million.  
 < - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



# Quality Control Report

Workorder: L2569714

Report Date: 04-NOV-21

Page 1 of 11

Client: TECK COAL LIMITED (LINE CREEK)  
 PO BOX 2003  
 SPARWOOD BC V0B 2G0

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R5418703							
<b>WG3512342-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			114.2		%		85-115	01-APR-21
<b>WG3512342-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	01-APR-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R5417355							
<b>WG3510914-1</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.5		%		85-115	29-MAR-21
<b>WG3510914-3</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-MAR-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R5415898							
<b>WG3508362-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.5		%		80-120	27-MAR-21
<b>WG3508362-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-MAR-21
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R5415946							
<b>WG3508351-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			102.7		%		80-120	26-MAR-21
<b>WG3508351-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	26-MAR-21
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R5417355							
<b>WG3510914-3</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	29-MAR-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R5415184							
<b>WG3508431-6</b>	<b>LCS</b>							
Bromide (Br)			104.3		%		85-115	25-MAR-21
<b>WG3508431-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	25-MAR-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2569714

Report Date: 04-NOV-21

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5417009							
<b>WG3510505-6 LCS</b>								
Dissolved Organic Carbon			107.0		%		80-120	29-MAR-21
<b>WG3510505-5 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-MAR-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5417009							
<b>WG3510505-6 LCS</b>								
Total Organic Carbon			110.3		%		80-120	29-MAR-21
<b>WG3510505-5 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	29-MAR-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5415184							
<b>WG3508431-6 LCS</b>								
Chloride (Cl)			101.4		%		85-115	25-MAR-21
<b>WG3508431-5 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	25-MAR-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5417355							
<b>WG3510914-3 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	29-MAR-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5417355							
<b>WG3510914-1 LCS</b>								
Conductivity (@ 25C)			98.0		%		90-110	29-MAR-21
<b>WG3510914-3 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	29-MAR-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5415184							
<b>WG3508431-6 LCS</b>								
Fluoride (F)			97.6		%		90-110	25-MAR-21
<b>WG3508431-5 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	25-MAR-21
<b>HG-D-CVAA-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2569714

Report Date: 04-NOV-21

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415464</b>							
<b>WG3508692-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.1		%		80-120	26-MAR-21
<b>WG3508692-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	26-MAR-21
<b>WG3508692-4</b>	<b>MS</b>	<b>L2569714-1</b>						
Mercury (Hg)-Dissolved			95.3		%		70-130	26-MAR-21
<b>HG-T-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415464</b>							
<b>WG3508766-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			97.8		%		80-120	26-MAR-21
<b>WG3508766-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	26-MAR-21
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415898</b>							
<b>WG3508362-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.1		%		80-120	27-MAR-21
Antimony (Sb)-Dissolved			98.8		%		80-120	27-MAR-21
Arsenic (As)-Dissolved			99.2		%		80-120	27-MAR-21
Barium (Ba)-Dissolved			102.4		%		80-120	27-MAR-21
Bismuth (Bi)-Dissolved			80.9		%		80-120	27-MAR-21
Boron (B)-Dissolved			95.9		%		80-120	27-MAR-21
Cadmium (Cd)-Dissolved			101.8		%		80-120	27-MAR-21
Calcium (Ca)-Dissolved			99.6		%		80-120	27-MAR-21
Chromium (Cr)-Dissolved			97.4		%		80-120	27-MAR-21
Cobalt (Co)-Dissolved			98.6		%		80-120	27-MAR-21
Copper (Cu)-Dissolved			98.2		%		80-120	27-MAR-21
Iron (Fe)-Dissolved			94.4		%		80-120	27-MAR-21
Lead (Pb)-Dissolved			98.3		%		80-120	27-MAR-21
Lithium (Li)-Dissolved			97.5		%		80-120	27-MAR-21
Magnesium (Mg)-Dissolved			97.9		%		80-120	27-MAR-21
Manganese (Mn)-Dissolved			99.6		%		80-120	27-MAR-21
Molybdenum (Mo)-Dissolved			94.9		%		80-120	27-MAR-21
Nickel (Ni)-Dissolved			97.9		%		80-120	27-MAR-21
Potassium (K)-Dissolved			102.6		%		80-120	27-MAR-21
Selenium (Se)-Dissolved			102.3		%		80-120	27-MAR-21
Silicon (Si)-Dissolved			99.1		%		60-140	27-MAR-21



## Quality Control Report

Workorder: L2569714

Report Date: 04-NOV-21

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415898</b>							
<b>WG3508362-2</b>	<b>LCS</b>							
Silver (Ag)-Dissolved			96.2		%		80-120	27-MAR-21
Sodium (Na)-Dissolved			108.5		%		80-120	27-MAR-21
Strontium (Sr)-Dissolved			100.9		%		80-120	27-MAR-21
Sulfur (S)-Dissolved			112.0		%		80-120	27-MAR-21
Thallium (Tl)-Dissolved			96.5		%		80-120	27-MAR-21
Tin (Sn)-Dissolved			95.9		%		80-120	27-MAR-21
Titanium (Ti)-Dissolved			96.7		%		80-120	27-MAR-21
Uranium (U)-Dissolved			95.0		%		80-120	27-MAR-21
Vanadium (V)-Dissolved			97.7		%		80-120	27-MAR-21
Zinc (Zn)-Dissolved			102.1		%		80-120	27-MAR-21
<b>WG3508362-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-MAR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-MAR-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-MAR-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-MAR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-MAR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-MAR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-MAR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-MAR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-MAR-21



## Quality Control Report

Workorder: L2569714

Report Date: 04-NOV-21

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415898</b>							
<b>WG3508362-1</b>	<b>MB</b>	<b>NP</b>						
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	27-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-MAR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-MAR-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-MAR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-MAR-21
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415946</b>							
<b>WG3508351-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			100.7		%		80-120	26-MAR-21
Antimony (Sb)-Total			109.9		%		80-120	26-MAR-21
Arsenic (As)-Total			100.3		%		80-120	26-MAR-21
Barium (Ba)-Total			107.2		%		80-120	26-MAR-21
Bismuth (Bi)-Total			107.4		%		80-120	26-MAR-21
Boron (B)-Total			100.7		%		80-120	26-MAR-21
Cadmium (Cd)-Total			99.95		%		80-120	26-MAR-21
Calcium (Ca)-Total			101.9		%		80-120	26-MAR-21
Chromium (Cr)-Total			100.9		%		80-120	26-MAR-21
Cobalt (Co)-Total			101.7		%		80-120	26-MAR-21
Copper (Cu)-Total			97.9		%		80-120	26-MAR-21
Iron (Fe)-Total			91.2		%		80-120	26-MAR-21
Lead (Pb)-Total			102.8		%		80-120	26-MAR-21
Lithium (Li)-Total			101.3		%		80-120	26-MAR-21
Magnesium (Mg)-Total			104.0		%		80-120	26-MAR-21
Manganese (Mn)-Total			103.4		%		80-120	26-MAR-21
Molybdenum (Mo)-Total			104.9		%		80-120	26-MAR-21
Nickel (Ni)-Total			99.0		%		80-120	26-MAR-21
Potassium (K)-Total			100.4		%		80-120	26-MAR-21
Selenium (Se)-Total			99.1		%		80-120	26-MAR-21
Silicon (Si)-Total			99.4		%		80-120	26-MAR-21
Silver (Ag)-Total			101.0		%		80-120	26-MAR-21
Sodium (Na)-Total			104.1		%		80-120	26-MAR-21



## Quality Control Report

Workorder: L2569714

Report Date: 04-NOV-21

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R5415946</b>							
<b>WG3508351-2 LCS</b>								
Strontium (Sr)-Total			117.4		%		80-120	26-MAR-21
Sulfur (S)-Total			99.0		%		80-120	26-MAR-21
Thallium (Tl)-Total			102.3		%		80-120	26-MAR-21
Tin (Sn)-Total			98.1		%		80-120	26-MAR-21
Titanium (Ti)-Total			103.1		%		80-120	26-MAR-21
Uranium (U)-Total			102.4		%		80-120	26-MAR-21
Vanadium (V)-Total			103.5		%		80-120	26-MAR-21
Zinc (Zn)-Total			116.4		%		80-120	26-MAR-21
<b>WG3508351-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	26-MAR-21
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	26-MAR-21
Arsenic (As)-Total			<0.00010		mg/L		0.0001	26-MAR-21
Barium (Ba)-Total			<0.00010		mg/L		0.0001	26-MAR-21
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	26-MAR-21
Boron (B)-Total			<0.010		mg/L		0.01	26-MAR-21
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	26-MAR-21
Calcium (Ca)-Total			<0.050		mg/L		0.05	26-MAR-21
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	26-MAR-21
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	26-MAR-21
Copper (Cu)-Total			<0.00050		mg/L		0.0005	26-MAR-21
Iron (Fe)-Total			<0.010		mg/L		0.01	26-MAR-21
Lead (Pb)-Total			<0.000050		mg/L		0.00005	26-MAR-21
Lithium (Li)-Total			<0.0010		mg/L		0.001	26-MAR-21
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	26-MAR-21
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	26-MAR-21
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	26-MAR-21
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	26-MAR-21
Potassium (K)-Total			<0.050		mg/L		0.05	26-MAR-21
Selenium (Se)-Total			<0.000050		mg/L		0.00005	26-MAR-21
Silicon (Si)-Total			<0.10		mg/L		0.1	26-MAR-21
Silver (Ag)-Total			<0.000010		mg/L		0.00001	26-MAR-21
Sodium (Na)-Total			<0.050		mg/L		0.05	26-MAR-21
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	26-MAR-21
Sulfur (S)-Total			<0.50		mg/L		0.5	26-MAR-21



## Quality Control Report

Workorder: L2569714

Report Date: 04-NOV-21

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415946</b>							
<b>WG3508351-1</b>	<b>MB</b>							
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	26-MAR-21
Tin (Sn)-Total			<0.00010		mg/L		0.0001	26-MAR-21
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	26-MAR-21
Uranium (U)-Total			<0.000010		mg/L		0.00001	26-MAR-21
Vanadium (V)-Total			<0.00050		mg/L		0.0005	26-MAR-21
Zinc (Zn)-Total			<0.0030		mg/L		0.003	26-MAR-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417039</b>							
<b>WG3510368-14</b>	<b>LCS</b>							
Ammonia as N			95.9		%		85-115	29-MAR-21
<b>WG3510368-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-MAR-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415184</b>							
<b>WG3508431-6</b>	<b>LCS</b>							
Nitrite (as N)			103.4		%		90-110	25-MAR-21
<b>WG3508431-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	25-MAR-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5415184</b>							
<b>WG3508431-6</b>	<b>LCS</b>							
Nitrate (as N)			102.3		%		90-110	25-MAR-21
<b>WG3508431-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	25-MAR-21
<b>OH-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417355</b>							
<b>WG3510914-3</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	29-MAR-21
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5417081</b>							
<b>WG3510597-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	30-MAR-21
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2569714

Report Date: 04-NOV-21

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5416520							
<b>WG3509904-18 LCS</b>								
Phosphorus (P)-Total			88.9		%		80-120	29-MAR-21
<b>WG3509904-17 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	29-MAR-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5417355							
<b>WG3510914-1 LCS</b>								
pH			6.97		pH		6.9-7.1	29-MAR-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5413456							
<b>WG3507699-6 LCS</b>								
Orthophosphate-Dissolved (as P)			100.8		%		80-120	24-MAR-21
<b>WG3507699-2 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-MAR-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5415184							
<b>WG3508431-6 LCS</b>								
Sulfate (SO4)			102.2		%		90-110	25-MAR-21
<b>WG3508431-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	25-MAR-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5417099							
<b>WG3509883-5 LCS</b>								
Total Dissolved Solids			98.4		%		85-115	29-MAR-21
<b>WG3509883-4 MB</b>								
Total Dissolved Solids			<10		mg/L		10	29-MAR-21
<b>TEH-BC-VA-CL</b>	<b>Water</b>							
Batch	R5417188							
<b>WG3509863-2 LCS</b>								
EPH10-19			108.6		%		70-130	29-MAR-21
EPH19-32			93.3		%		70-130	29-MAR-21
<b>WG3509863-1 MB</b>								
EPH10-19			<0.25		mg/L		0.25	29-MAR-21
EPH19-32			<0.25		mg/L		0.25	29-MAR-21
Surrogate: 2-Bromobenzotrifluoride			76.1		%		60-140	29-MAR-21
<b>TEH-WATER-VA-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2569714

Report Date: 04-NOV-21

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TEH-WATER-VA-CL</b>								
<b>Water</b>								
Batch R5417188								
WG3509863-2 LCS								
TEH (C10-C30)			104.1		%		70-130	29-MAR-21
WG3509863-1 MB								
TEH (C10-C30)			<0.25		mg/L		0.25	29-MAR-21
Surrogate: 2-Bromobenzotrifluoride			76.1		%		60-140	29-MAR-21
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch R5417789								
WG3510627-6 LCS								
Total Kjeldahl Nitrogen			85.0		%		75-125	30-MAR-21
WG3510627-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-MAR-21
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch R5416976								
WG3509882-2 LCS								
Total Suspended Solids			90.5		%		85-115	29-MAR-21
WG3509882-1 MB								
Total Suspended Solids			<1.0		mg/L		1	29-MAR-21
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch R5413256								
WG3507774-5 LCS								
Turbidity			100.5		%		85-115	24-MAR-21
WG3507774-4 MB								
Turbidity			<0.10		NTU		0.1	24-MAR-21



# Quality Control Report

Workorder: L2569714

Report Date: 04-NOV-21

Page 10 of 11

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2569714

Report Date: 04-NOV-21

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	22-MAR-21 14:05	30-MAR-21 08:00	0.25	186	hours	EHTR-FM
	2	22-MAR-21 14:05	30-MAR-21 09:30	0.25	187	hours	EHTR-FM
pH	1	22-MAR-21 14:05	29-MAR-21 18:00	0.25	172	hours	EHTR-FM
	2	22-MAR-21 14:05	29-MAR-21 18:00	0.25	172	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2569714 were received on 23-MAR-21 09:15.

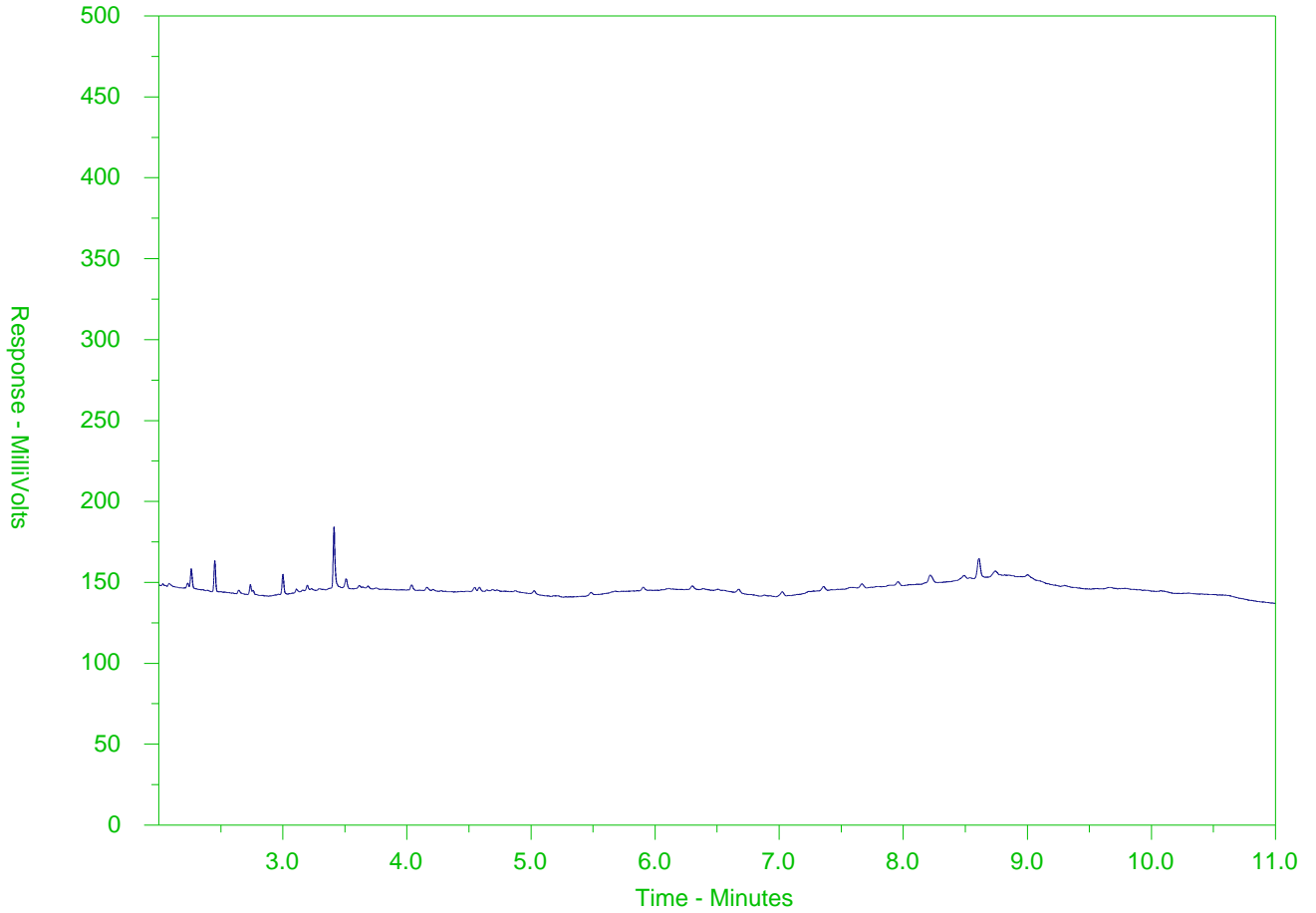
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2569714-1  
 Client Sample ID: LC\_PIZP1101\_WG\_Q1-2021\_N



EPH10-19		EPH19-32	
nC10	nC19	nC32	
174°C	330°C	467°C	
345°F	626°F	873°F	
Gasoline		Motor Oils, Lube Oils, Grease	
Diesel/ Jet Fuels			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at [www.alsglobal.com](http://www.alsglobal.com).

**COC ID:** LC\_GW\_20210322      **TURNAROUND TIME:**      **RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	x	x
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x
	15km North Hwy 43							Email 4:	shanise.fossen@teck.com	x	x
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:			
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930		
Phone Number	250-425-8478			Phone Number	403 407 1794						

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Y1	N	Y	Y	N	Y	N	N	N	N	N	N	N
								ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-Sulfide-T	ALS_Package-EPH			
LC_PIZP1101_WG_Q1-2021_N	LC_PIZP1101	WG	No	3/22/2021	14:05	G	9	1	1	1	1	1	1	1	1		2			
WG_Q1-2021_010	LC_CC1	WG	No	3/22/2021	14:05	G	7	1	1	1	1	1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S. Fossen	22-Mar	<i>[Signature]</i>	3/22 9:15

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	<input checked="" type="checkbox"/>	Sampler's Name	S. Fossen/D. Tymstra	Mobile #
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	S Fossen	Date/Time
Emergency (1 Business Day) - 100% surcharge				March 22, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2101423**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : SBPIN, HSP, 1101 may-13  
**Sampler** : DT/SF  
**Site** : ---  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 10  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 14-May-2021 09:00  
**Date Analysis Commenced** : 14-May-2021  
**Issue Date** : 05-Nov-2021 11:57

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

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## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Joshua Stessun	Laboratory Analyst	Organics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maqsood Ul Hassan	Laboratory Analyst	Organics, Calgary, Alberta
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

Sample	Client Id	Comment
CG2101423-001	LC_SBPIN_WW_2021-05-04_ N	Sample 001: Bottles for total+dissolved mercury s not submitted. Tests removed.

## Qualifiers

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_SBPIN_WW _2021-05-04_N	LC_HSP_WS_2 021-05-10_N	LC_PIZP1103_ WG_Q2-2021_N P	----	----
Client sampling date / time					13-May-2021 09:05	13-May-2021 10:20	13-May-2021 13:05	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101423-001 Result	CG2101423-002 Result	CG2101423-003 Result	----- ----	----- ----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	9.6	<2.0	<2.0	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	170	175	364	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	207	213	444	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	43.2	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	25.9	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	170	175	407	----	----	
conductivity	----	E100	2.0	µS/cm	631	610	741	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	239	329	139	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	383	397	249	----	----	
pH	----	E108	0.10	pH units	7.90	8.10	8.62	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	365	368	438	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	30.5	1.1	16.5	----	----	
turbidity	----	E121	0.10	NTU	21.8	1.79	16.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	17.2 <sup>RRV</sup>	0.0250	0.126	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.067	<0.050	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	16.3	0.34	2.56	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.494	0.236	0.347	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	18.6	0.479	0.278	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.14	1.77	<0.0050	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.318	0.0028	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	25.5	<0.0010	0.0376	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	28.4	0.0023	0.0502	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	110	163	26.4	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	8.40	1.00	1.66	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	11.2	1.10	1.85	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_SBPIN_WW _2021-05-04_N	LC_HSP_WS_2 021-05-10_N	LC_PIZP1103_ WG_Q2-2021_N P	----	----
Client sampling date / time					13-May-2021 09:05	13-May-2021 10:20	13-May-2021 13:05	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101423-001 Result	CG2101423-002 Result	CG2101423-003 Result	----- ----	----- ----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.28	7.04	8.77	----	----	
cation sum	----	EC101	0.10	meq/L	7.11	6.93	8.42	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	113	98.4	96.0	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	6.20	0.787	2.04	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0677	0.0174	0.358	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00700	0.00047	0.00029	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00746	0.00013	0.00136	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0563	0.0445	0.0712	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	0.026	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.218	0.030	0.514	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.802	0.134	0.0296	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	64.0	74.4	30.0	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00032	0.00011	0.00089	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	2.61	0.64	0.76	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00200	<0.00050	0.00146	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.166	0.038	0.598	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000571	<0.000050	0.000313	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.199	0.0454	0.121	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	22.0	36.7	16.4	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0683	0.00708	0.557	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	----	0.00057	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0870	0.00210	0.00904	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0103	0.0138	0.00190	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	16.8	1.95	1.64	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	20.4	15.3	<0.050	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	5.11	1.52	4.84	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	16.1	7.25	133	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_SBPIN_WW _2021-05-04_N	LC_HSP_WS_2 021-05-10_N	LC_PIZP1103_ WG_Q2-2021_N P	----	----
Client sampling date / time					13-May-2021 09:05	13-May-2021 10:20	13-May-2021 13:05	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101423-001 Result	CG2101423-002 Result	CG2101423-003 Result	----- ----	----- ----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.121	0.138	0.816	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	42.7	63.2	10.9	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	0.000023	<0.000010	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0.00032	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00090 <sup>DLM</sup>	<0.00060 <sup>DLM</sup>	0.00519	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000419	0.00206	0.00170	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0122	<0.00050	0.00084	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0442	0.0100	0.0082	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0023	0.0017	0.0025	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00673	0.00047	0.00025	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00728	0.00011	0.00128	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0485	0.0468	0.0803	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.192	0.027	0.470	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.718	0.120	<0.0100 <sup>DLM</sup>	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	60.5	71.4	29.5	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	<0.00010	0.00012	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	2.28	0.36	0.57	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00103	<0.00020	0.00937 <sup>DTC</sup>	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0.147	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000284	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.195	0.0445	0.122	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	21.4	36.7	15.8	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0638	0.00334	0.574	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	----	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0906	0.00209	0.00937	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00869	0.0132	0.00134	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	16.9	2.06	1.64	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_SBPIN_WW _2021-05-04_N	LC_HSP_WS_2 021-05-10_N	LC_PIZP1103_ WG_Q2-2021_N P	----	----
Client sampling date / time					13-May-2021 09:05	13-May-2021 10:20	13-May-2021 13:05	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101423-001 Result	CG2101423-002 Result	CG2101423-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	20.2	15.8	<0.050	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.00	1.47	4.45	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	15.4	6.84	128	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.122	0.140	0.848	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	42.9	63.5	11.2	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000024	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0.00017	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000464	0.00206	0.00165	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.0116	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0406	0.0102	0.0064	----	----	
dissolved mercury filtration location	----	EP509	-	-	----	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	
<b>Volatile Organic Compounds</b>										
benzene	71-43-2	E611E	0.00050	mg/L	<0.00050	----	----	----	----	
bromobenzene	108-86-1	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
bromochloromethane	74-97-5	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
bromodichloromethane	75-27-4	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
bromoform	75-25-2	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
bromomethane	74-83-9	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
butylbenzene, n-	104-51-8	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
butylbenzene, sec-	135-98-8	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
butylbenzene, tert-	98-06-6	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
carbon tetrachloride	56-23-5	E611E	0.00100	mg/L	<0.00100	----	----	----	----	
chlorobenzene	108-90-7	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
chloroethane	75-00-3	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
chloroform	67-66-3	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
chloromethane	74-87-3	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
chlorotoluene, 2-	95-49-8	E611E	0.0010	mg/L	<0.0010	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_SBPIN_WW _2021-05-04_N	LC_HSP_WS_2 021-05-10_N	LC_PIZP1103_ WG_Q2-2021_N P	----	----
Client sampling date / time					13-May-2021 09:05	13-May-2021 10:20	13-May-2021 13:05	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101423-001 Result	CG2101423-002 Result	CG2101423-003 Result	----- ----	----- ----	
<b>Volatile Organic Compounds</b>										
chlorotoluene, 4-	106-43-4	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
cymene, p-	99-87-6	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dibromo-3-chloropropane, 1,2-	96-12-8	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dibromochloromethane	124-48-1	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dibromoethane, 1,2-	106-93-4	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dibromomethane	74-95-3	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichlorobenzene, 1,2-	95-50-1	E611E	0.00100	mg/L	<0.00100	----	----	----	----	
dichlorobenzene, 1,3-	541-73-1	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichlorobenzene, 1,4-	106-46-7	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichlorodifluoromethane	75-71-8	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichloroethane, 1,1-	75-34-3	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichloroethane, 1,2-	107-06-2	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichloroethylene, 1,1-	75-35-4	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichloroethylene, cis-1,2-	156-59-2	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichloroethylene, trans-1,2-	156-60-5	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichloromethane	75-09-2	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichloropropane, 1,2-	78-87-5	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichloropropane, 1,3-	142-28-9	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichloropropane, 2,2-	594-20-7	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichloropropylene, 1,1-	563-58-6	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichloropropylene, cis+trans-1,3-	542-75-6	E611E	0.0015	mg/L	<0.0015	----	----	----	----	
dichloropropylene, cis-1,3-	10061-01-5	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
dichloropropylene, trans-1,3-	10061-02-6	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
ethylbenzene	100-41-4	E611E	0.00050	mg/L	<0.00050	----	----	----	----	
hexachlorobutadiene	87-68-3	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
isopropylbenzene	98-82-8	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
methyl-tert-butyl ether [MTBE]	1634-04-4	E611E	0.00050	mg/L	<0.00050	----	----	----	----	
propylbenzene, n-	103-65-1	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
styrene	100-42-5	E611E	0.00050	mg/L	<0.00050	----	----	----	----	
tetrachloroethane, 1,1,1,2-	630-20-6	E611E	0.0010	mg/L	<0.0010	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_SBPIN_WW _2021-05-04_N	LC_HSP_WS_2 021-05-10_N	LC_PIZP1103_ WG_Q2-2021_N P	----	----
Client sampling date / time					13-May-2021 09:05	13-May-2021 10:20	13-May-2021 13:05	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101423-001 Result	CG2101423-002 Result	CG2101423-003 Result	----- ----	----- ----	
<b>Volatile Organic Compounds</b>										
tetrachloroethane, 1,1,2,2-	79-34-5	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
tetrachloroethylene	127-18-4	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
toluene	108-88-3	E611E	0.00050	mg/L	<0.00050	----	----	----	----	
trichlorobenzene, 1,2,3-	87-61-6	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
trichlorobenzene, 1,2,4-	120-82-1	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
trichloroethane, 1,1,1-	71-55-6	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
trichloroethane, 1,1,2-	79-00-5	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
trichloroethylene	79-01-6	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
trichlorofluoromethane	75-69-4	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
trichloropropane, 1,2,3-	96-18-4	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
trimethylbenzene, 1,2,4-	95-63-6	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
trimethylbenzene, 1,3,5-	108-67-8	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
vinyl chloride	75-01-4	E611E	0.0010	mg/L	<0.0010	----	----	----	----	
xylene, m+p-	179601-23-1	E611E	0.00050	mg/L	<0.00050	----	----	----	----	
xylene, o-	95-47-6	E611E	0.00050	mg/L	<0.00050	----	----	----	----	
xylenes, total	1330-20-7	E611E	0.00075	mg/L	<0.00075	----	----	----	----	
BTEX, total	----	E611E	0.0012	mg/L	<0.0012	----	----	----	----	
trihalomethanes [THMs], total	----	E611E	0.0020	mg/L	<0.0020	----	----	----	----	
<b>Volatile Organic Compounds Surrogates</b>										
bromofluorobenzene, 4-	460-00-4	E611E	1.0	%	85.7	----	----	----	----	
difluorobenzene, 1,4-	540-36-3	E611E	1.0	%	94.6	----	----	----	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	----	----	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	0.27	----	----	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	0.32	----	----	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	108	----	----	----	----	
<b>Polycyclic Aromatic Hydrocarbons</b>										
naphthalene	91-20-3	E611E	0.0010	mg/L	<0.0010	----	----	----	----	



Please refer to the General Comments section for an explanation of any qualifiers detected.

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## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101423</b>	Page	: 1 of 17
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 14-May-2021 09:00
PO	: VPO00739930	Issue Date	: 05-Nov-2021 11:58
C-O-C number	: SBPIN, HSP, 1101 may-13		
Sampler	: DT/SF		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_HSP_WS_2021-05-10_N	E298	13-May-2021	26-May-2021	----	----		26-May-2021	28 days	13 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q2-2021_NP	E298	13-May-2021	26-May-2021	----	----		26-May-2021	28 days	13 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_SBPIN_WW_2021-05-04_N	E298	13-May-2021	26-May-2021	----	----		26-May-2021	28 days	13 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_HSP_WS_2021-05-10_N	E235.Br-L	13-May-2021	----	----	----		14-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q2-2021_NP	E235.Br-L	13-May-2021	----	----	----		14-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_SBPIN_WW_2021-05-04_N	E235.Br-L	13-May-2021	----	----	----		14-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_HSP_WS_2021-05-10_N	E235.Cl-L	13-May-2021	----	----	----		14-May-2021	28 days	1 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_PIZP1103_WG_Q2-2021_NP	E235.Cl-L	13-May-2021	----	----	----		14-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_SBPIN_WW_2021-05-04_N	E235.Cl-L	13-May-2021	----	----	----		14-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_HSP_WS_2021-05-10_N	E378-U	13-May-2021	----	----	----		14-May-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_PIZP1103_WG_Q2-2021_NP	E378-U	13-May-2021	----	----	----		14-May-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_SBPIN_WW_2021-05-04_N	E378-U	13-May-2021	----	----	----		14-May-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_HSP_WS_2021-05-10_N	E235.F	13-May-2021	----	----	----		14-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_PIZP1103_WG_Q2-2021_NP	E235.F	13-May-2021	----	----	----		14-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_SBPIN_WW_2021-05-04_N	E235.F	13-May-2021	----	----	----		14-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_HSP_WS_2021-05-10_N	E235.NO3-L	13-May-2021	----	----	----		14-May-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q2-2021_NP	E235.NO3-L	13-May-2021	----	----	----		14-May-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_SBPIN_WW_2021-05-04_N	E235.NO3-L	13-May-2021	----	----	----		14-May-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_HSP_WS_2021-05-10_N	E235.NO2-L	13-May-2021	----	----	----		14-May-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q2-2021_NP	E235.NO2-L	13-May-2021	----	----	----		14-May-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_SBPIN_WW_2021-05-04_N	E235.NO2-L	13-May-2021	----	----	----		14-May-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_HSP_WS_2021-05-10_N	E235.SO4	13-May-2021	----	----	----		14-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q2-2021_NP	E235.SO4	13-May-2021	----	----	----		14-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_SBPIN_WW_2021-05-04_N	E235.SO4	13-May-2021	----	----	----		14-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_HSP_WS_2021-05-10_N	E318	13-May-2021	20-May-2021	----	----		20-May-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q2-2021_NP	E318	13-May-2021	20-May-2021	----	----		20-May-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_SBPIN_WW_2021-05-04_N	E318	13-May-2021	20-May-2021	----	----		20-May-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_HSP_WS_2021-05-10_N	E372-U	13-May-2021	20-May-2021	----	----		20-May-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q2-2021_NP	E372-U	13-May-2021	20-May-2021	----	----		20-May-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_SBPIN_WW_2021-05-04_N	E372-U	13-May-2021	20-May-2021	----	----		20-May-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_HSP_WS_2021-05-10_N	E421.Cr-L	13-May-2021	20-May-2021	----	----		20-May-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1103_WG_Q2-2021_NP	E421.Cr-L	13-May-2021	20-May-2021	----	----		20-May-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_SBPIN_WW_2021-05-04_N	E421.Cr-L	13-May-2021	20-May-2021	----	----		20-May-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_HSP_WS_2021-05-10_N	E509	13-May-2021	20-May-2021	----	----		20-May-2021	28 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1103_WG_Q2-2021_NP	E509	13-May-2021	20-May-2021	----	----		20-May-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_HSP_WS_2021-05-10_N	E421	13-May-2021	20-May-2021	----	----		20-May-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1103_WG_Q2-2021_NP	E421	13-May-2021	20-May-2021	----	----		20-May-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_SBPIN_WW_2021-05-04_N	E421	13-May-2021	20-May-2021	----	----		20-May-2021	180 days	8 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_SBPIN_WW_2021-05-04_N	E601A	13-May-2021	15-May-2021	14 days	2 days	✓	15-May-2021	40 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_HSP_WS_2021-05-10_N	E358-L	13-May-2021	24-May-2021	----	----		24-May-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1103_WG_Q2-2021_NP	E358-L	13-May-2021	24-May-2021	----	----		24-May-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_SBPIN_WW_2021-05-04_N	E358-L	13-May-2021	24-May-2021	----	----		24-May-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_HSP_WS_2021-05-10_N	E355-L	13-May-2021	24-May-2021	----	----		24-May-2021	28 days	11 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q2-2021_NP	E355-L	13-May-2021	24-May-2021	----	----		24-May-2021	28 days	11 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_SBPIN_WW_2021-05-04_N	E355-L	13-May-2021	24-May-2021	----	----		24-May-2021	28 days	11 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_HSP_WS_2021-05-10_N	E283	13-May-2021	----	----	----		22-May-2021	14 days	9 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q2-2021_NP	E283	13-May-2021	----	----	----		22-May-2021	14 days	9 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_SBPIN_WW_2021-05-04_N	E283	13-May-2021	----	----	----		22-May-2021	14 days	9 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_HSP_WS_2021-05-10_N	E290	13-May-2021	----	----	----		25-May-2021	14 days	12 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q2-2021_NP	E290	13-May-2021	----	----	----		25-May-2021	14 days	12 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_SBPIN_WW_2021-05-04_N	E290	13-May-2021	----	----	----		25-May-2021	14 days	12 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> LC_HSP_WS_2021-05-10_N	E100	13-May-2021	----	----	----		25-May-2021	28 days	12 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZP1103_WG_Q2-2021_NP	E100	13-May-2021	----	----	----		25-May-2021	28 days	12 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_SBPIN_WW_2021-05-04_N	E100	13-May-2021	----	----	----		25-May-2021	28 days	12 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZP1103_WG_Q2-2021_NP	E125	13-May-2021	----	----	----		20-May-2021	0.25 hrs	167 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_HSP_WS_2021-05-10_N	E125	13-May-2021	----	----	----		20-May-2021	0.25 hrs	170 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_SBPIN_WW_2021-05-04_N	E125	13-May-2021	----	----	----		20-May-2021	0.25 hrs	171 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZP1103_WG_Q2-2021_NP	E108	13-May-2021	----	----	----		25-May-2021	0.25 hrs	284 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_HSP_WS_2021-05-10_N	E108	13-May-2021	----	----	----		25-May-2021	0.25 hrs	287 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_SBPIN_WW_2021-05-04_N	E108	13-May-2021	----	----	----		25-May-2021	0.25 hrs	288 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_HSP_WS_2021-05-10_N	E162	13-May-2021	----	----	----		18-May-2021	7 days	5 days		✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q2-2021_NP	E162	13-May-2021	----	----	----		18-May-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_SBPIN_WW_2021-05-04_N	E162	13-May-2021	----	----	----		18-May-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_HSP_WS_2021-05-10_N	E160-L	13-May-2021	----	----	----		18-May-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZP1103_WG_Q2-2021_NP	E160-L	13-May-2021	----	----	----		18-May-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_SBPIN_WW_2021-05-04_N	E160-L	13-May-2021	----	----	----		18-May-2021	7 days	5 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_HSP_WS_2021-05-10_N	E121	13-May-2021	----	----	----		15-May-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q2-2021_NP	E121	13-May-2021	----	----	----		15-May-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_SBPIN_WW_2021-05-04_N	E121	13-May-2021	----	----	----		15-May-2021	3 days	2 days	✓	
<b>Polycyclic Aromatic Hydrocarbons : VOCs (Prairies List) by Headspace GC-MS</b>											
<b>Glass vial (sodium bisulfate)</b> LC_SBPIN_WW_2021-05-04_N	E611E	13-May-2021	20-May-2021	----	----		21-May-2021	----	----		





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_HSP_WS_2021-05-10_N	E420.Cr-L	13-May-2021	----	----	----		20-May-2021	180 days	7 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1103_WG_Q2-2021_NP	E420.Cr-L	13-May-2021	----	----	----		20-May-2021	180 days	7 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_SBPIN_WW_2021-05-04_N	E420.Cr-L	13-May-2021	----	----	----		20-May-2021	180 days	7 days	✓
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> LC_HSP_WS_2021-05-10_N	E508-L	13-May-2021	----	----	----		20-May-2021	28 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_HSP_WS_2021-05-10_N	E420	13-May-2021	----	----	----		20-May-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1103_WG_Q2-2021_NP	E420	13-May-2021	----	----	----		20-May-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_SBPIN_WW_2021-05-04_N	E420	13-May-2021	----	----	----		20-May-2021	180 days	7 days	✓
<b>Volatile Organic Compounds : VOCs (Prairies List) by Headspace GC-MS</b>										
<b>Glass vial (sodium bisulfate)</b> LC_SBPIN_WW_2021-05-04_N	E611E	13-May-2021	20-May-2021	----	----		21-May-2021	14 days	8 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	203720	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	204579	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	205359	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	198041	2	22	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	198042	2	22	9.0	5.0	✓
Conductivity in Water	E100	204577	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	201422	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	201632	1	13	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	201423	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204287	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	198160	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	198045	2	22	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	198043	2	22	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	198044	2	22	9.0	5.0	✓
ORP by Electrode	E125	202089	1	16	6.2	5.0	✓
pH by Meter	E108	204578	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	198040	2	22	9.0	5.0	✓
TDS by Gravimetry	E162	199757	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	201613	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	201181	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	202212	1	8	12.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	201614	1	7	14.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	204289	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	200916	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	198368	1	6	16.6	5.0	✓
VOCs (Prairies List) by Headspace GC-MS	E611E	202082	1	1	100.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	203720	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	204579	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	205359	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	198030	1	6	16.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	198041	2	22	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	198042	2	22	9.0	5.0	✓
Conductivity in Water	E100	204577	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	201422	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	201632	1	13	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	201423	1	18	5.5	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204287	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	198160	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	198045	2	22	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	198043	2	22	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	198044	2	22	9.0	5.0	✓
ORP by Electrode	E125	202089	1	16	6.2	5.0	✓
pH by Meter	E108	204578	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	198040	2	22	9.0	5.0	✓
TDS by Gravimetry	E162	199757	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	201613	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	201181	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	202212	1	8	12.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	201614	1	7	14.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	204289	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	200916	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	199751	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	198368	1	6	16.6	5.0	✓
VOCs (Prairies List) by Headspace GC-MS	E611E	202082	1	1	100.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	203720	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	204579	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	205359	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	198030	1	6	16.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	198041	2	22	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	198042	2	22	9.0	5.0	✓
Conductivity in Water	E100	204577	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	201422	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	201632	1	13	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	201423	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204287	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	198160	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	198045	2	22	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	198043	2	22	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	198044	2	22	9.0	5.0	✓
Sulfate in Water by IC	E235.SO4	198040	2	22	9.0	5.0	✓
TDS by Gravimetry	E162	199757	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	201613	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	201181	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	202212	1	8	12.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	201614	1	7	14.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	204289	1	15	6.6	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Method Blanks (MB) - Continued</b>							
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	200916	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	199751	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	198368	1	6	16.6	5.0	✓
VOCs (Prairies List) by Headspace GC-MS	E611E	202082	1	1	100.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	205359	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	198041	2	22	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	198042	2	22	9.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	201422	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	201632	1	13	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	201423	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204287	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	198160	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	198045	2	22	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	198043	2	22	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	198044	2	22	9.0	5.0	✓
Sulfate in Water by IC	E235.SO4	198040	2	22	9.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	201613	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	201181	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	202212	1	8	12.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	201614	1	7	14.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	204289	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	200916	1	20	5.0	5.0	✓
VOCs (Prairies List) by Headspace GC-MS	E611E	202082	1	1	100.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
VOCs (Prairies List) by Headspace GC-MS	E611E Calgary - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
VOCs Preparation for Headspace Analysis	EP581 Calgary - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 Calgary - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.



## QUALITY CONTROL REPORT

**Work Order** : **CG2101423**

**Page** : 1 of 27

**Amendment** : **1**

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : SBPIN, HSP, 1101 may-13  
**Sampler** : DT/SF  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 14-May-2021 09:00  
**Date Analysis Commenced** : 14-May-2021  
**Issue Date** : 05-Nov-2021 11:57

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
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Elke Tabora		Inorganics, Calgary, Alberta
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta



Robin Weeks  
Sara Niroomand

Team Leader - Metals

Metals, Burnaby, British Columbia  
Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 198368)</b>											
CG2101421-001	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 199757)</b>											
CG2101419-003	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	259	256	1.16%	20%	----
<b>Physical Tests (QC Lot: 202089)</b>											
CG2101419-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	260	268	3.29%	15%	----
<b>Physical Tests (QC Lot: 203720)</b>											
CG2101396-001	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	18.7	15.0	3.7	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 204577)</b>											
CG2101419-002	Anonymous	conductivity	----	E100	2.0	µS/cm	619	611	1.30%	10%	----
<b>Physical Tests (QC Lot: 204578)</b>											
CG2101419-002	Anonymous	pH	----	E108	0.10	pH units	6.24	6.26	0.320%	4%	----
<b>Physical Tests (QC Lot: 204579)</b>											
CG2101421-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	171	169	1.23%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	171	169	1.23%	20%	----
<b>Anions and Nutrients (QC Lot: 198040)</b>											
CG2101404-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	205	206	0.384%	20%	----
<b>Anions and Nutrients (QC Lot: 198041)</b>											
CG2101404-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198042)</b>											
CG2101404-003	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.82	0.82	0.008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198043)</b>											
CG2101404-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	13.5	13.5	0.00444%	20%	----
<b>Anions and Nutrients (QC Lot: 198044)</b>											
CG2101404-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0044	0.0032	0.0012	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198045)</b>											
CG2101404-003	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.150	0.148	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198047)</b>											
CG2101423-003	LC_PIZP1103_WG_Q2-20 21_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.347	0.336	3.26%	20%	----
<b>Anions and Nutrients (QC Lot: 198048)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 198048) - continued</b>											
CG2101423-003	LC_PIZP1103_WG_Q2-20 21_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	26.4	26.5	0.191%	20%	----
<b>Anions and Nutrients (QC Lot: 198049)</b>											
CG2101423-003	LC_PIZP1103_WG_Q2-20 21_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198050)</b>											
CG2101423-003	LC_PIZP1103_WG_Q2-20 21_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.56	2.49	2.60%	20%	----
<b>Anions and Nutrients (QC Lot: 198051)</b>											
CG2101423-003	LC_PIZP1103_WG_Q2-20 21_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198052)</b>											
CG2101423-003	LC_PIZP1103_WG_Q2-20 21_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198160)</b>											
CG2101424-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 200916)</b>											
CG2101419-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0028	<0.0020	0.0008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 201181)</b>											
CG2101419-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.563	0.534	5.22%	20%	----
<b>Anions and Nutrients (QC Lot: 205359)</b>											
CG2101420-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.250	mg/L	5.59	5.51	1.38%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 204287)</b>											
CG2101419-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.08	2.15	0.06	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 204289)</b>											
CG2101420-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.76	0.65	0.11	Diff <2x LOR	----
<b>Total Metals (QC Lot: 201613)</b>											
CG2101423-002	LC_HSP_WS_2021-05-10_ N	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00011	0.00010	0.000004	Diff <2x LOR	----
<b>Total Metals (QC Lot: 201614)</b>											
CG2101423-002	LC_HSP_WS_2021-05-10_ N	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0174	0.0184	0.0010	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00047	0.00047	0.0000006	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00013	0.00015	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0445	0.0451	1.19%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.030	0.031	0.002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.134 µg/L	0.000136	2.21%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 201614) - continued</b>											
CG2101423-002	LC_HSP_WS_2021-05-10_N	calcium, total	7440-70-2	E420	0.050	mg/L	74.4	74.5	0.226%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.64 µg/L	0.00064	0.000001	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.038	0.036	0.001	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0454	0.0447	1.65%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	36.7	36.2	1.56%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00708	0.00710	0.345%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00210	0.00220	4.92%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0138	0.0139	0.622%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.95	1.95	0.161%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	15.3 µg/L	0.0153	0.418%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.52	1.50	1.42%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	7.25	7.12	1.86%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.138	0.138	0.618%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	63.2	63.8	0.973%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000023	0.000019	0.000003	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00206	0.00206	0.103%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0100	0.0098	0.0003	Diff <2x LOR	----
<b>Total Metals (QC Lot: 202212)</b>											
CG2101404-003	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	0.00084 µg/L	0.78	0.06	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 201422)</b>											
CG2101427-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00011	0.00013	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 201423)</b>											
CG2101427-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0020	0.0021	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	0.00012	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0116	0.0119	2.22%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 201423) - continued</b>											
CG2101427-001	Anonymous	cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0101 µg/L	0.0000118	0.0000017	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	38.8	37.3	4.11%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0011	0.0010	0.00008	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	8.84	8.78	0.691%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000789	0.000822	4.08%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.234	0.232	0.002	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.692 µg/L	0.000713	2.94%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.46	1.43	2.33%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.342	0.320	0.022	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0756	0.0734	2.95%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	6.97	6.72	3.61%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000804	0.000815	1.40%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0035	0.0036	0.00005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 201632)</b>											
CG2101423-002	LC_HSP_WS_2021-05-10_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Volatile Organic Compounds (QC Lot: 202082)</b>											
CG2101423-001	LC_SBPIN_WW_2021-05-04_N	benzene	71-43-2	E611E	0.00050	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		bromobenzene	108-86-1	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		bromochloromethane	74-97-5	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		bromodichloromethane	75-27-4	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		bromoform	75-25-2	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		bromomethane	74-83-9	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		butylbenzene, n-	104-51-8	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----



Sub-Matrix: Water

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Volatile Organic Compounds (QC Lot: 202082) - continued</b>											
CG2101423-001	LC_SBPIN_WW_2021-05-04_N	butylbenzene, sec-	135-98-8	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		butylbenzene, tert-	98-06-6	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		carbon tetrachloride	56-23-5	E611E	0.00100	µg/L	<0.00100 mg/L	<1.00	0	Diff <2x LOR	----
		chlorobenzene	108-90-7	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		chloroethane	75-00-3	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		chloroform	67-66-3	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		chloromethane	74-87-3	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		chlorotoluene, 2-	95-49-8	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		chlorotoluene, 4-	106-43-4	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		cymene, p-	99-87-6	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dibromo-3-chloropropane, 1,2-	96-12-8	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dibromochloromethane	124-48-1	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dibromoethane, 1,2-	106-93-4	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dibromomethane	74-95-3	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichlorobenzene, 1,2-	95-50-1	E611E	0.00100	µg/L	<0.00100 mg/L	<1.00	0	Diff <2x LOR	----
		dichlorobenzene, 1,3-	541-73-1	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichlorobenzene, 1,4-	106-46-7	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichlorodifluoromethane	75-71-8	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichloroethane, 1,1-	75-34-3	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichloroethane, 1,2-	107-06-2	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichloroethylene, 1,1-	75-35-4	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichloroethylene, cis-1,2-	156-59-2	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichloroethylene, trans-1,2-	156-60-5	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichloromethane	75-09-2	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichloropropane, 1,2-	78-87-5	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichloropropane, 1,3-	142-28-9	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichloropropane, 2,2-	594-20-7	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichloropropylene, 1,1-	563-58-6	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichloropropylene, cis-1,3-	10061-01-5	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		dichloropropylene, trans-1,3-	10061-02-6	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611E	0.00050	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		hexachlorobutadiene	87-68-3	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		isopropylbenzene	98-82-8	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Volatile Organic Compounds (QC Lot: 202082) - continued</b>											
CG2101423-001	LC_SBPIN_WW_2021-05-04_N	methyl-tert-butyl ether [MTBE]	1634-04-4	E611E	0.00050	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		naphthalene	91-20-3	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		propylbenzene, n-	103-65-1	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		styrene	100-42-5	E611E	0.00050	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		tetrachloroethylene	127-18-4	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		toluene	108-88-3	E611E	0.00050	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		trichlorobenzene, 1,2,3-	87-61-6	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		trichlorobenzene, 1,2,4-	120-82-1	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		trichloroethane, 1,1,1-	71-55-6	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		trichloroethane, 1,1,2-	79-00-5	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		trichloroethylene	79-01-6	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		trichlorofluoromethane	75-69-4	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		trichloropropane, 1,2,3-	96-18-4	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		trimethylbenzene, 1,2,4-	95-63-6	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		trimethylbenzene, 1,3,5-	108-67-8	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		vinyl chloride	75-01-4	E611E	0.0010	µg/L	<0.0010 mg/L	<1.0	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611E	0.00050	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611E	0.00050	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 198368)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 199751)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 199757)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 203720)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 204577)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 204579)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 198040)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 198041)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 198042)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 198043)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 198044)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 198045)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 198047)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 198048)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 198049)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 198050)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 198050) - continued</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 198051)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 198052)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 198160)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 200916)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 201181)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 205359)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 204287)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 204289)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 201613)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 201614)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 201614) - continued</b>						
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 202212)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
<b>Dissolved Metals (QCLot: 201422)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 201423)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 201423) - continued</b>						
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 201632)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Volatile Organic Compounds (QCLot: 202082)</b>						
benzene	71-43-2	E611E	0.5	µg/L	<0.50	----
bromobenzene	108-86-1	E611E	1	µg/L	<1.0	----
bromochloromethane	74-97-5	E611E	1	µg/L	<1.0	----
bromodichloromethane	75-27-4	E611E	1	µg/L	<1.0	----
bromoform	75-25-2	E611E	1	µg/L	<1.0	----
bromomethane	74-83-9	E611E	1	µg/L	<1.0	----
butylbenzene, n-	104-51-8	E611E	1	µg/L	<1.0	----
butylbenzene, sec-	135-98-8	E611E	1	µg/L	<1.0	----
butylbenzene, tert-	98-06-6	E611E	1	µg/L	<1.0	----
carbon tetrachloride	56-23-5	E611E	0.5	µg/L	<0.50	----
chlorobenzene	108-90-7	E611E	1	µg/L	<1.0	----
chloroethane	75-00-3	E611E	1	µg/L	<1.0	----
chloroform	67-66-3	E611E	1	µg/L	<1.0	----
chloromethane	74-87-3	E611E	1	µg/L	<1.0	----
chlorotoluene, 2-	95-49-8	E611E	1	µg/L	<1.0	----
chlorotoluene, 4-	106-43-4	E611E	1	µg/L	<1.0	----
cymene, p-	99-87-6	E611E	1	µg/L	<1.0	----
dibromo-3-chloropropane, 1,2-	96-12-8	E611E	1	µg/L	<1.0	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Volatile Organic Compounds (QCLot: 202082) - continued</b>						
dibromochloromethane	124-48-1	E611E	1	µg/L	<1.0	---
dibromoethane, 1,2-	106-93-4	E611E	1	µg/L	<1.0	---
dibromomethane	74-95-3	E611E	1	µg/L	<1.0	---
dichlorobenzene, 1,2-	95-50-1	E611E	0.5	µg/L	<0.50	---
dichlorobenzene, 1,3-	541-73-1	E611E	1	µg/L	<1.0	---
dichlorobenzene, 1,4-	106-46-7	E611E	1	µg/L	<1.0	---
dichlorodifluoromethane	75-71-8	E611E	1	µg/L	<1.0	---
dichloroethane, 1,1-	75-34-3	E611E	1	µg/L	<1.0	---
dichloroethane, 1,2-	107-06-2	E611E	1	µg/L	<1.0	---
dichloroethylene, 1,1-	75-35-4	E611E	1	µg/L	<1.0	---
dichloroethylene, cis-1,2-	156-59-2	E611E	1	µg/L	<1.0	---
dichloroethylene, trans-1,2-	156-60-5	E611E	1	µg/L	<1.0	---
dichloromethane	75-09-2	E611E	1	µg/L	<1.0	---
dichloropropane, 1,2-	78-87-5	E611E	1	µg/L	<1.0	---
dichloropropane, 1,3-	142-28-9	E611E	1	µg/L	<1.0	---
dichloropropane, 2,2-	594-20-7	E611E	1	µg/L	<1.0	---
dichloropropylene, 1,1-	563-58-6	E611E	1	µg/L	<1.0	---
dichloropropylene, cis-1,3-	10061-01-5	E611E	1	µg/L	<1.0	---
dichloropropylene, trans-1,3-	10061-02-6	E611E	1	µg/L	<1.0	---
ethylbenzene	100-41-4	E611E	0.5	µg/L	<0.50	---
hexachlorobutadiene	87-68-3	E611E	1	µg/L	<1.0	---
isopropylbenzene	98-82-8	E611E	1	µg/L	<1.0	---
methyl-tert-butyl ether [MTBE]	1634-04-4	E611E	0.5	µg/L	<0.50	---
naphthalene	91-20-3	E611E	1	µg/L	<1.0	---
propylbenzene, n-	103-65-1	E611E	1	µg/L	<1.0	---
styrene	100-42-5	E611E	0.5	µg/L	<0.50	---
tetrachloroethane, 1,1,1,2-	630-20-6	E611E	1	µg/L	<1.0	---
tetrachloroethane, 1,1,2,2-	79-34-5	E611E	1	µg/L	<1.0	---
tetrachloroethylene	127-18-4	E611E	1	µg/L	<1.0	---
toluene	108-88-3	E611E	0.5	µg/L	<0.50	---
trichlorobenzene, 1,2,3-	87-61-6	E611E	1	µg/L	<1.0	---
trichlorobenzene, 1,2,4-	120-82-1	E611E	1	µg/L	<1.0	---
trichloroethane, 1,1,1-	71-55-6	E611E	1	µg/L	<1.0	---
trichloroethane, 1,1,2-	79-00-5	E611E	1	µg/L	<1.0	---
trichloroethylene	79-01-6	E611E	1	µg/L	<1.0	---
trichlorofluoromethane	75-69-4	E611E	1	µg/L	<1.0	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Volatile Organic Compounds (QCLot: 202082) - continued</b>						
trichloropropane, 1,2,3-	96-18-4	E611E	1	µg/L	<1.0	----
trimethylbenzene, 1,2,4-	95-63-6	E611E	1	µg/L	<1.0	----
trimethylbenzene, 1,3,5-	108-67-8	E611E	1	µg/L	<1.0	----
vinyl chloride	75-01-4	E611E	1	µg/L	<1.0	----
xylene, m+p-	179601-23-1	E611E	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611E	0.3	µg/L	<0.30	----
<b>Hydrocarbons (QCLot: 198030)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 198368)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	---
<b>Physical Tests (QCLot: 199751)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	108	85.0	115	---
<b>Physical Tests (QCLot: 199757)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	94.1	85.0	115	---
<b>Physical Tests (QCLot: 202089)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 203720)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 204577)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.5	90.0	110	---
<b>Physical Tests (QCLot: 204578)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 204579)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Anions and Nutrients (QCLot: 198040)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 198041)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	91.0	85.0	115	---
<b>Anions and Nutrients (QCLot: 198042)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 198043)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 198044)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	110	90.0	110	---
<b>Anions and Nutrients (QCLot: 198045)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	91.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 198047)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 198048)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 198049)</b>									





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		
						Low	High		
<b>Anions and Nutrients (QCLot: 198049) - continued</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.3	85.0	115	----
<b>Anions and Nutrients (QCLot: 198050)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.0	90.0	110	----
<b>Anions and Nutrients (QCLot: 198051)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.1	90.0	110	----
<b>Anions and Nutrients (QCLot: 198052)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	108	90.0	110	----
<b>Anions and Nutrients (QCLot: 198160)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	98.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 200916)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	104	80.0	120	----
<b>Anions and Nutrients (QCLot: 201181)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	85.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 205359)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	113	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 204287)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	108	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 204289)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 201613)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	97.9	80.0	120	----
<b>Total Metals (QCLot: 201614)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	99.2	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	99.0	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	97.2	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	96.5	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.2	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	95.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----





Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 201614) - continued</b>									
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.1	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.6	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	99.0	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.5	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	97.3	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	105	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	98.7	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	98.0	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.0	80.0	120	----
<b>Total Metals (QCLot: 202212)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	92.8	80.0	120	----
<b>Dissolved Metals (QCLot: 201422)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 201423)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 201423) - continued</b>									
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.0	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.6	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	95.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.4	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.8	80.0	120	----
<b>Volatile Organic Compounds (QCLot: 202082)</b>									
benzene	71-43-2	E611E	0.5	µg/L	100 µg/L	88.6	70.0	130	----
bromobenzene	108-86-1	E611E	1	µg/L	100 µg/L	88.6	70.0	130	----
bromochloromethane	74-97-5	E611E	1	µg/L	100 µg/L	87.0	70.0	130	----
bromodichloromethane	75-27-4	E611E	1	µg/L	100 µg/L	85.6	70.0	130	----
bromoform	75-25-2	E611E	1	µg/L	100 µg/L	86.4	70.0	130	----
bromomethane	74-83-9	E611E	1	µg/L	100 µg/L	100	60.0	140	----
butylbenzene, n-	104-51-8	E611E	1	µg/L	100 µg/L	98.8	70.0	130	----
butylbenzene, sec-	135-98-8	E611E	1	µg/L	100 µg/L	98.8	70.0	130	----
butylbenzene, tert-	98-06-6	E611E	1	µg/L	100 µg/L	102	70.0	130	----
carbon tetrachloride	56-23-5	E611E	0.5	µg/L	100 µg/L	91.2	70.0	130	----
chlorobenzene	108-90-7	E611E	1	µg/L	100 µg/L	94.6	70.0	130	----
chloroethane	75-00-3	E611E	1	µg/L	100 µg/L	99.2	60.0	140	----
chloroform	67-66-3	E611E	1	µg/L	100 µg/L	86.8	70.0	130	----
chloromethane	74-87-3	E611E	1	µg/L	100 µg/L	116	60.0	140	----
chlorotoluene, 2-	95-49-8	E611E	1	µg/L	100 µg/L	95.2	70.0	130	----
chlorotoluene, 4-	106-43-4	E611E	1	µg/L	100 µg/L	94.9	70.0	130	----
cymene, p-	99-87-6	E611E	1	µg/L	100 µg/L	98.6	70.0	130	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Volatile Organic Compounds (QCLot: 202082) - continued</b>									
dibromo-3-chloropropane, 1,2-	96-12-8	E611E	1	µg/L	100 µg/L	81.2	70.0	130	----
dibromochloromethane	124-48-1	E611E	1	µg/L	100 µg/L	80.3	70.0	130	----
dibromoethane, 1,2-	106-93-4	E611E	1	µg/L	100 µg/L	82.0	70.0	130	----
dibromomethane	74-95-3	E611E	1	µg/L	100 µg/L	85.2	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611E	0.5	µg/L	100 µg/L	92.4	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611E	1	µg/L	100 µg/L	90.7	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611E	1	µg/L	100 µg/L	91.9	70.0	130	----
dichlorodifluoromethane	75-71-8	E611E	1	µg/L	100 µg/L	98.6	60.0	140	----
dichloroethane, 1,1-	75-34-3	E611E	1	µg/L	100 µg/L	87.5	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611E	1	µg/L	100 µg/L	81.9	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611E	1	µg/L	100 µg/L	94.7	70.0	130	----
dichloroethylene, cis-1,2-	156-59-2	E611E	1	µg/L	100 µg/L	88.3	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611E	1	µg/L	100 µg/L	88.3	70.0	130	----
dichloromethane	75-09-2	E611E	1	µg/L	100 µg/L	84.0	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611E	1	µg/L	100 µg/L	84.5	70.0	130	----
dichloropropane, 1,3-	142-28-9	E611E	1	µg/L	100 µg/L	84.9	70.0	130	----
dichloropropane, 2,2-	594-20-7	E611E	1	µg/L	100 µg/L	81.5	70.0	130	----
dichloropropylene, 1,1-	563-58-6	E611E	1	µg/L	100 µg/L	98.2	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611E	1	µg/L	100 µg/L	83.5	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611E	1	µg/L	100 µg/L	82.3	70.0	130	----
ethylbenzene	100-41-4	E611E	0.5	µg/L	100 µg/L	101	70.0	130	----
hexachlorobutadiene	87-68-3	E611E	1	µg/L	100 µg/L	89.2	70.0	130	----
isopropylbenzene	98-82-8	E611E	1	µg/L	100 µg/L	102	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611E	0.5	µg/L	100 µg/L	98.8	70.0	130	----
naphthalene	91-20-3	E611E	1	µg/L	100 µg/L	82.6	70.0	130	----
propylbenzene, n-	103-65-1	E611E	1	µg/L	100 µg/L	92.7	70.0	130	----
styrene	100-42-5	E611E	0.5	µg/L	100 µg/L	94.1	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611E	1	µg/L	100 µg/L	86.6	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611E	1	µg/L	100 µg/L	86.1	70.0	130	----
tetrachloroethylene	127-18-4	E611E	1	µg/L	100 µg/L	93.1	70.0	130	----
toluene	108-88-3	E611E	0.5	µg/L	100 µg/L	91.3	70.0	130	----
trichlorobenzene, 1,2,3-	87-61-6	E611E	1	µg/L	100 µg/L	89.2	70.0	130	----
trichlorobenzene, 1,2,4-	120-82-1	E611E	1	µg/L	100 µg/L	80.3	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611E	1	µg/L	100 µg/L	90.9	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611E	1	µg/L	100 µg/L	81.4	70.0	130	----
trichloroethylene	79-01-6	E611E	1	µg/L	100 µg/L	90.1	70.0	130	----
trichlorofluoromethane	75-69-4	E611E	1	µg/L	100 µg/L	92.9	60.0	140	----
trichloropropane, 1,2,3-	96-18-4	E611E	1	µg/L	100 µg/L	85.3	70.0	130	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Volatile Organic Compounds (QCLot: 202082) - continued</b>									
trimethylbenzene, 1,2,4-	95-63-6	E611E	1	µg/L	100 µg/L	102	70.0	130	----
trimethylbenzene, 1,3,5-	108-67-8	E611E	1	µg/L	100 µg/L	104	70.0	130	----
vinyl chloride	75-01-4	E611E	1	µg/L	100 µg/L	109	60.0	140	----
xylene, m+p-	179601-23-1	E611E	0.4	µg/L	200 µg/L	99.6	70.0	130	----
xylene, o-	95-47-6	E611E	0.3	µg/L	100 µg/L	98.9	70.0	130	----
<b>Hydrocarbons (QCLot: 198030)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	107	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	100	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	105	70.0	130	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 198040)</b>										
CG2101404-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 198041)</b>										
CG2101404-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.427 mg/L	0.5 mg/L	85.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 198042)</b>										
CG2101404-004	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 198043)</b>										
CG2101404-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.55 mg/L	2.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 198044)</b>										
CG2101404-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.464 mg/L	0.5 mg/L	92.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 198045)</b>										
CG2101404-004	Anonymous	fluoride	16984-48-8	E235.F	0.979 mg/L	1 mg/L	97.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 198047)</b>										
CG2101424-001	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 198048)</b>										
CG2101424-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 198049)</b>										
CG2101424-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.416 mg/L	0.5 mg/L	83.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 198050)</b>										
CG2101424-001	Anonymous	chloride	16887-00-6	E235.Cl-L	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 198051)</b>										
CG2101424-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.58 mg/L	2.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 198052)</b>										
CG2101424-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.469 mg/L	0.5 mg/L	93.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 198160)</b>										
CG2101419-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0517 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 200916)</b>										
CG2101419-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0539 mg/L	0.0676 mg/L	79.7	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 201181)</b>										
CG2101420-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.84 mg/L	2.5 mg/L	73.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 205359)</b>										
CG2101420-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 204287)</b>										
CG2101419-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.7 mg/L	23.9 mg/L	108	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 204289)</b>										
CG2101420-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.9 mg/L	23.9 mg/L	108	70.0	130	----
<b>Total Metals (QCLot: 201613)</b>										
CG2101423-002	LC_HSP_WS_2021-05-10_N	chromium, total	7440-47-3	E420.Cr-L	0.0392 mg/L	0.04 mg/L	98.1	70.0	130	----
<b>Total Metals (QCLot: 201614)</b>										
CG2101423-002	LC_HSP_WS_2021-05-10_N	aluminum, total	7429-90-5	E420	0.199 mg/L	0.2 mg/L	99.5	70.0	130	----
		antimony, total	7440-36-0	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00935 mg/L	0.01 mg/L	93.5	70.0	130	----
		boron, total	7440-42-8	E420	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		copper, total	7440-50-8	E420	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		iron, total	7439-89-6	E420	1.93 mg/L	2 mg/L	96.5	70.0	130	----
		lead, total	7439-92-1	E420	0.0184 mg/L	0.02 mg/L	92.2	70.0	130	----
		lithium, total	7439-93-2	E420	0.0916 mg/L	0.1 mg/L	91.6	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		nickel, total	7440-02-0	E420	0.0386 mg/L	0.04 mg/L	96.4	70.0	130	----
		potassium, total	7440-09-7	E420	4.33 mg/L	4 mg/L	108	70.0	130	----
		selenium, total	7782-49-2	E420	0.0446 mg/L	0.04 mg/L	112	70.0	130	----
		silicon, total	7440-21-3	E420	9.69 mg/L	10 mg/L	96.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00381 mg/L	0.004 mg/L	95.2	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 201614) - continued</b>										
CG2101423-002	LC_HSP_WS_2021-05-10_N	sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00364 mg/L	0.004 mg/L	91.1	70.0	130	----
		tin, total	7440-31-5	E420	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		titanium, total	7440-32-6	E420	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		uranium, total	7440-61-1	E420	0.00384 mg/L	0.004 mg/L	95.9	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.397 mg/L	0.4 mg/L	99.4	70.0	130	----
<b>Total Metals (QCLot: 202212)</b>										
CG2101404-004	Anonymous	mercury, total	7439-97-6	E508-L	4.99 ng/L	5 ng/L	99.8	70.0	130	----
<b>Dissolved Metals (QCLot: 201422)</b>										
CG2101427-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 201423)</b>										
CG2101427-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00838 mg/L	0.01 mg/L	83.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	99.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00418 mg/L	0.004 mg/L	104	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	96.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.07 mg/L	4 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0414 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.42 mg/L	10 mg/L	94.2	70.0	130	----
silver, dissolved	7440-22-4	E421	0.00377 mg/L	0.004 mg/L	94.2	70.0	130	----		
sodium, dissolved	17341-25-2	E421	1.98 mg/L	2 mg/L	98.8	70.0	130	----		
strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----		



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 201423) - continued</b>										
CG2101427-001	Anonymous	sulfur, dissolved	7704-34-9	E421	20.2 mg/L	20 mg/L	101	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00386 mg/L	0.004 mg/L	96.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00391 mg/L	0.004 mg/L	97.7	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.412 mg/L	0.4 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 201632)</b>										
CG2101423-003	LC_PIZP1103_WG_Q2-2021_NP	mercury, dissolved	7439-97-6	E509	0.0000972 mg/L	0.0001 mg/L	97.2	70.0	130	----
<b>Volatile Organic Compounds (QCLot: 202082)</b>										
CG2101423-001	LC_SBPIN_WW_2021-05-04_N	benzene	71-43-2	E611E	92.5 µg/L	100 µg/L	92.5	50.0	140	----
		bromobenzene	108-86-1	E611E	91.8 µg/L	100 µg/L	91.8	50.0	140	----
		bromochloromethane	74-97-5	E611E	82.0 µg/L	100 µg/L	82.0	50.0	140	----
		bromodichloromethane	75-27-4	E611E	88.1 µg/L	100 µg/L	88.1	50.0	140	----
		bromoform	75-25-2	E611E	88.7 µg/L	100 µg/L	88.7	50.0	140	----
		bromomethane	74-83-9	E611E	102 µg/L	100 µg/L	102	50.0	140	----
		butylbenzene, n-	104-51-8	E611E	104 µg/L	100 µg/L	104	50.0	140	----
		butylbenzene, sec-	135-98-8	E611E	104 µg/L	100 µg/L	104	50.0	140	----
		butylbenzene, tert-	98-06-6	E611E	106 µg/L	100 µg/L	106	50.0	140	----
		carbon tetrachloride	56-23-5	E611E	95.6 µg/L	100 µg/L	95.6	50.0	140	----
		chlorobenzene	108-90-7	E611E	97.3 µg/L	100 µg/L	97.3	50.0	140	----
		chloroethane	75-00-3	E611E	100 µg/L	100 µg/L	100	50.0	140	----
		chloroform	67-66-3	E611E	89.7 µg/L	100 µg/L	89.7	50.0	140	----
		chloromethane	74-87-3	E611E	115 µg/L	100 µg/L	115	50.0	140	----
		chlorotoluene, 2-	95-49-8	E611E	101 µg/L	100 µg/L	101	50.0	140	----
		chlorotoluene, 4-	106-43-4	E611E	99.8 µg/L	100 µg/L	99.8	50.0	140	----
		cymene, p-	99-87-6	E611E	105 µg/L	100 µg/L	105	50.0	140	----
		dibromo-3-chloropropane, 1,2-	96-12-8	E611E	91.0 µg/L	100 µg/L	91.0	50.0	140	----
		dibromochloromethane	124-48-1	E611E	83.5 µg/L	100 µg/L	83.5	50.0	140	----
		dibromoethane, 1,2-	106-93-4	E611E	85.5 µg/L	100 µg/L	85.5	50.0	140	----
		dibromomethane	74-95-3	E611E	82.4 µg/L	100 µg/L	82.4	50.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611E	97.3 µg/L	100 µg/L	97.3	50.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611E	97.9 µg/L	100 µg/L	97.9	50.0	140	----
dichlorobenzene, 1,4-	106-46-7	E611E	96.6 µg/L	100 µg/L	96.6	50.0	140	----		
dichlorodifluoromethane	75-71-8	E611E	98.2 µg/L	100 µg/L	98.2	50.0	140	----		





Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Volatile Organic Compounds (QCLot: 202082) - continued</b>										
CG2101423-001	LC_SBPIN_WW_2021-05-04_N	dichloroethane, 1,1-	75-34-3	E611E	89.7 µg/L	100 µg/L	89.7	50.0	140	----
		dichloroethane, 1,2-	107-06-2	E611E	84.7 µg/L	100 µg/L	84.7	50.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611E	96.8 µg/L	100 µg/L	96.8	50.0	140	----
		dichloroethylene, cis-1,2-	156-59-2	E611E	91.9 µg/L	100 µg/L	91.9	50.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611E	86.4 µg/L	100 µg/L	86.4	50.0	140	----
		dichloromethane	75-09-2	E611E	80.4 µg/L	100 µg/L	80.4	50.0	140	----
		dichloropropane, 1,2-	78-87-5	E611E	88.1 µg/L	100 µg/L	88.1	50.0	140	----
		dichloropropane, 1,3-	142-28-9	E611E	87.4 µg/L	100 µg/L	87.4	50.0	140	----
		dichloropropane, 2,2-	594-20-7	E611E	84.6 µg/L	100 µg/L	84.6	50.0	140	----
		dichloropropylene, 1,1-	563-58-6	E611E	106 µg/L	100 µg/L	106	50.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611E	88.3 µg/L	100 µg/L	88.3	50.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611E	86.7 µg/L	100 µg/L	86.7	50.0	140	----
		ethylbenzene	100-41-4	E611E	110 µg/L	100 µg/L	110	50.0	140	----
		hexachlorobutadiene	87-68-3	E611E	96.6 µg/L	100 µg/L	96.6	50.0	140	----
		isopropylbenzene	98-82-8	E611E	107 µg/L	100 µg/L	107	50.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611E	100 µg/L	100 µg/L	100	50.0	140	----
		naphthalene	91-20-3	E611E	95.0 µg/L	100 µg/L	95.0	50.0	140	----
		propylbenzene, n-	103-65-1	E611E	96.7 µg/L	100 µg/L	96.7	50.0	140	----
		styrene	100-42-5	E611E	98.7 µg/L	100 µg/L	98.7	50.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611E	89.7 µg/L	100 µg/L	89.7	50.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611E	90.6 µg/L	100 µg/L	90.6	50.0	140	----
		tetrachloroethylene	127-18-4	E611E	98.8 µg/L	100 µg/L	98.8	50.0	140	----
		toluene	108-88-3	E611E	96.3 µg/L	100 µg/L	96.3	50.0	140	----
		trichlorobenzene, 1,2,3-	87-61-6	E611E	91.6 µg/L	100 µg/L	91.6	50.0	140	----
		trichlorobenzene, 1,2,4-	120-82-1	E611E	89.7 µg/L	100 µg/L	89.7	50.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611E	94.6 µg/L	100 µg/L	94.6	50.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611E	83.2 µg/L	100 µg/L	83.2	50.0	140	----
		trichloroethylene	79-01-6	E611E	95.6 µg/L	100 µg/L	95.6	50.0	140	----
		trichlorofluoromethane	75-69-4	E611E	92.4 µg/L	100 µg/L	92.4	50.0	140	----
		trichloropropane, 1,2,3-	96-18-4	E611E	88.2 µg/L	100 µg/L	88.2	50.0	140	----
		trimethylbenzene, 1,2,4-	95-63-6	E611E	106 µg/L	100 µg/L	106	50.0	140	----
		trimethylbenzene, 1,3,5-	108-67-8	E611E	109 µg/L	100 µg/L	109	50.0	140	----
		vinyl chloride	75-01-4	E611E	114 µg/L	100 µg/L	114	50.0	140	----
		xylene, m+p-	179601-23-1	E611E	210 µg/L	200 µg/L	105	50.0	140	----
		xylene, o-	95-47-6	E611E	105 µg/L	100 µg/L	105	50.0	140	----



COC ID: SBPIN, HSP, 1101 may-13      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	*	*
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	*	*
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	*	*
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	*	*
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	tanva.siek@teck.com	*	*
Environmental Division	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930		
Calgary				Phone Number	403 407 1794						

Environmental Division  
Calgary

Work Order Reference

**CG2101423**



Telephone: +1 403 407 1800

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED														
								ALS_Package-DOC	ALS_Package-Sulfide-T	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	CHLOROA-F-VA	ALS_Package-EPH	ALS_Package-VOC				
LC_SBPIN_WW_2021-05-04_N	LC_SBPIN	WW		13-May	9:05	G	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
LC_HSP_WS_2021-05-10_N	LC_HSP	WS		13-May	10:20	G	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
LC_PIZP1103_WG_Q2-2021_NP	LC_PIZP1103	WG		13-May	13:05	G	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S.Fossen	13-May	<i>[Signature]</i>	14/05 9:00

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	X	Sampler's Name	D.Tymstra/S.Fossen	Mobile #
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time
Emergency (1 Business Day) - 100% surcharge				May 13, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

*[Handwritten initials]*

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>CG2101534</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Tom Jeffery <b>Address</b> : PO BOX 2003 15km North Hwy 43 Sparwood BC Canada <b>Telephone</b> : 250-433-8467 <b>Project</b> : LINE CREEK OPERATION <b>PO</b> : VPO00739930 <b>C-O-C number</b> : DC_GW_20210519 <b>Sampler</b> : DT/SF <b>Site</b> : ---- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 3 <b>No. of samples analysed</b> : 3	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Lyudmyla Shvets <b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5 <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 20-May-2021 08:40 <b>Date Analysis Commenced</b> : 20-May-2021 <b>Issue Date</b> : 05-Nov-2021 11:32
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

<i>Sample</i>	<i>Client Id</i>	<i>Comment</i>
CG2101534-001	LC_NNCD_WG_2021-04_NP	Sample 001: Bottles for total+dissolved mercury were not submitted. Tests removed.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_NNCD_WG_2021-04_NP	LC_PIZDC1307_WG_Q2-2021_NP	LC_PIZDC1308_WG_Q2-2021_NP	----	----
(Matrix: Water)					Client sampling date / time	19-May-2021 15:40	19-May-2021 13:35	19-May-2021 11:55	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2101534-001	CG2101534-002	CG2101534-003	-----	-----	
					Result	Result	Result	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	2.1	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	100	212	412	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	122	258	502	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	9.2	<1.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	5.5	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	100	221	412	----	----	
conductivity	----	E100	2.0	µS/cm	216	381	671	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	119	198	430	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	411	483	406	----	----	
pH	----	E108	0.10	pH units	8.17	8.42	8.28	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	128	205	396	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	6.1	<1.0	<1.0	----	----	
turbidity	----	E121	0.10	NTU	0.74	6.84	<0.10	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.119 <sup>RRV</sup>	<0.0050	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	0.17	2.30	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.139	0.559	0.136	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.096	0.164	0.096	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.290	<0.0050	0.171	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0076	<0.0010	<0.0010	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0080 <sup>DLM</sup>	0.0127 <sup>DLM</sup>	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	17.9	<0.30	5.41	----	----	
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	----	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	1.26	3.38	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_NNCD_WG_ 2021-04_NP	LC_PIZDC1307 _WG_Q2-2021_ NP	LC_PIZDC1308 _WG_Q2-2021_ NP	----	----
Client sampling date / time					19-May-2021 15:40	19-May-2021 13:35	19-May-2021 11:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101534-001 Result	CG2101534-002 Result	CG2101534-003 Result	-----	-----	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	1.15	3.36	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	2.40	4.45	8.43	----	----	
cation sum	----	EC101	0.10	meq/L	2.42	4.83	8.71	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	101	108	103	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.415	4.09	1.63	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0087	0.0036	<0.0030	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0.00010	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00014	0.00179	0.00011	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0274	1.44	0.342	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	0.024	0.011	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0086	<0.0100 <sup>DLM</sup>	0.160	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	29.1	40.1	113	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00030	<0.00010	<0.00010	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	0.36	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	1.30	<0.010	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0010	0.0728	0.0084	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	8.80	20.3	31.4	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00099	0.00841	0.00168	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000832	0.0329	0.00131	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0.00090	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	0.314	4.93	1.93	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	1.11	<0.050	0.204	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	1.42	2.71	5.06	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_NNCD_WG_ 2021-04_NP	LC_PIZDC1307 _WG_Q2-2021_ NP	LC_PIZDC1308 _WG_Q2-2021_ NP	----	----
Client sampling date / time					19-May-2021 15:40	19-May-2021 13:35	19-May-2021 11:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101534-001 Result	CG2101534-002 Result	CG2101534-003 Result	----- ----	----- ----	
<b>Total Metals</b>										
sodium, total	17341-25-2	E420	0.050	mg/L	0.492	14.2	1.41	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0606	0.136	0.118	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	6.20	<0.50	2.15	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0.000018	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000932	0.000024	0.00191	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0045	<0.0030	<0.0030	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0039	<0.0010	0.0011	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0.00011	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00180	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0274	1.53	0.343	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.025	0.011	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0089	<0.0150 <sup>DLM</sup>	0.178	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	31.4	42.6	115	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00031	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	0.38	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00127 <sup>DTC</sup>	0.00038	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	1.07	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0011	0.0804	0.0083	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	9.96	22.2	34.6	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00079	0.00912	0.00177	----	----	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	----	<0.000050	<0.000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000804	0.0352	0.00135	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0.00118	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_NNCD_WG_ 2021-04_NP	LC_PIZDC1307 _WG_Q2-2021_ NP	LC_PIZDC1308 _WG_Q2-2021_ NP	----	----
Client sampling date / time					19-May-2021 15:40	19-May-2021 13:35	19-May-2021 11:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101534-001	CG2101534-002	CG2101534-003	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.346	5.57	2.11	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	1.15	<0.050	0.232	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.45	3.02	5.51	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.529	15.8	1.60	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0640	0.153	0.125	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	6.54	<0.50	2.53	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0.000014	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000916	0.000026	0.00181	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0047	0.0015	0.0040	----	----	
dissolved mercury filtration location	----	EP509	-	-	----	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101534</b>	Page	: 1 of 17
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 20-May-2021 08:40
PO	: VPO00739930	Issue Date	: 05-Nov-2021 11:33
C-O-C number	: DC_GW_20210519		
Sampler	: DT/SF		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_NNCD_WG_2021-04_NP	E298	19-May-2021	02-Jun-2021	----	----		02-Jun-2021	28 days	14 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307_WG_Q2-2021_NP	E298	19-May-2021	02-Jun-2021	----	----		02-Jun-2021	28 days	14 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308_WG_Q2-2021_NP	E298	19-May-2021	02-Jun-2021	----	----		02-Jun-2021	28 days	14 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_NNCD_WG_2021-04_NP	E235.Br-L	19-May-2021	----	----	----		20-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q2-2021_NP	E235.Br-L	19-May-2021	----	----	----		20-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q2-2021_NP	E235.Br-L	19-May-2021	----	----	----		20-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_NNCD_WG_2021-04_NP	E235.Cl-L	19-May-2021	----	----	----		20-May-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_PIZDC1307_WG_Q2-2021_NP	E235.Cl-L	19-May-2021	----	----	----		20-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_PIZDC1308_WG_Q2-2021_NP	E235.Cl-L	19-May-2021	----	----	----		20-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_NNCD_WG_2021-04_NP	E378-U	19-May-2021	----	----	----		21-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_PIZDC1307_WG_Q2-2021_NP	E378-U	19-May-2021	----	----	----		21-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_PIZDC1308_WG_Q2-2021_NP	E378-U	19-May-2021	----	----	----		21-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_NNCD_WG_2021-04_NP	E235.F	19-May-2021	----	----	----		20-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_PIZDC1307_WG_Q2-2021_NP	E235.F	19-May-2021	----	----	----		20-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_PIZDC1308_WG_Q2-2021_NP	E235.F	19-May-2021	----	----	----		20-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_NNCD_WG_2021-04_NP	E235.NO3-L	19-May-2021	----	----	----		20-May-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q2-2021_NP	E235.NO3-L	19-May-2021	----	----	----		20-May-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q2-2021_NP	E235.NO3-L	19-May-2021	----	----	----		20-May-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_NNCD_WG_2021-04_NP	E235.NO2-L	19-May-2021	----	----	----		20-May-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q2-2021_NP	E235.NO2-L	19-May-2021	----	----	----		20-May-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q2-2021_NP	E235.NO2-L	19-May-2021	----	----	----		20-May-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_NNCD_WG_2021-04_NP	E235.SO4	19-May-2021	----	----	----		20-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q2-2021_NP	E235.SO4	19-May-2021	----	----	----		20-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q2-2021_NP	E235.SO4	19-May-2021	----	----	----		20-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_NNCD_WG_2021-04_NP	E318	19-May-2021	26-May-2021	----	----		26-May-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307_WG_Q2-2021_NP	E318	19-May-2021	26-May-2021	----	----		26-May-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308_WG_Q2-2021_NP	E318	19-May-2021	26-May-2021	----	----		26-May-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_NNCD_WG_2021-04_NP	E372-U	19-May-2021	27-May-2021	----	----		27-May-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307_WG_Q2-2021_NP	E372-U	19-May-2021	27-May-2021	----	----		27-May-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308_WG_Q2-2021_NP	E372-U	19-May-2021	27-May-2021	----	----		27-May-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Sulfide by Colourimetry (Automated Flow)</b>											
<b>HDPE total (zinc acetate+sodium hydroxide)</b> LC_NNCD_WG_2021-04_NP	E395	19-May-2021	----	----	----		24-May-2021	7 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_NNCD_WG_2021-04_NP	E421.Cr-L	19-May-2021	25-May-2021	----	----		25-May-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1307_WG_Q2-2021_NP	E421.Cr-L	19-May-2021	25-May-2021	----	----		25-May-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1308_WG_Q2-2021_NP	E421.Cr-L	19-May-2021	25-May-2021	----	----		25-May-2021	180 days	6 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1307_WG_Q2-2021_NP	E509	19-May-2021	26-May-2021	----	----		26-May-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1308_WG_Q2-2021_NP	E509	19-May-2021	26-May-2021	----	----		26-May-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_NNCD_WG_2021-04_NP	E421	19-May-2021	25-May-2021	----	----		25-May-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1307_WG_Q2-2021_NP	E421	19-May-2021	25-May-2021	----	----		25-May-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1308_WG_Q2-2021_NP	E421	19-May-2021	25-May-2021	----	----		25-May-2021	180 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_NNCD_WG_2021-04_NP	E358-L	19-May-2021	27-May-2021	----	----		27-May-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1307_WG_Q2-2021_NP	E358-L	19-May-2021	27-May-2021	----	----		27-May-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1308_WG_Q2-2021_NP	E358-L	19-May-2021	27-May-2021	----	----		27-May-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_NNCD_WG_2021-04_NP	E355-L	19-May-2021	27-May-2021	----	----		27-May-2021	28 days	8 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307_WG_Q2-2021_NP	E355-L	19-May-2021	27-May-2021	----	----		27-May-2021	28 days	8 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308_WG_Q2-2021_NP	E355-L	19-May-2021	27-May-2021	----	----		27-May-2021	28 days	8 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_NNCD_WG_2021-04_NP	E283	19-May-2021	----	----	----		29-May-2021	14 days	10 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q2-2021_NP	E283	19-May-2021	----	----	----		29-May-2021	14 days	10 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q2-2021_NP	E283	19-May-2021	----	----	----		29-May-2021	14 days	10 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_NNCD_WG_2021-04_NP	E290	19-May-2021	----	----	----		27-May-2021	14 days	8 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q2-2021_NP	E290	19-May-2021	----	----	----		27-May-2021	14 days	8 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q2-2021_NP	E290	19-May-2021	----	----	----		27-May-2021	14 days	8 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> LC_NNCD_WG_2021-04_NP	E100	19-May-2021	----	----	----		27-May-2021	28 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZDC1307_WG_Q2-2021_NP	E100	19-May-2021	----	----	----		27-May-2021	28 days	8 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZDC1308_WG_Q2-2021_NP	E100	19-May-2021	----	----	----		27-May-2021	28 days	8 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_NNCD_WG_2021-04_NP	E125	19-May-2021	----	----	----		27-May-2021	0.25 hrs	187 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC1307_WG_Q2-2021_NP	E125	19-May-2021	----	----	----		27-May-2021	0.25 hrs	189 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC1308_WG_Q2-2021_NP	E125	19-May-2021	----	----	----		27-May-2021	0.25 hrs	191 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_NNCD_WG_2021-04_NP	E108	19-May-2021	----	----	----		27-May-2021	0.25 hrs	195 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC1307_WG_Q2-2021_NP	E108	19-May-2021	----	----	----		27-May-2021	0.25 hrs	197 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC1308_WG_Q2-2021_NP	E108	19-May-2021	----	----	----		27-May-2021	0.25 hrs	198 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_NNCD_WG_2021-04_NP	E162	19-May-2021	----	----	----		24-May-2021	7 days	5 days		✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q2-2021_NP	E162	19-May-2021	----	----	----		24-May-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q2-2021_NP	E162	19-May-2021	----	----	----		24-May-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_NNCD_WG_2021-04_NP	E160-L	19-May-2021	----	----	----		24-May-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZDC1307_WG_Q2-2021_NP	E160-L	19-May-2021	----	----	----		24-May-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZDC1308_WG_Q2-2021_NP	E160-L	19-May-2021	----	----	----		24-May-2021	7 days	5 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_NNCD_WG_2021-04_NP	E121	19-May-2021	----	----	----		21-May-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q2-2021_NP	E121	19-May-2021	----	----	----		21-May-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q2-2021_NP	E121	19-May-2021	----	----	----		21-May-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1307_WG_Q2-2021_NP	E420.Cr-L	19-May-2021	----	----	----		25-May-2021	180 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_NNCD_WG_2021-04_NP	E420.Cr-L	19-May-2021	----	----	----		28-May-2021	180 days	9 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1308_WG_Q2-2021_NP	E420.Cr-L	19-May-2021	----	----	----		28-May-2021	180 days	9 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1307_WG_Q2-2021_NP	E420	19-May-2021	----	----	----		25-May-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_NNCD_WG_2021-04_NP	E420	19-May-2021	----	----	----		28-May-2021	180 days	9 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1308_WG_Q2-2021_NP	E420	19-May-2021	----	----	----		28-May-2021	180 days	9 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	208376	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	207125	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	210836	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	202378	1	11	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	202379	1	11	9.0	5.0	✓
Conductivity in Water	E100	207124	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	204097	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	205904	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	204098	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	207097	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	202977	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	202382	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	202380	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	202381	1	11	9.0	5.0	✓
ORP by Electrode	E125	204702	1	18	5.5	5.0	✓
pH by Meter	E108	207123	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	202377	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	204263	1	14	7.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	203988	3	34	8.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	204419	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	203989	3	58	5.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	207099	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	204810	1	20	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	204282	1	8	12.5	5.0	✓
Turbidity by Nephelometry	E121	202603	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	208376	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	207125	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	210836	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	202378	1	11	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	202379	1	11	9.0	5.0	✓
Conductivity in Water	E100	207124	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	204097	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	205904	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	204098	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	207097	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	202977	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	202382	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	202380	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	202381	1	11	9.0	5.0	✓
ORP by Electrode	E125	204702	1	18	5.5	5.0	✓
pH by Meter	E108	207123	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	202377	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	204263	1	14	7.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	203988	3	34	8.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	204419	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	203989	3	58	5.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	207099	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	204810	1	20	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	204282	1	8	12.5	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	204258	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	202603	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	208376	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	207125	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	210836	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	202378	1	11	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	202379	1	11	9.0	5.0	✓
Conductivity in Water	E100	207124	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	204097	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	205904	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	204098	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	207097	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	202977	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	202382	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	202380	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	202381	1	11	9.0	5.0	✓
Sulfate in Water by IC	E235.SO4	202377	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	204263	1	14	7.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	203988	3	34	8.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	204419	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	203989	3	58	5.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	207099	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	204810	1	20	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	204282	1	8	12.5	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	204258	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	202603	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	210836	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	202378	1	11	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	202379	1	11	9.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	204097	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	205904	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	204098	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	207097	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	202977	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	202382	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	202380	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	202381	1	11	9.0	5.0	✓
Sulfate in Water by IC	E235.SO4	202377	1	11	9.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	203988	3	34	8.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	204419	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	203989	3	58	5.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	207099	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	204810	1	20	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	204282	1	8	12.5	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
	Vancouver - Environmental			
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Sulfide by Colourimetry (Automated Flow)	E395 Vancouver - Environmental	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methylene blue colourimetric method. Results expressed "as H <sub>2</sub> S" if reported represent the maximum possible H <sub>2</sub> S concentration based on the total sulfide concentration in the sample. The H <sub>2</sub> S calculation converts Total Sulphide as (S <sup>2-</sup> ) and reports it as Total Sulphide as (H <sub>2</sub> S)
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.  Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

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## QUALITY CONTROL REPORT

**Work Order** : **CG2101534**  
**Amendment** : **1**

**Page** : 1 of 26

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
 Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : DC\_GW\_20210519  
**Sampler** : DT/SF  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-May-2021 08:40  
**Date Analysis Commenced** : 20-May-2021  
**Issue Date** : 05-Nov-2021 11:32

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
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Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta

Sristika Chand  
Tracy Harley

Lab Analyst  
Supervisor - Water Quality Instrumentation

Metals, Burnaby, British Columbia  
Inorganics, Burnaby, British Columbia



## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 202603)</b>											
CG2101508-001	Anonymous	turbidity	----	E121	0.10	NTU	32.8	31.4	4.36%	15%	----
<b>Physical Tests (QC Lot: 204263)</b>											
CG2101534-001	LC_NNCD_WG_2021-04_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	128	113	14	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 204702)</b>											
CG2101529-006	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	490	497	1.46%	15%	----
<b>Physical Tests (QC Lot: 207123)</b>											
CG2101528-001	Anonymous	pH	----	E108	0.10	pH units	7.75	7.84	1.15%	4%	----
<b>Physical Tests (QC Lot: 207124)</b>											
CG2101528-001	Anonymous	conductivity	----	E100	2.0	µS/cm	3950	3950	0.00%	10%	----
<b>Physical Tests (QC Lot: 207125)</b>											
CG2101528-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	417	414	0.650%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	417	414	0.650%	20%	----
<b>Physical Tests (QC Lot: 208376)</b>											
CG2101536-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 202377)</b>											
CG2101508-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	59.8	59.7	0.280%	20%	----
<b>Anions and Nutrients (QC Lot: 202378)</b>											
CG2101508-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 202379)</b>											
CG2101508-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.13	1.14	0.576%	20%	----
<b>Anions and Nutrients (QC Lot: 202380)</b>											
CG2101508-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.69	2.68	0.469%	20%	----
<b>Anions and Nutrients (QC Lot: 202381)</b>											
CG2101508-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 202382)</b>											
CG2101508-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.168	0.167	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 202977)</b>											
CG2101531-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 204419)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 204419) - continued</b>											
CG2101529-005	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.438	0.461	0.023	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 204810)</b>											
CG2101528-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210836)</b>											
CG2101532-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 207097)</b>											
CG2101529-005	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.87	0.96	0.09	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 207099)</b>											
CG2101529-005	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Sulfides (QC Lot: 204282)</b>											
CG2101534-001	LC_NNCD_WG_2021-04_NP	sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 203988)</b>											
CG2101531-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 203989)</b>											
CG2101531-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	0.0276	0.0274	0.0002	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00061	0.00058	0.00002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00028	0.00029	0.000010	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0180	0.0180	0.290%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.039	0.038	0.0004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	0.0265 µg/L	0.0000320	0.0000055	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.100	mg/L	286	280	2.19%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	0.066	0.064	0.001	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.125	0.122	2.30%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	280	276	1.36%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	0.00426	0.00420	1.44%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00318	0.00300	6.01%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.0183	0.0179	2.35%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	5.68	5.60	1.44%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	304 µg/L	0.304	0.125%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	0.99	0.97	0.01	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 203989) - continued</b>											
CG2101531-001	Anonymous	silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	16.8	16.2	3.12%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.364	0.343	6.01%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	504	498	1.25%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.000027	0.000027	0.0000006	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0197	0.0195	0.955%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 204147)</b>											
CG2101534-002	LC_PIZDC1307_WG_Q2-2 021_NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0036	<0.0030	0.0006	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00179	0.00175	2.13%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	1.44	1.44	0.0361%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.024	0.024	0.0005	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	<0.0100 µg/L	<0.0000100	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	40.1	40.8	1.68%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	1.30	1.28	1.41%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0728	0.0734	0.917%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	20.3	20.4	0.269%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00841	0.00840	0.148%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0329	0.0331	0.610%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	4.93	5.01	1.56%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.71	2.81	3.58%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	14.2	14.2	0.667%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.136	0.138	1.74%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 204147) - continued</b>											
CG2101534-002	LC_PIZDC1307_WG_Q2-2 021_NP	sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000024	0.000030	0.000006	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 204148)</b>											
CG2101534-002	LC_PIZDC1307_WG_Q2-2 021_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 206816)</b>											
CG2101534-001	LC_NNCD_WG_2021-04_ NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0087	0.0094	0.0007	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00014	0.00015	0.000009	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0274	0.0265	3.38%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0086 µg/L	0.0000112	0.0000026	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	29.1	29.8	2.35%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0010	<0.0010	0.000006	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	8.80	8.89	1.10%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00099	0.00099	0.000005	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000832	0.000822	1.16%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.314	0.319	0.004	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.050	mg/L	1.11 µg/L	0.00115	3.47%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.42	1.42	0.506%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	0.492	0.484	0.009	Diff <2x LOR	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0606	0.0597	1.49%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 206816) - continued</b>											
CG2101534-001	LC_NNCD_WG_2021-04_NP	sulfur, total	7704-34-9	E420	0.50	mg/L	6.20	6.30	1.58%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000932	0.000914	2.00%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0045	0.0042	0.0003	Diff <2x LOR	----
<b>Total Metals (QC Lot: 206817)</b>											
CG2101534-001	LC_NNCD_WG_2021-04_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00030	0.00030	0.000004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 204097)</b>											
CG2101525-007	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 204098)</b>											
CG2101525-007	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00224	0.00213	5.11%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0167	0.0172	2.66%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.094	0.094	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	1.02 µg/L	0.00105	3.36%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	529	529	0.0341%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	82.5 µg/L	0.0837	1.53%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00066	<0.00040	0.00026	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	1.06	1.05	1.12%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	228	236	3.43%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.919	0.945	2.76%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00362	0.00340	6.26%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.337	0.344	2.06%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	22.2	23.4	5.07%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	6.58 µg/L	0.00600	9.08%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.71	2.73	0.713%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----



Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 204098) - continued</b>											
CG2101525-007	Anonymous	sodium, dissolved	17341-25-2	E421	0.100	mg/L	34.2	34.6	1.23%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	2.13	2.10	1.83%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	427	430	0.614%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000218	0.000208	4.38%	20%	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0254	0.0255	0.0726%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0813	0.0819	0.708%	20%	----
<b>Dissolved Metals (QC Lot: 205904)</b>											
CG2101531-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 202603)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 204258)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 204263)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 207124)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 207125)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 208376)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 202377)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 202378)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 202379)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 202380)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 202381)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 202382)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 202977)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 204419)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 204810)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 210836)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 210836) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 207097)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 207099)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Sulfides (QCLot: 204282)</b>						
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	---
<b>Total Metals (QCLot: 203988)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 203989)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 203989) - continued</b>						
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 204147)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 204147) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 204148)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 206816)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 206817)</b>						





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 206817) - continued</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 204097)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 204098)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 205904)</b>						



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 205904) - continued</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 202603)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100.0	85.0	115	---
<b>Physical Tests (QCLot: 204258)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	92.1	85.0	115	---
<b>Physical Tests (QCLot: 204263)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.6	85.0	115	---
<b>Physical Tests (QCLot: 204702)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.6	95.4	104	---
<b>Physical Tests (QCLot: 207123)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 207124)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	---
<b>Physical Tests (QCLot: 207125)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 208376)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 202377)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 202378)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 202379)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 202380)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 202381)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	108	90.0	110	---
<b>Anions and Nutrients (QCLot: 202382)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 202977)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 204419)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	81.4	75.0	125	---
<b>Anions and Nutrients (QCLot: 204810)</b>									



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Anions and Nutrients (QCLot: 204810) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	100	80.0	120	----
<b>Anions and Nutrients (QCLot: 210836)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	107	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 207097)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 207099)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Total Sulfides (QCLot: 204282)</b>									
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.08 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 203988)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
<b>Total Metals (QCLot: 203989)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	94.6	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	94.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.5	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.2	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.7	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	95.1	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	98.4	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	102	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 203989) - continued</b>									
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	97.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.0	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.5	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	103	80.0	120	----
<b>Total Metals (QCLot: 204147)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	97.6	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.3	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.7	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	93.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.0	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	98.9	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	95.5	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.0	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	97.9	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.7	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	98.8	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.5	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	90.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 204147) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.0	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.6	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	96.2	80.0	120	----
<b>Total Metals (QCLot: 204148)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	95.2	80.0	120	----
<b>Total Metals (QCLot: 206816)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	89.5	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.3	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.0	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	107	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	104	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	112	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	106	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.7	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		
						Low	High		
<b>Total Metals (QCLot: 206816) - continued</b>									
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	102	80.0	120	----
<b>Total Metals (QCLot: 206817)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 204097)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 204098)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.8	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.9	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	94.9	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.7	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	108	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 204098) - continued</b>									
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.5	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.6	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 202377)</b>										
CG2101535-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	110 mg/L	100 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 202378)</b>										
CG2101535-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.530 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 202379)</b>										
CG2101535-004	Anonymous	chloride	16887-00-6	E235.Cl-L	111 mg/L	100 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 202380)</b>										
CG2101535-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.79 mg/L	2.5 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 202381)</b>										
CG2101535-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.558 mg/L	0.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 202382)</b>										
CG2101535-004	Anonymous	fluoride	16984-48-8	E235.F	1.11 mg/L	1 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 202977)</b>										
CG2101531-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0518 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 204419)</b>										
CG2101529-006	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.51 mg/L	2.5 mg/L	100	70.0	130	----
<b>Anions and Nutrients (QCLot: 204810)</b>										
CG2101528-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0641 mg/L	0.0676 mg/L	94.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 210836)</b>										
CG2101535-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 207097)</b>										
CG2101529-005	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.3 mg/L	23.9 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 207099)</b>										
CG2101529-005	Anonymous	carbon, total organic [TOC]	----	E355-L	27.7 mg/L	23.9 mg/L	116	70.0	130	----
<b>Total Sulfides (QCLot: 204282)</b>										
CG2101547-009	Anonymous	sulfide, total (as S)	18496-25-8	E395	0.219 mg/L	0.2 mg/L	109	75.0	125	----
<b>Total Metals (QCLot: 203988)</b>										
CG2101531-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0749 mg/L	0.08 mg/L	93.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 203989)</b>										
CG2101531-001	Anonymous	aluminum, total	7429-90-5	E420	0.386 mg/L	0.4 mg/L	96.4	70.0	130	----
		antimony, total	7440-36-0	E420	0.0366 mg/L	0.04 mg/L	91.5	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		barium, total	7440-39-3	E420	0.0373 mg/L	0.04 mg/L	93.3	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0747 mg/L	0.08 mg/L	93.3	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0179 mg/L	0.02 mg/L	89.6	70.0	130	----
		boron, total	7440-42-8	E420	0.185 mg/L	0.2 mg/L	92.7	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00753 mg/L	0.008 mg/L	94.1	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0363 mg/L	0.04 mg/L	90.8	70.0	130	----
		copper, total	7440-50-8	E420	0.0356 mg/L	0.04 mg/L	89.1	70.0	130	----
		iron, total	7439-89-6	E420	3.71 mg/L	4 mg/L	92.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0350 mg/L	0.04 mg/L	87.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.176 mg/L	0.2 mg/L	88.2	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0361 mg/L	0.04 mg/L	90.3	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0382 mg/L	0.04 mg/L	95.6	70.0	130	----
		nickel, total	7440-02-0	E420	0.0713 mg/L	0.08 mg/L	89.1	70.0	130	----
		potassium, total	7440-09-7	E420	7.09 mg/L	8 mg/L	88.6	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	17.9 mg/L	20 mg/L	89.3	70.0	130	----
		silver, total	7440-22-4	E420	0.00727 mg/L	0.008 mg/L	90.9	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00727 mg/L	0.008 mg/L	90.9	70.0	130	----
		tin, total	7440-31-5	E420	0.0364 mg/L	0.04 mg/L	91.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0741 mg/L	0.08 mg/L	92.6	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.193 mg/L	0.2 mg/L	96.6	70.0	130	----
		zinc, total	7440-66-6	E420	0.709 mg/L	0.8 mg/L	88.7	70.0	130	----
<b>Total Metals (QCLot: 204147)</b>										
CG2101534-002	LC_PIZDC1307_WG_Q2-20 21_NP	aluminum, total	7429-90-5	E420	0.193 mg/L	0.2 mg/L	96.5	70.0	130	----
		antimony, total	7440-36-0	E420	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 204147) - continued</b>										
CG2101534-002	LC_PIZDC1307_WG_Q2-20 21_NP	beryllium, total	7440-41-7	E420	0.0369 mg/L	0.04 mg/L	92.2	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00874 mg/L	0.01 mg/L	87.4	70.0	130	----
		boron, total	7440-42-8	E420	0.094 mg/L	0.1 mg/L	93.8	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		copper, total	7440-50-8	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		iron, total	7439-89-6	E420	1.84 mg/L	2 mg/L	92.0	70.0	130	----
		lead, total	7439-92-1	E420	0.0181 mg/L	0.02 mg/L	90.7	70.0	130	----
		lithium, total	7439-93-2	E420	0.0863 mg/L	0.1 mg/L	86.3	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		molybdenum, total	7439-98-7	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, total	7440-02-0	E420	0.0384 mg/L	0.04 mg/L	96.1	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, total	7440-21-3	E420	8.97 mg/L	10 mg/L	89.7	70.0	130	----
		silver, total	7440-22-4	E420	0.00384 mg/L	0.004 mg/L	96.1	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	20.1 mg/L	20 mg/L	100	70.0	130	----
		thallium, total	7440-28-0	E420	0.00356 mg/L	0.004 mg/L	88.9	70.0	130	----
		tin, total	7440-31-5	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, total	7440-32-6	E420	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	----
		uranium, total	7440-61-1	E420	0.00368 mg/L	0.004 mg/L	92.1	70.0	130	----
		vanadium, total	7440-62-2	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, total	7440-66-6	E420	0.372 mg/L	0.4 mg/L	93.0	70.0	130	----
<b>Total Metals (QCLot: 204148)</b>										
CG2101534-002	LC_PIZDC1307_WG_Q2-20 21_NP	chromium, total	7440-47-3	E420.Cr-L	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
<b>Total Metals (QCLot: 206816)</b>										
CG2101534-001	LC_NNCD_WG_2021-04_N P	aluminum, total	7429-90-5	E420	0.198 mg/L	0.2 mg/L	98.9	70.0	130	----
		antimony, total	7440-36-0	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 206816) - continued</b>										
CG2101534-001	LC_NNCD_WG_2021-04_N P	bismuth, total	7440-69-9	E420	0.00971 mg/L	0.01 mg/L	97.1	70.0	130	----
		boron, total	7440-42-8	E420	0.093 mg/L	0.1 mg/L	93.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		iron, total	7439-89-6	E420	1.94 mg/L	2 mg/L	97.0	70.0	130	----
		lead, total	7439-92-1	E420	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.0961 mg/L	0.1 mg/L	96.1	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		potassium, total	7440-09-7	E420	3.94 mg/L	4 mg/L	98.4	70.0	130	----
		selenium, total	7782-49-2	E420	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, total	7440-21-3	E420	9.05 mg/L	10 mg/L	90.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, total	17341-25-2	E420	2.00 mg/L	2 mg/L	100.0	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	20.7 mg/L	20 mg/L	103	70.0	130	----
		thallium, total	7440-28-0	E420	0.00382 mg/L	0.004 mg/L	95.4	70.0	130	----
		tin, total	7440-31-5	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		uranium, total	7440-61-1	E420	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.387 mg/L	0.4 mg/L	96.7	70.0	130	----
<b>Total Metals (QCLot: 206817)</b>										
CG2101534-001	LC_NNCD_WG_2021-04_N P	chromium, total	7440-47-3	E420.Cr-L	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 204097)</b>										
CG2101525-007	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0766 mg/L	0.08 mg/L	95.7	70.0	130	----
<b>Dissolved Metals (QCLot: 204098)</b>										
CG2101525-007	Anonymous	aluminum, dissolved	7429-90-5	E421	0.400 mg/L	0.4 mg/L	100	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0352 mg/L	0.04 mg/L	87.9	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 204098) - continued</b>										
CG2101525-007	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0714 mg/L	0.08 mg/L	89.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0166 mg/L	0.02 mg/L	83.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.184 mg/L	0.2 mg/L	92.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00744 mg/L	0.008 mg/L	92.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0339 mg/L	0.04 mg/L	84.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.68 mg/L	4 mg/L	92.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0361 mg/L	0.04 mg/L	90.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0901 mg/L	0.08 mg/L	113	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.0 mg/L	20 mg/L	90.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00741 mg/L	0.008 mg/L	92.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00707 mg/L	0.008 mg/L	88.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0806 mg/L	0.08 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.199 mg/L	0.2 mg/L	99.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.691 mg/L	0.8 mg/L	86.3	70.0	130	----
<b>Dissolved Metals (QCLot: 205904)</b>										
CG2101531-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000958 mg/L	0.0001 mg/L	95.8	70.0	130	----

COC ID: **DC\_GW\_20210519**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
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Address	Box 2003 15km North Hwy 43			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	*	*
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	Shanise.fossen@teck.com	*	*
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930		
Phone Number	250-425-8478			Phone Number	403 407 1794						

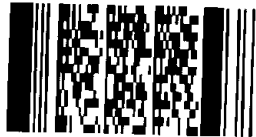
**DETAILS**

**ANALYSIS REQUESTED**

Filtered: F: Field, L: Lab, FL: Field & Lab, N: None

Environmental Division  
Calgary

Work Order Reference  
**CG2101534**



Telephone: +1 403 407 1800

Sample ID	(sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Compl	# Of Cont.	ANALYSIS REQUESTED									
								ALS_Package-DOC	ALS_Package-Sulfide-T	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA		
LC_NNCD_WG_2021-04_NP	LC_NNCD	WG		19-May	15:40	G	8	1	1	1	1	1	1	1	1	1	0
LC_PIZDC1307_WG_Q2-2021_NP	LC_PIZDC1307	WG		19-May	13:35	G	6	1	1	1	1	1	1	1	1	1	
LC_PIZDC1308_WG_Q2-2021_NP	LC_PIZDC1308	WG		19-May	11:55	G	6	1	1	1	1	1	1	1	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S.Fossen	19-May	<i>[Signature]</i>	19-May

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	D.Tymstra/S.Fossen	Mobile #	Sampler's Signature	Date/Time	May 19, 2021
								<i>[Signature]</i>		

7



CERTIFICATE OF ANALYSIS

Work Order : CG2101746
Amendment : 1
Client : Teck Coal Limited
Contact : Tom Jeffery
Address : PO BOX 2003 15km North Hwy 43
Sparwood BC Canada
Telephone : 250-433-8467
Project : LINE CREEK OPERATION
PO : VPO00739930
C-O-C number : DC\_GW\_20210531
Sampler : DT/SF
Site : ---
Quote number : Teck Coal Master Quote
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 7
Laboratory : Calgary - Environmental
Account Manager : Lyudmyla Shvets
Address : 2559 29th Street NE
Calgary AB Canada T1Y 7B5
Telephone : +1 403 407 1800
Date Samples Received : 01-Jun-2021 08:40
Date Analysis Commenced : 01-Jun-2021
Issue Date : 10-Nov-2021 13:33

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Lists names like Annabelle Prasad, Anthony Calero, Dee Lee, Hannah Phung, Jordan Fanson, Kim Jensen, Maria Tuguinay, Naeun Kim, Parker Sgarbossa, Ruifang Zheng, Sara Niroomand, Shirley Li and their respective roles and departments.







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_PIZP1104_	---	---	---	---
(Matrix: Water)					WG_Q2-2021_N					
					P					
					Client sampling date / time	31-May-2021	---	---	---	---
					13:35					
Analyte	CAS Number	Method	LOR	Unit	CG2101746-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	5.1	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	262	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	320	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	262	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	1180	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	575	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	444	---	---	---	---	---
pH	---	E108	0.10	pH units	7.74	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	824	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	62.8	---	---	---	---	---
turbidity	---	E121	0.10	NTU	57.0	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0176	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	2.74	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	221	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.295	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.063	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.217	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0030	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.153	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	60.6	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	3.69	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	3.49	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1104_ WG_Q2-2021_N P	----	----	----	----
Client sampling date / time					31-May-2021 13:35	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101746-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	12.8	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	12.2	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	95.3	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.40	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.868	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00014	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00190	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.369	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	0.073	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.023	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.181	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	149	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00329	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	1.64	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00387	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	4.40	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.00109	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0232	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	49.8	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.586	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00198	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00519	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.82	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	0.122	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	6.11	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000033	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	13.8	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.497	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1104_ WG_Q2-2021_N P	----	----	----	----
Client sampling date / time					31-May-2021 13:35	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101746-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	19.6	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000053	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00016	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0163	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00369	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00323	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0144	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0061	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00138	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.401	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.018	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0169	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	147	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	1.34	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	3.24	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0198	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	50.4	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.737	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00257	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00399	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.42	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1104_ WG_Q2-2021_N P	----	----	----	----
Client sampling date / time					31-May-2021 13:35	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101746-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.56	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	13.1	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.500	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	11.1	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00397	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0049	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101746</b>	Page	: 1 of 11
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 01-Jun-2021 08:40
PO	: VPO00739930	Issue Date	: 10-Nov-2021 13:33
C-O-C number	: DC_GW_20210531		
Sampler	: DT/SF		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q2-2021_NP	E298	31-May-2021	07-Jun-2021	----	----		07-Jun-2021	28 days	7 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q2-2021_NP	E235.Br-L	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q2-2021_NP	E235.Cl-L	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q2-2021_NP	E378-U	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q2-2021_NP	E235.F	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q2-2021_NP	E235.NO3-L	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q2-2021_NP	E235.NO2-L	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q2-2021_NP	E235.SO4	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q2-2021_NP	E318	31-May-2021	06-Jun-2021	----	----		06-Jun-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q2-2021_NP	E372-U	31-May-2021	05-Jun-2021	----	----		05-Jun-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1104_WG_Q2-2021_NP	E421.Cr-L	31-May-2021	02-Jun-2021	----	----		04-Jun-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1104_WG_Q2-2021_NP	E509	31-May-2021	05-Jun-2021	----	----		05-Jun-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1104_WG_Q2-2021_NP	E421	31-May-2021	02-Jun-2021	----	----		04-Jun-2021	180 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1104_WG_Q2-2021_NP	E358-L	31-May-2021	09-Jun-2021	----	----		11-Jun-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q2-2021_NP	E355-L	31-May-2021	09-Jun-2021	----	----		11-Jun-2021	28 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q2-2021_NP	E283	31-May-2021	----	----	----		07-Jun-2021	14 days	7 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE LC_PIZP1104_WG_Q2-2021_NP	E290	31-May-2021	----	----	----		07-Jun-2021	14 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_PIZP1104_WG_Q2-2021_NP	E100	31-May-2021	----	----	----		07-Jun-2021	28 days	7 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE LC_PIZP1104_WG_Q2-2021_NP	E125	31-May-2021	----	----	----		07-Jun-2021	0.25 hrs	172 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_PIZP1104_WG_Q2-2021_NP	E108	31-May-2021	----	----	----		07-Jun-2021	0.25 hrs	165 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_PIZP1104_WG_Q2-2021_NP	E162	31-May-2021	----	----	----		04-Jun-2021	7 days	4 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] LC_PIZP1104_WG_Q2-2021_NP	E160-L	31-May-2021	----	----	----		04-Jun-2021	7 days	4 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE LC_PIZP1104_WG_Q2-2021_NP	E121	31-May-2021	----	----	----		02-Jun-2021	3 days	2 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
HDPE total (nitric acid) LC_PIZP1104_WG_Q2-2021_NP	E420.Cr-L	31-May-2021	----	----	----		05-Jun-2021	180 days	4 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
HDPE total (nitric acid) LC_PIZP1104_WG_Q2-2021_NP	E420	31-May-2021	----	----	----		05-Jun-2021	180 days	4 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 5 of 11  
Work Order : CG2101746 Amendment 1  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	214961	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	214882	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	214984	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	210449	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	210450	1	8	12.5	5.0	✓
Conductivity in Water	E100	214880	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	211552	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	214026	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	211551	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	217351	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	210387	1	12	8.3	5.0	✓
Fluoride in Water by IC	E235.F	210453	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	210451	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	210452	1	8	12.5	5.0	✓
ORP by Electrode	E125	214578	1	9	11.1	5.0	✓
pH by Meter	E108	214881	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	210448	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	212998	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	211700	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	213018	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	211699	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	217361	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	213241	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	210982	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	214961	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	214882	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	214984	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	210449	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	210450	1	8	12.5	5.0	✓
Conductivity in Water	E100	214880	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	211552	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	214026	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	211551	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	217351	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	210387	1	12	8.3	5.0	✓
Fluoride in Water by IC	E235.F	210453	1	8	12.5	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	210451	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	210452	1	8	12.5	5.0	✓
ORP by Electrode	E125	214578	1	9	11.1	5.0	✓
pH by Meter	E108	214881	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	210448	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	212998	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	211700	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	213018	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	211699	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	217361	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	213241	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	212993	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	210982	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	214961	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	214882	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	214984	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	210449	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	210450	1	8	12.5	5.0	✓
Conductivity in Water	E100	214880	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	211552	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	214026	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	211551	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	217351	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	210387	1	12	8.3	5.0	✓
Fluoride in Water by IC	E235.F	210453	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	210451	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	210452	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	210448	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	212998	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	211700	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	213018	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	211699	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	217361	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	213241	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	212993	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	210982	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	214984	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	210449	1	8	12.5	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	210450	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	211552	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	214026	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	211551	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	217351	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	210387	1	12	8.3	5.0	✓
Fluoride in Water by IC	E235.F	210453	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	210451	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	210452	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	210448	1	8	12.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	211700	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	213018	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	211699	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	217361	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	213241	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2101746**

**Page** : 1 of 17

**Amendment** : **1**

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : DC\_GW\_20210531  
**Sampler** : DT/SF  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 01-Jun-2021 08:40  
**Date Analysis Commenced** : 01-Jun-2021  
**Issue Date** : 10-Nov-2021 13:33

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
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## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

### Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 210982)</b>											
CG2101743-006	Anonymous	turbidity	----	E121	0.10	NTU	6.84	6.13	11.0%	15%	----
<b>Physical Tests (QC Lot: 212998)</b>											
CG2101739-014	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 214578)</b>											
CG2101744-005	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	405	407	0.493%	15%	----
<b>Physical Tests (QC Lot: 214880)</b>											
CG2101743-002	Anonymous	conductivity	----	E100	2.0	µS/cm	201	197	2.16%	10%	----
<b>Physical Tests (QC Lot: 214881)</b>											
CG2101743-002	Anonymous	pH	----	E108	0.10	pH units	7.88	7.93	0.632%	4%	----
<b>Physical Tests (QC Lot: 214882)</b>											
CG2101743-002	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	76.1	79.3	4.12%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	76.1	79.3	4.12%	20%	----
<b>Physical Tests (QC Lot: 214961)</b>											
CG2101743-008	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210387)</b>											
CG2101743-008	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210448)</b>											
CG2101745-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	1.36	1.36	0.001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210449)</b>											
CG2101745-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210450)</b>											
CG2101745-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210451)</b>											
CG2101745-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0065	0.0055	0.0010	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210452)</b>											
CG2101745-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210453)</b>											
CG2101745-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.110	0.109	0.0006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 213018)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 213018) - continued</b>											
CG2101744-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.104	0.121	0.017	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 213241)</b>											
CG2101743-011	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0330	0.0317	4.17%	20%	----
<b>Anions and Nutrients (QC Lot: 214984)</b>											
CG2101743-009	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0140	0.0176	0.0036	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 217351)</b>											
CG2101743-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.43	1.61	0.18	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 217361)</b>											
CG2101743-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.43	1.45	0.02	Diff <2x LOR	----
<b>Total Metals (QC Lot: 211699)</b>											
CG2101740-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	0.0060	0.0060	0.00001	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00315	0.00315	0.169%	20%	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0177	0.0176	0.570%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.108	0.106	0.002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	1.04 µg/L	0.00105	1.00%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	542	538	0.619%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	85.2 µg/L	0.0861	1.00%	20%	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	0.166	0.166	0.0002	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	1.17	1.15	1.90%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	222	221	0.455%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	0.512	0.506	1.27%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00575	0.00567	1.32%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.380	0.376	1.23%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	23.5	23.2	1.22%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	2.58 µg/L	0.00241	6.98%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	3.03	2.98	1.60%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	35.9	35.0	2.49%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	1.97	1.97	0.365%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	469	481	2.66%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 211699) - continued</b>											
CG2101740-001	Anonymous	thallium, total	7440-28-0	E420	0.000020	mg/L	0.000205	0.000200	2.84%	20%	----
		tin, total	7440-31-5	E420	0.000020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.000060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0295	0.0292	0.868%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.0727	0.0700	3.70%	20%	----
<b>Total Metals (QC Lot: 211700)</b>											
CG2101740-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 211551)</b>											
CG2101740-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00324	0.00337	3.74%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0162	0.0165	1.61%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.098	0.103	0.005	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	1.11 µg/L	0.00112	1.43%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	515	540	4.58%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	85.6 µg/L	0.0880	2.71%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	0.028	0.028	0.00005	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	1.04	1.09	4.89%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	220	224	1.95%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.505	0.527	4.26%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00560	0.00592	5.62%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.378	0.389	2.92%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	23.5	23.9	1.64%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	2.91 µg/L	0.00284	2.52%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.90	2.95	1.91%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	37.2	38.3	2.78%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	2.03	2.08	2.67%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	463	461	0.415%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000192	0.000189	0.000004	Diff <2x LOR	----



Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 211551) - continued</b>											
CG2101740-001	Anonymous	tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0278	0.0288	3.66%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0690	0.0720	4.29%	20%	----
<b>Dissolved Metals (QC Lot: 211552)</b>											
CG2101740-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 214026)</b>											
CG2101743-012	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 210982)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 212993)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 212998)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 214880)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 214882)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 214961)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 210387)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 210448)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 210449)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 210450)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 210451)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 210452)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 210453)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 213018)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 213241)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 214984)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 214984) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 217351)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 217361)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 211699)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 211699) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 211700)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 211551)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	---
<b>Dissolved Metals (QCLot: 211552)</b>						



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 211552) - continued</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 214026)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 210982)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	----
<b>Physical Tests (QCLot: 212993)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	100	85.0	115	----
<b>Physical Tests (QCLot: 212998)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	103	85.0	115	----
<b>Physical Tests (QCLot: 214578)</b>									
oxidation-reduction potential [ORP]	---	E125	----	mV	220 mV	102	95.4	104	----
<b>Physical Tests (QCLot: 214880)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	----
<b>Physical Tests (QCLot: 214881)</b>									
pH	---	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 214882)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	102	85.0	115	----
<b>Physical Tests (QCLot: 214961)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	109	85.0	115	----
<b>Anions and Nutrients (QCLot: 210387)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	103	80.0	120	----
<b>Anions and Nutrients (QCLot: 210448)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 210449)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	109	85.0	115	----
<b>Anions and Nutrients (QCLot: 210450)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 210451)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 210452)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 210453)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 213018)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	86.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 213241)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 213241) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 214984)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.0	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 217351)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	111	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 217361)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	120	80.0	120	----
<b>Total Metals (QCLot: 211699)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	99.0	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.6	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.9	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	93.0	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.6	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.8	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.6	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.8	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.4	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.7	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	96.6	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	99.5	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	96.9	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.5	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	106	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.1	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 211699) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	97.4	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	95.4	80.0	120	----
<b>Total Metals (QCLot: 211700)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
<b>Dissolved Metals (QCLot: 211551)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	92.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	84.1	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.8	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	88.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	105	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.5	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	113	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.2	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	85.8	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.7	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 211551) - continued</b>									
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 211552)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.3	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 210387)</b>										
CG2101743-009	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0540 mg/L	0.05 mg/L	108	70.0	130	----
<b>Anions and Nutrients (QCLot: 210448)</b>										
CG2101747-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 210449)</b>										
CG2101747-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.552 mg/L	0.5 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 210450)</b>										
CG2101747-002	Anonymous	chloride	16887-00-6	E235.Cl-L	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 210451)</b>										
CG2101747-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.66 mg/L	2.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 210452)</b>										
CG2101747-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.535 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 210453)</b>										
CG2101747-002	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 213018)</b>										
CG2101744-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.55 mg/L	2.5 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 213241)</b>										
CG2101743-012	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0555 mg/L	0.0676 mg/L	82.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 214984)</b>										
CG2101743-010	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 217351)</b>										
CG2101743-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.2 mg/L	23.9 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 217361)</b>										
CG2101743-001	Anonymous	carbon, total organic [TOC]	----	E355-L	27.8 mg/L	23.9 mg/L	116	70.0	130	----
<b>Total Metals (QCLot: 211699)</b>										
CG2101740-001	Anonymous	aluminum, total	7429-90-5	E420	0.407 mg/L	0.4 mg/L	102	70.0	130	----
		antimony, total	7440-36-0	E420	0.0428 mg/L	0.04 mg/L	107	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		barium, total	7440-39-3	E420	0.0411 mg/L	0.04 mg/L	103	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 211699) - continued</b>										
CG2101740-001	Anonymous	beryllium, total	7440-41-7	E420	0.0776 mg/L	0.08 mg/L	97.0	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		boron, total	7440-42-8	E420	0.188 mg/L	0.2 mg/L	94.1	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00783 mg/L	0.008 mg/L	97.8	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, total	7440-50-8	E420	0.0358 mg/L	0.04 mg/L	89.6	70.0	130	----
		iron, total	7439-89-6	E420	3.96 mg/L	4 mg/L	99.1	70.0	130	----
		lead, total	7439-92-1	E420	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0426 mg/L	0.04 mg/L	106	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0905 mg/L	0.08 mg/L	113	70.0	130	----
		silicon, total	7440-21-3	E420	19.6 mg/L	20 mg/L	97.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00793 mg/L	0.008 mg/L	99.2	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00766 mg/L	0.008 mg/L	95.7	70.0	130	----
		tin, total	7440-31-5	E420	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		titanium, total	7440-32-6	E420	0.0850 mg/L	0.08 mg/L	106	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.208 mg/L	0.2 mg/L	104	70.0	130	----
		zinc, total	7440-66-6	E420	0.718 mg/L	0.8 mg/L	89.8	70.0	130	----
<b>Total Metals (QCLot: 211700)</b>										
CG2101740-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0806 mg/L	0.08 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 211551)</b>										
CG2101740-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.406 mg/L	0.4 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0429 mg/L	0.04 mg/L	107	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0754 mg/L	0.08 mg/L	94.3	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0162 mg/L	0.02 mg/L	80.8	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 211551) - continued</b>										
CG2101740-001	Anonymous	boron, dissolved	7440-42-8	E421	0.204 mg/L	0.2 mg/L	102	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00818 mg/L	0.008 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.98 mg/L	4 mg/L	99.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0376 mg/L	0.04 mg/L	94.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0422 mg/L	0.04 mg/L	106	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0903 mg/L	0.08 mg/L	113	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.7 mg/L	20 mg/L	93.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00812 mg/L	0.008 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00743 mg/L	0.008 mg/L	92.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0829 mg/L	0.08 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.213 mg/L	0.2 mg/L	106	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.721 mg/L	0.8 mg/L	90.1	70.0	130	----
<b>Dissolved Metals (QCLot: 211552)</b>										
CG2101740-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0798 mg/L	0.08 mg/L	99.8	70.0	130	----
<b>Dissolved Metals (QCLot: 214026)</b>										
CG2101745-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000929 mg/L	0.0001 mg/L	92.9	70.0	130	----

# Teck

COC ID: **DC\_GW\_20210531**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	x	x
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.c		x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.co	x	x
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	x	x
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	tanva.dick@teck.com	x	x
	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	1/PO00739930		
				Phone Number	403 407 1794						

Environmental Division  
Calgary

Work Order Reference  
**CG2101746**



Telephone : +1 403 407 1800

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**      Patented © F. Field, L. Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys. loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED													
								Fill	Y	N	N	Y	N	Y	N	N	N				
								ALS_Package-DOC	ALS_Package-Sulfide-T	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA						
LC_PIZP1104_WG_Q2-2021_NP	LC_PIZP1104	WG		31-May	13:35	G	6	1		1	1		1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
PLEASE FORWARD WITH ALL SAMPLES TO ALS BL BRNBY FOR ANALYSIS	D.Tymstra/S.Fossen	31-May	<i>Dr</i>	6/1 0840

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	<input checked="" type="checkbox"/>	Sampler's Name	D.Tymstra/S.Fossen	Mobile #
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time
Emergency (1 Business Day) - 100% surcharge				May 31, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

*90*

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>CG2101953</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Tom Jeffery <b>Address</b> : PO BOX 2003 15km North Hwy 43 Sparwood BC Canada <b>Telephone</b> : 250-433-8467 <b>Project</b> : LINE CREEK OPERATION <b>PO</b> : VPO00739930 <b>C-O-C number</b> : DC_GW_20210610 <b>Sampler</b> : DT/SF <b>Site</b> : ---- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 3 <b>No. of samples analysed</b> : 3	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Lyudmyla Shvets <b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5 <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 11-Jun-2021 08:30 <b>Date Analysis Commenced</b> : 11-Jun-2021 <b>Issue Date</b> : 10-Nov-2021 13:54
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
James Diacon	Laboratory Analyst	Metals, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maqsood Ul Hassan	Laboratory Analyst	Organics, Calgary, Alberta
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

Sample	Client Id	Comment
CG2101953-001	LC_PIZP1101_WG_Q2-2021_ N	-1, -2 & -3 REGULA T-HG VIALS RECEIVED INSTEAD OF ULTRA TRACE HG BOTTLES
CG2101953-002	WG_Q2-2021_005	-1, -2 & -3 REGULA T-HG VIALS RECEIVED INSTEAD OF ULTRA TRACE HG BOTTLES
CG2101953-003	WG_Q2-2021_006	-1, -2 & -3 REGULA T-HG VIALS RECEIVED INSTEAD OF ULTRA TRACE HG BOTTLES

## Qualifiers

Qualifier	Description
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID		LC_PIZP1101_	WG_Q2-2021_0	WG_Q2-2021_0	----	----
(Matrix: Water)					WG_Q2-2021_N	05	06				
Client sampling date / time					10-Jun-2021 15:40	10-Jun-2021 01:35	10-Jun-2021 11:55	----	----		
Analyte	CAS Number	Method	LOR	Unit	CG2101953-001	CG2101953-002	CG2101953-003	-----	-----		
					Result	Result	Result	----	----		
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	2.1	----	----		
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	187	179	<1.0	----	----		
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	228	219	<1.0	----	----		
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----		
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----		
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----		
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----		
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	187	179	<1.0	----	----		
conductivity	----	E100	2.0	µS/cm	303	303	<2.0	----	----		
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	121	120	<0.50	----	----		
oxidation-reduction potential [ORP]	----	E125	0.10	mV	412	392	481	----	----		
pH	----	E108	0.10	pH units	8.29	8.28	5.31	----	----		
solids, total dissolved [TDS]	----	E162	10	mg/L	192	192	<10	----	----		
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	69.9	77.9	<1.0	----	----		
turbidity	----	E121	0.10	NTU	102	113	<0.10	----	----		
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0268	0.0705	0.0063 <sup>RRV</sup>	----	----		
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----		
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.76	0.76	<0.10	----	----		
fluoride	16984-48-8	E235.F	0.020	mg/L	1.88	1.88	<0.020	----	----		
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.242	0.239	<0.050	----	----		
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----		
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----		
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0091	0.0091	<0.0010	----	----		
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.213	0.223	<0.0020	----	----		
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	2.66	2.63	<0.30	----	----		
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.21	1.49	----	----	----		
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.08	1.72	<0.50	----	----		
<b>Ion Balance</b>											



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1101_ WG_Q2-2021_N	WG_Q2-2021_0 05	WG_Q2-2021_0 06	----	----
Client sampling date / time					10-Jun-2021 15:40	10-Jun-2021 01:35	10-Jun-2021 11:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101953-001	CG2101953-002	CG2101953-003	-----	-----	
					Result	Result	Result	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	3.91	3.75	<0.10	----	----	
cation sum	----	EC101	0.10	meq/L	3.32	3.33	<0.10	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	84.9	88.8	100	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	8.16	5.93	<0.010	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	5.22	4.99	<0.0030	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00018	0.00018	<0.00010	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00239	0.00242	<0.00010	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.602	0.591	<0.00010	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	0.250	0.244	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	0.000055	0.000055	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.031	0.030	<0.010	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.464	0.468	<0.0050	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	44.0	44.2	<0.050	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00731	0.00681	<0.00010	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	1.91	1.82	<0.10	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.0132	0.0128	<0.00050	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	4.27	4.13	<0.010	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.00255	0.00249	<0.000050	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0139	0.0139	<0.0010	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	16.5	16.2	<0.0050	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.447	0.426	<0.00010	----	----	
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000064	0.0000092	<0.0000050	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0121	0.0126	<0.000050	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00701	0.00668	<0.00050	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.66	2.58	<0.050	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	0.799	0.756	<0.050	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	13.0	12.5	<0.10	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000188	0.000197	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	20.8	20.6	<0.050	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.238	0.236	<0.00020	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1101_ WG_Q2-2021_N	WG_Q2-2021_0 05	WG_Q2-2021_0 06	----	----
Client sampling date / time					10-Jun-2021 15:40	10-Jun-2021 01:35	10-Jun-2021 11:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101953-001	CG2101953-002	CG2101953-003	-----	-----	
					Result	Result	Result	---	---	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	1.12	1.04	<0.50	----	----	
thallium, total	7440-28-0	E420	0.00010	mg/L	0.000227	0.000226	<0.00010	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00027	0.00027	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.104	0.0941	<0.00030	----	----	
uranium, total	7440-61-1	E420	0.00010	mg/L	0.00186	0.00177	<0.00010	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0139	0.0136	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0316	0.0312	<0.0030	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0227	0.0117	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00104	0.00108	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.474	0.463	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.020	0.020	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	26.6	26.0	<0.050	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.19	0.18	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00021	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.147	0.126	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0091	0.0090	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	13.2	13.5	<0.0050	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.224	0.221	----	----	----	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0130	0.0128	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.765	0.767	<0.050	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.77	3.74	----	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1101_ WG_Q2-2021_N	WG_Q2-2021_0 05	WG_Q2-2021_0 06	----	----
Client sampling date / time					10-Jun-2021 15:40	10-Jun-2021 01:35	10-Jun-2021 11:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101953-001	CG2101953-002	CG2101953-003	-----	-----	
					Result	Result	Result	---	---	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	20.1	20.3	<0.050	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.214	0.213	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.13	0.97	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00053	0.00048	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00140	0.00136	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Laboratory	----	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	----	----	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	87.0	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b>	: <b>CG2101953</b>	<b>Page</b>	: 1 of 18
<b>Amendment</b>	: 1		
<b>Client</b>	: <b>Teck Coal Limited</b>	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Tom Jeffery	<b>Account Manager</b>	: Lyudmyla Shvets
<b>Address</b>	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	<b>Address</b>	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
<b>Telephone</b>	: 250-433-8467	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: LINE CREEK OPERATION	<b>Date Samples Received</b>	: 11-Jun-2021 08:30
<b>PO</b>	: VPO00739930	<b>Issue Date</b>	: 10-Nov-2021 13:54
<b>C-O-C number</b>	: DC_GW_20210610		
<b>Sampler</b>	: DT/SF		
<b>Site</b>	: ----		
<b>Quote number</b>	: Teck Coal Master Quote		
<b>No. of samples received</b>	: 3		
<b>No. of samples analysed</b>	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

### Summary of Outliers

#### Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

#### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

#### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Method Blank (MB) Values</b>								
Total Metals	QC-MRG2-2200780 01	----	sodium, total	17341-25-2	E420	0.053 <sup>B</sup> mg/L	0.05 mg/L	Blank result exceeds permitted value

**Result Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q2-2021_N	E298	10-Jun-2021	21-Jun-2021	----	----		21-Jun-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q2-2021_005	E298	10-Jun-2021	21-Jun-2021	----	----		21-Jun-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q2-2021_006	E298	10-Jun-2021	21-Jun-2021	----	----		21-Jun-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1101_WG_Q2-2021_N	E235.Br-L	10-Jun-2021	----	----	----		11-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q2-2021_006	E235.Br-L	10-Jun-2021	----	----	----		11-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q2-2021_005	E235.Br-L	10-Jun-2021	----	----	----		11-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1101_WG_Q2-2021_N	E235.Cl-L	10-Jun-2021	----	----	----		11-Jun-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE WG_Q2-2021_006	E235.Cl-L	10-Jun-2021	----	----	----		11-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE WG_Q2-2021_005	E235.Cl-L	10-Jun-2021	----	----	----		11-Jun-2021	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_PIZP1101_WG_Q2-2021_N	E378-U	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE WG_Q2-2021_005	E378-U	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE WG_Q2-2021_006	E378-U	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_PIZP1101_WG_Q2-2021_N	E235.F	10-Jun-2021	----	----	----		11-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE WG_Q2-2021_006	E235.F	10-Jun-2021	----	----	----		11-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE WG_Q2-2021_005	E235.F	10-Jun-2021	----	----	----		11-Jun-2021	28 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_PIZP1101_WG_Q2-2021_N	E235.NO3-L	10-Jun-2021	----	----	----		11-Jun-2021	3 days	1 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE WG_Q2-2021_006	E235.NO3-L	10-Jun-2021	----	----	----		11-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE WG_Q2-2021_005	E235.NO3-L	10-Jun-2021	----	----	----		11-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_PIZP1101_WG_Q2-2021_N	E235.NO2-L	10-Jun-2021	----	----	----		11-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE WG_Q2-2021_006	E235.NO2-L	10-Jun-2021	----	----	----		11-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE WG_Q2-2021_005	E235.NO2-L	10-Jun-2021	----	----	----		11-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_PIZP1101_WG_Q2-2021_N	E235.SO4	10-Jun-2021	----	----	----		11-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE WG_Q2-2021_006	E235.SO4	10-Jun-2021	----	----	----		11-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE WG_Q2-2021_005	E235.SO4	10-Jun-2021	----	----	----		11-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q2-2021_N	E318	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q2-2021_005	E318	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q2-2021_006	E318	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q2-2021_N	E372-U	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q2-2021_005	E372-U	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q2-2021_006	E372-U	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1101_WG_Q2-2021_N	E421.Cr-L	10-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q2-2021_005	E421.Cr-L	10-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1101_WG_Q2-2021_N	E509	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> WG_Q2-2021_005	E509	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> WG_Q2-2021_006	E421	10-Jun-2021	12-Jun-2021	----	----		12-Jun-2021	180 days	2 days	✓
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1101_WG_Q2-2021_N	E421	10-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	180 days	5 days	✓
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> WG_Q2-2021_005	E421	10-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	180 days	5 days	✓
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>										
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_PIZP1101_WG_Q2-2021_N	E601A	10-Jun-2021	16-Jun-2021	14 days	6 days	✓	18-Jun-2021	40 days	2 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1101_WG_Q2-2021_N	E358-L	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> WG_Q2-2021_005	E358-L	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q2-2021_N	E355-L	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> WG_Q2-2021_005	E355-L	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> WG_Q2-2021_006	E355-L	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE LC_PIZP1101_WG_Q2-2021_N	E283	10-Jun-2021	----	----	----		17-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE WG_Q2-2021_005	E283	10-Jun-2021	----	----	----		17-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE WG_Q2-2021_006	E283	10-Jun-2021	----	----	----		17-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_PIZP1101_WG_Q2-2021_N	E290	10-Jun-2021	----	----	----		17-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE WG_Q2-2021_005	E290	10-Jun-2021	----	----	----		17-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE WG_Q2-2021_006	E290	10-Jun-2021	----	----	----		17-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZP1101_WG_Q2-2021_N	E100	10-Jun-2021	----	----	----		17-Jun-2021	28 days	7 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE WG_Q2-2021_005	E100	10-Jun-2021	----	----	----		17-Jun-2021	28 days	7 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE WG_Q2-2021_006	E100	10-Jun-2021	----	----	----		17-Jun-2021	28 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZP1101_WG_Q2-2021_N	E125	10-Jun-2021	----	----	----		17-Jun-2021	0.25 hrs	170 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE WG_Q2-2021_006	E125	10-Jun-2021	----	----	----		17-Jun-2021	0.25 hrs	174 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE WG_Q2-2021_005	E125	10-Jun-2021	----	----	----		17-Jun-2021	0.25 hrs	185 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZP1101_WG_Q2-2021_N	E108	10-Jun-2021	----	----	----		17-Jun-2021	0.25 hrs	160 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE WG_Q2-2021_006	E108	10-Jun-2021	----	----	----		17-Jun-2021	0.25 hrs	164 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE WG_Q2-2021_005	E108	10-Jun-2021	----	----	----		17-Jun-2021	0.25 hrs	174 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZP1101_WG_Q2-2021_N	E162	10-Jun-2021	----	----	----		16-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE WG_Q2-2021_005	E162	10-Jun-2021	----	----	----		16-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE WG_Q2-2021_006	E162	10-Jun-2021	----	----	----		16-Jun-2021	7 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE LC_PIZP1101_WG_Q2-2021_N	E160-L	10-Jun-2021	----	----	----		16-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE WG_Q2-2021_005	E160-L	10-Jun-2021	----	----	----		16-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE WG_Q2-2021_006	E160-L	10-Jun-2021	----	----	----		16-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE WG_Q2-2021_005	E121	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE LC_PIZP1101_WG_Q2-2021_N	E121	10-Jun-2021	----	----	----		13-Jun-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE WG_Q2-2021_006	E121	10-Jun-2021	----	----	----		13-Jun-2021	3 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) LC_PIZP1101_WG_Q2-2021_N	E420.Cr-L	10-Jun-2021	----	----	----		16-Jun-2021	180 days	6 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) WG_Q2-2021_006	E420.Cr-L	10-Jun-2021	----	----	----		16-Jun-2021	180 days	6 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) WG_Q2-2021_005	E420.Cr-L	10-Jun-2021	----	----	----		16-Jun-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_PIZP1101_WG_Q2-2021_N	E508	10-Jun-2021	----	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> WG_Q2-2021_005	E508	10-Jun-2021	----	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> WG_Q2-2021_006	E508	10-Jun-2021	----	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_PIZP1101_WG_Q2-2021_N	E420	10-Jun-2021	----	----	----		16-Jun-2021	180 days	6 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> WG_Q2-2021_006	E420	10-Jun-2021	----	----	----		16-Jun-2021	180 days	6 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> WG_Q2-2021_005	E420	10-Jun-2021	----	----	----		16-Jun-2021	180 days	7 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	223225	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	223207	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	225883	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	219268	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	219269	1	20	5.0	5.0	✓
Conductivity in Water	E100	223208	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	220155	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	223113	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	219529	1	2	50.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	223212	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	219467	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	219266	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	219270	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	219271	1	20	5.0	5.0	✓
ORP by Electrode	E125	223483	1	18	5.5	5.0	✓
pH by Meter	E108	223206	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	219267	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	222063	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	220078	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	222271	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	223111	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	220079	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	223215	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	222476	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	219462	2	20	10.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	223225	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	223207	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	225883	1	18	5.5	5.0	✓
BC PHC - EPH by GC-FID	E601A	221723	1	8	12.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	219268	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	219269	1	20	5.0	5.0	✓
Conductivity in Water	E100	223208	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	220155	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	223113	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	219529	1	2	50.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	223212	1	19	5.2	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	219467	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	219266	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	219270	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	219271	1	20	5.0	5.0	✓
ORP by Electrode	E125	223483	1	18	5.5	5.0	✓
pH by Meter	E108	223206	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	219267	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	222063	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	220078	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	222271	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	223111	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	220079	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	223215	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	222476	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	222057	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	219462	2	20	10.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	223225	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	223207	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	225883	1	18	5.5	5.0	✓
BC PHC - EPH by GC-FID	E601A	221723	1	8	12.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	219268	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	219269	1	20	5.0	5.0	✓
Conductivity in Water	E100	223208	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	220155	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	223113	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	219529	1	2	50.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	223212	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	219467	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	219266	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	219270	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	219271	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	219267	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	222063	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	220078	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	222271	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	223111	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	220079	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	223215	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	222476	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	222057	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
Method Blanks (MB) - Continued							
Turbidity by Nephelometry	E121	219462	2	20	10.0	5.0	✓
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	225883	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	219268	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	219269	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	220155	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	223113	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	219529	1	2	50.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	223212	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	219467	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	219266	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	219270	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	219271	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	219267	1	17	5.8	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	220078	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	222271	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	223111	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	220079	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	223215	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	222476	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100 Calgary - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
PHCs and PAHs Hexane Extraction	EP601  Calgary - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101953**

**Page** : 1 of 21

**Amendment** : **1**

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : DC\_GW\_20210610  
**Sampler** : DT/SF  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 11-Jun-2021 08:30  
**Date Analysis Commenced** : 11-Jun-2021  
**Issue Date** : 10-Nov-2021 13:54

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 219462)</b>											
CG2101940-002	Anonymous	turbidity	----	E121	0.10	NTU	0.21	0.22	0.003	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 219881)</b>											
CG2101952-004	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 222063)</b>											
CG2101951-026	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2740	3080	11.4%	20%	----
<b>Physical Tests (QC Lot: 223206)</b>											
CG2101951-021	Anonymous	pH	----	E108	0.10	pH units	7.55	7.62	0.923%	4%	----
<b>Physical Tests (QC Lot: 223207)</b>											
CG2101951-021	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	713	680	4.82%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	713	680	4.82%	20%	----
<b>Physical Tests (QC Lot: 223208)</b>											
CG2101951-021	Anonymous	conductivity	----	E100	2.0	µS/cm	2960	2960	0.00%	10%	----
<b>Physical Tests (QC Lot: 223225)</b>											
CG2101951-021	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	12.2	<10.0	2.2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 223483)</b>											
CG2101951-026	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	357	362	1.45%	15%	----
<b>Anions and Nutrients (QC Lot: 219266)</b>											
CG2101952-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.222	0.218	1.46%	20%	----
<b>Anions and Nutrients (QC Lot: 219267)</b>											
CG2101952-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	113	113	0.251%	20%	----
<b>Anions and Nutrients (QC Lot: 219268)</b>											
CG2101952-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 219269)</b>											
CG2101952-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.24	3.23	0.461%	20%	----
<b>Anions and Nutrients (QC Lot: 219270)</b>											
CG2101952-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	5.79	5.85	1.02%	20%	----
<b>Anions and Nutrients (QC Lot: 219271)</b>											
CG2101952-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0016	0.0006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 219467)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 219467) - continued</b>											
CG2101951-024	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 222271)</b>											
CG2101953-001	LC_PIZP1101_WG_Q2-20 21_N	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.242	0.180	0.062	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 222476)</b>											
CG2101951-025	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 225883)</b>											
CG2101951-026	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.661	0.644	2.62%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 223212)</b>											
CG2101938-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.70	1.59	0.11	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 223215)</b>											
CG2101938-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.81	1.60	0.20	Diff <2x LOR	----
<b>Total Metals (QC Lot: 220078)</b>											
CG2101951-008	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 220079)</b>											
CG2101951-008	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	0.0063	<0.0060	0.0003	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00044	0.00043	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0582	0.0586	0.544%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	0.0711 µg/L	0.0000796	0.0000084	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.100	mg/L	276	283	2.71%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	0.63 µg/L	0.00065	0.00002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	0.256	0.252	1.92%	20%	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.0317	0.0317	0.0144%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	165	161	2.41%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	0.0426	0.0427	0.320%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00144	0.00147	2.21%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.00263	0.00265	0.00002	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	3.21	3.18	0.897%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	135 µg/L	0.134	0.764%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	3.86	3.77	2.35%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 220079) - continued</b>											
CG2101951-008	Anonymous	silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	4.75	4.64	2.42%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.262	0.261	0.375%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	289	285	1.27%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.00924	0.00936	1.25%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 223111)</b>											
CG2101953-001	LC_PIZP1101_WG_Q2-2021_N	mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000064	0.0000083	0.0000019	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 219529)</b>											
CG2101953-003	WG_Q2-2021_006	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 219529) - continued</b>											
CG2101953-003	WG_Q2-2021_006	sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0014	0.0015	0.00005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 220155)</b>											
CG2101910-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 220156)</b>											
CG2101910-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0014	0.0016	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00026	0.00025	0.000006	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0448	0.0444	0.800%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.011	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0981 µg/L	0.000107	9.05%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	78.2	78.2	0.0382%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.12 µg/L	0.00012	0.000005	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00022	0.00023	0.000002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0393	0.0386	1.90%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	35.8	35.3	1.26%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00319	0.00317	0.615%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00179	0.00178	0.618%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00451	0.00441	0.00010	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.76	1.75	0.436%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	50.8 µg/L	0.0517	1.83%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.72	1.71	0.349%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.88	1.86	0.832%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 220156) - continued</b>											
CG2101910-001	Anonymous	strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.106	0.104	2.65%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	46.7	47.1	0.875%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00254	0.00253	0.409%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0036	0.0036	0.00003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 223113)</b>											
CG2101953-001	LC_PIZP1101_WG_Q2-20 21_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 219462)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 219881)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 222057)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 222063)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 223207)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 223208)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 223225)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 219266)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 219267)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 219268)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 219269)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 219270)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 219271)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 219467)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 222271)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 222476)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 222476) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 225883)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 223212)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 223215)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 220078)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 220079)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	# 0.053	B
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 220079) - continued</b>						
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 223111)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 219529)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 219529) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 220155)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 220156)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 220156) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 223113)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Hydrocarbons (QCLot: 221723)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----

**Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 219462)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
<b>Physical Tests (QCLot: 219881)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	100.0	85.0	115	----
<b>Physical Tests (QCLot: 222057)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	85.9	85.0	115	----
<b>Physical Tests (QCLot: 222063)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	91.6	85.0	115	----
<b>Physical Tests (QCLot: 223206)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 223207)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	500 mg/L	106	85.0	115	----
<b>Physical Tests (QCLot: 223208)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	----
<b>Physical Tests (QCLot: 223225)</b>									
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	50 mg/L	109	85.0	115	----
<b>Physical Tests (QCLot: 223483)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----
<b>Anions and Nutrients (QCLot: 219266)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 219267)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 219268)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	101	85.0	115	----
<b>Anions and Nutrients (QCLot: 219269)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 219270)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 219271)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	96.6	90.0	110	----
<b>Anions and Nutrients (QCLot: 219467)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	----
<b>Anions and Nutrients (QCLot: 222271)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 222271) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	83.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 222476)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 225883)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 223212)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.0	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 223215)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	96.0	80.0	120	----
<b>Total Metals (QCLot: 220078)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
<b>Total Metals (QCLot: 220079)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	110	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	114	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	109	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	111	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	106	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	111	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	106	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	109	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	107	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	111	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	107	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	109	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	106	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	112	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 220079) - continued</b>									
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.2	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	112	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	102	80.0	120	----
<b>Total Metals (QCLot: 223111)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.5	80.0	120	----
<b>Dissolved Metals (QCLot: 219529)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.7	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.3	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.9	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.9	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.3	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	92.6	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.6	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.1	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.4	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	97.4	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	110	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 219529) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.4	80.0	120	----
<b>Dissolved Metals (QCLot: 220155)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
<b>Dissolved Metals (QCLot: 220156)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.3	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	107	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.9	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	103	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 220156) - continued</b>									
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
<b>Hydrocarbons (QCLot: 221723)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	95.2	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	94.4	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	94.6	70.0	130	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 219266)</b>										
CG2101953-003	WG_Q2-2021_006	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 219267)</b>										
CG2101953-003	WG_Q2-2021_006	sulfate (as SO4)	14808-79-8	E235.SO4	100 mg/L	100 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 219268)</b>										
CG2101953-003	WG_Q2-2021_006	bromide	24959-67-9	E235.Br-L	0.474 mg/L	0.5 mg/L	94.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 219269)</b>										
CG2101953-003	WG_Q2-2021_006	chloride	16887-00-6	E235.Cl-L	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 219270)</b>										
CG2101953-003	WG_Q2-2021_006	nitrate (as N)	14797-55-8	E235.NO3-L	2.53 mg/L	2.5 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 219271)</b>										
CG2101953-003	WG_Q2-2021_006	nitrite (as N)	14797-65-0	E235.NO2-L	0.480 mg/L	0.5 mg/L	96.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 219467)</b>										
CG2101951-025	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0609 mg/L	0.05 mg/L	122	70.0	130	----
<b>Anions and Nutrients (QCLot: 222271)</b>										
CG2101953-002	WG_Q2-2021_005	Kjeldahl nitrogen, total [TKN]	----	E318	2.64 mg/L	2.5 mg/L	105	70.0	130	----
<b>Anions and Nutrients (QCLot: 222476)</b>										
CG2101951-026	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0495 mg/L	0.0676 mg/L	73.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 225883)</b>										
CG2101955-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.110 mg/L	0.1 mg/L	110	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 223212)</b>										
CG2101938-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.2 mg/L	23.9 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 223215)</b>										
CG2101938-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.0 mg/L	23.9 mg/L	104	70.0	130	----
<b>Total Metals (QCLot: 220078)</b>										
CG2101951-008	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0840 mg/L	0.08 mg/L	105	70.0	130	----
<b>Total Metals (QCLot: 220079)</b>										
CG2101951-008	Anonymous	aluminum, total	7429-90-5	E420	0.417 mg/L	0.4 mg/L	104	70.0	130	----
		antimony, total	7440-36-0	E420	0.0433 mg/L	0.04 mg/L	108	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 220079) - continued</b>										
CG2101951-008	Anonymous	arsenic, total	7440-38-2	E420	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0845 mg/L	0.08 mg/L	106	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		boron, total	7440-42-8	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00861 mg/L	0.008 mg/L	108	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		copper, total	7440-50-8	E420	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		iron, total	7439-89-6	E420	3.98 mg/L	4 mg/L	99.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		lithium, total	7439-93-2	E420	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0442 mg/L	0.04 mg/L	110	70.0	130	----
		nickel, total	7440-02-0	E420	0.0781 mg/L	0.08 mg/L	97.6	70.0	130	----
		potassium, total	7440-09-7	E420	8.38 mg/L	8 mg/L	105	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	20.0 mg/L	20 mg/L	99.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00830 mg/L	0.008 mg/L	104	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00793 mg/L	0.008 mg/L	99.2	70.0	130	----
		tin, total	7440-31-5	E420	0.0426 mg/L	0.04 mg/L	106	70.0	130	----
		titanium, total	7440-32-6	E420	0.0864 mg/L	0.08 mg/L	108	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.208 mg/L	0.2 mg/L	104	70.0	130	----
		zinc, total	7440-66-6	E420	0.777 mg/L	0.8 mg/L	97.2	70.0	130	----
<b>Total Metals (QCLot: 223111)</b>										
CG2101953-002	WG_Q2-2021_005	mercury, total	7439-97-6	E508	0.0000988 mg/L	0.0001 mg/L	98.8	70.0	130	----
<b>Dissolved Metals (QCLot: 219529)</b>										
CG2101953-003	WG_Q2-2021_006	aluminum, dissolved	7429-90-5	E421	1.97 mg/L	2 mg/L	98.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.183 mg/L	0.2 mg/L	91.4	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.191 mg/L	0.2 mg/L	95.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.196 mg/L	0.2 mg/L	97.9	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 219529) - continued</b>										
CG2101953-003	WG_Q2-2021_006	beryllium, dissolved	7440-41-7	E421	0.379 mg/L	0.4 mg/L	94.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0936 mg/L	0.1 mg/L	93.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	1.03 mg/L	1 mg/L	103	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	38.1 mg/L	40 mg/L	95.3	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.192 mg/L	0.2 mg/L	96.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.195 mg/L	0.2 mg/L	97.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	19.3 mg/L	20 mg/L	96.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.196 mg/L	0.2 mg/L	98.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.916 mg/L	1 mg/L	91.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	9.40 mg/L	10 mg/L	94.0	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.190 mg/L	0.2 mg/L	94.9	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.188 mg/L	0.2 mg/L	93.9	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.389 mg/L	0.4 mg/L	97.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	34.6 mg/L	40 mg/L	86.6	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.407 mg/L	0.4 mg/L	102	70.0	130	----
		silicon, dissolved	7440-21-3	E421	93.8 mg/L	100 mg/L	93.8	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0363 mg/L	0.04 mg/L	90.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	19.3 mg/L	20 mg/L	96.4	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.193 mg/L	0.2 mg/L	96.5	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	202 mg/L	200 mg/L	101	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0371 mg/L	0.04 mg/L	92.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.177 mg/L	0.2 mg/L	88.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.343 mg/L	0.4 mg/L	85.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0381 mg/L	0.04 mg/L	95.4	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.951 mg/L	1 mg/L	95.1	70.0	130	----
		zinc, dissolved	7440-66-6	E421	4.03 mg/L	4 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 220155)</b>										
CG2101910-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
<b>Dissolved Metals (QCLot: 220156)</b>										
CG2101910-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00855 mg/L	0.01 mg/L	85.5	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 220156) - continued</b>										
CG2101910-001	Anonymous	boron, dissolved	7440-42-8	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00386 mg/L	0.004 mg/L	96.5	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.88 mg/L	2 mg/L	93.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0940 mg/L	0.1 mg/L	94.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0372 mg/L	0.04 mg/L	93.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.73 mg/L	4 mg/L	93.3	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.33 mg/L	10 mg/L	93.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00370 mg/L	0.004 mg/L	92.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.88 mg/L	2 mg/L	94.0	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00372 mg/L	0.004 mg/L	92.9	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00382 mg/L	0.004 mg/L	95.4	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.377 mg/L	0.4 mg/L	94.3	70.0	130	----
<b>Dissolved Metals (QCLot: 223113)</b>										
CG2101953-002	WG_Q2-2021_005	mercury, dissolved	7439-97-6	E509	0.0000960 mg/L	0.0001 mg/L	96.0	70.0	130	----

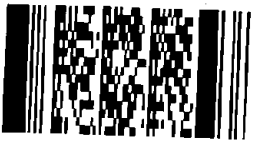


COC ID: **DC\_GW\_20210610** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	*	*
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	*	*
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	*	*
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	*	*
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	tanya.dick@teck.com	*	*
	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VP000739930		
				Phone Number	403 407 1794						

Environmental Division  
Calgary

Work Order Reference  
**CG2101953**



Telephone : +1 403 407 1800

SAMPLE DETAILS							ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp # Of Cont.	ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None				
							Y	N	N	Y	N	Y	N	N					
							H2SO4	NAHSO4	H2SO4	HCl	NONE	HNO3	HNO3	NONE					
LC_PIZP1101_WG_Q2-2021_N	LC_PIZP1101	WG		10-Jun	15:40	G 9	1	2	1	1	1	1	1	1					
WG_Q2-2021_005	LC_PIZP1101	WG		10-Jun	13:35	G 7	1		1	1	1	1	1	1					
WG_Q2-2021_006	LC_PIZP1101	WG		10-Jun	11:55	G 4			1		1		1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
PLEASE FORWARD ALL SAMPLES TO ALS HEADQUARTERS FOR ANALYSIS	D.Tymstra/S.Fossen	10-Jun	<i>[Signature]</i>	6/11 830

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	<input checked="" type="checkbox"/>	Sampler's Name	D.Tymstra/S.Fossen
Priority (2-3 business days) - 50% surcharge	<input type="checkbox"/>	Sampler's Signature	<i>[Signature]</i>
Emergency (1 Business Day) - 100% surcharge	<input type="checkbox"/>	Date/Time	June 10, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<input type="checkbox"/>		

*[Handwritten mark]*



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2101972**

**Amendment** : **1**

**Client** : **Teck Coal Limited**

**Contact** : Tom Jeffery

**Address** : PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada

**Telephone** : 250-433-8467

**Project** : LINE CREEK OPERATION

**PO** : VPO00739930

**C-O-C number** : LC\_GW\_20210611

**Sampler** : TD/SF

**Site** : ---

**Quote number** : Teck Coal Master Quote

**No. of samples received** : 3

**No. of samples analysed** : 3

**Page** : 1 of 8

**Laboratory** : Calgary - Environmental

**Account Manager** : Lyudmyla Shvets

**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5

**Telephone** : +1 403 407 1800

**Date Samples Received** : 12-Jun-2021 09:10

**Date Analysis Commenced** : 12-Jun-2021

**Issue Date** : 05-Nov-2021 11:29

---

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

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## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
James Diacon	Laboratory Analyst	Metals, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maqsood Ul Hassan	Laboratory Analyst	Organics, Calgary, Alberta
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

Sample	Client Id	Comment
CG2101972-003	LC_PIZDC1306_WG_Q2-2021 _NP	No Dissolved metals for sample 003

## Qualifiers

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.



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RRV

*Reported result verified by repeat analysis.*

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## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1105_ WG_Q2-2021_N	WG_Q2-2021_0 05	LC_PIZDC1306 _WG_Q2-2021_ NP	----	----
Client sampling date / time					11-Jun-2021 12:00	11-Jun-2021 12:00	11-Jun-2021 10:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101972-001 Result	CG2101972-002 Result	CG2101972-003 Result	----- ---	----- ---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	159	135	<2.0	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	427	437	262	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	520	533	320	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	427	437	262	----	----	
conductivity	----	E100	2.0	µS/cm	1330	1340	442	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	782	712	259	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	410	480	506	----	----	
pH	----	E108	0.10	pH units	7.46	7.47	8.22	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	854	850	311	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	242	390	100	----	----	
turbidity	----	E121	0.10	NTU	143	246	43.2	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0147	0.0552	0.0592	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	2.41	2.32	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	186	186	0.13	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.189	0.168	0.130	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.227	0.236	0.327	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.535	0.0928	0.183	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0102	<0.0050 <sup>DLDS</sup>	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0092	0.0089	0.0011	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.558	0.560	0.233	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	120	107	6.75	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	35.5 <sup>DTC,RRV</sup>	38.9 <sup>DTC,RRV</sup>	2.02	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.44 <sup>DTC,RRV</sup>	2.48 <sup>DTC,RRV</sup>	4.62	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1105_ WG_Q2-2021_N	WG_Q2-2021_0 05	LC_PIZDC1306 _WG_Q2-2021_ NP	----	----
Client sampling date / time					11-Jun-2021 12:00	11-Jun-2021 12:00	11-Jun-2021 10:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101972-001 Result	CG2101972-002 Result	CG2101972-003 Result	----- ----	----- ----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	16.3	16.2	5.40	----	----	
cation sum	----	EC101	0.10	meq/L	16.4	14.9	5.27	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	101	92.0	97.6	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.306	4.18	1.22	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	4.25	4.65	1.01	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00054	0.00062	0.00042	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00313	0.00345	0.00085	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.303	0.334	0.206	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	0.310	0.363	0.129	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	0.000075	0.000087	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.026	0.027	0.012	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.846	0.949	0.600	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	222	224	62.2	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00801	0.00882	0.00219	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	3.64	4.02	1.79	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00980	0.0109	0.0267	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	9.11	10.1	1.64	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.00396	0.00445	0.00233	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0265	0.0290	0.0115	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	61.6	62.6	21.2	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.642	0.707	0.0793	----	----	
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000214	0.0000126	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00108	0.00112	0.00207	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0106	0.0117	0.00617	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	3.48	3.46	2.54	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	0.382	0.404	4.38	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	10.7	11.1	4.42	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000112	0.000128	0.000121	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	14.5	14.4	0.728	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1105_ WG_Q2-2021_N	WG_Q2-2021_0 05	LC_PIZDC1306 _WG_Q2-2021_ NP	----	----
Client sampling date / time					11-Jun-2021 12:00	11-Jun-2021 12:00	11-Jun-2021 10:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101972-001 Result	CG2101972-002 Result	CG2101972-003 Result	----- ----	----- ----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.488	0.503	0.0771	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	35.7	36.5	2.57	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000250	0.000287	0.000104	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00025	0.00030	0.00012	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0302	0.0225	0.0100	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000771	0.000810	0.00113	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0125	0.0135	0.0106	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0791	0.0868	0.0347	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0137	0.0172	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00382 <sup>DTC</sup>	0.00403 <sup>DTMF</sup>	0.00022	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	0.00012	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.117	0.120	0.163	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	----	----	<0.000020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.024	0.021	<0.010	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.240	0.231	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	----	----	0.000142	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	221	189	63.6	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.38	0.35	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	----	----	<0.00010	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0.00034	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0219	0.0204	0.0102	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	55.9	58.2	24.4	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.257	0.242	0.00081	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	





**Analytical Results**

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1105_ WG_Q2-2021_N	WG_Q2-2021_0 05	LC_PIZDC1306 _WG_Q2-2021_ NP	----	----
Client sampling date / time					11-Jun-2021 12:00	11-Jun-2021 12:00	11-Jun-2021 10:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101972-001 Result	CG2101972-002 Result	CG2101972-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000365	0.000301	0.00180	----	----	
nickel, dissolved	7440-02-0	E421	0.000050	mg/L	0.00218	0.00210	0.00112	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.26	2.22	2.08	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.236	0.126	----	----	----	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	----	----	0.00434	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.79	4.88	3.10	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	16.3	15.1	0.763	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.504	0.441	0.0662	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	39.3	39.9	2.48	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000050	0.000039	0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000389	0.000329	0.000742	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0.00056	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0446	0.0597	0.0029	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Laboratory	----	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	----	----	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	90.0	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101972</b>	Page	: 1 of 18
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 12-Jun-2021 09:10
PO	: VPO00739930	Issue Date	: 05-Nov-2021 11:29
C-O-C number	: LC_GW_20210611		
Sampler	: TD/SF		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Method Blank (MB) Values</b>								
Dissolved Metals	QC-MRG2-2218170 01	----	magnesium, dissolved	7439-95-4	E421	0.0052 <sup>B</sup> mg/L	0.005 mg/L	Blank result exceeds permitted value

**Result Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q2-2021_NP	E298	11-Jun-2021	22-Jun-2021	----	----		22-Jun-2021	28 days	11 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q2-2021_N	E298	11-Jun-2021	22-Jun-2021	----	----		22-Jun-2021	28 days	11 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> WG_Q2-2021_005	E298	11-Jun-2021	22-Jun-2021	----	----		22-Jun-2021	28 days	11 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q2-2021_NP	E235.Br-L	11-Jun-2021	----	----	----		12-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1105_WG_Q2-2021_N	E235.Br-L	11-Jun-2021	----	----	----		12-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> WG_Q2-2021_005	E235.Br-L	11-Jun-2021	----	----	----		12-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q2-2021_NP	E235.Cl-L	11-Jun-2021	----	----	----		12-Jun-2021	28 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_PIZP1105_WG_Q2-2021_N	E235.CI-L	11-Jun-2021	----	----	----		12-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE WG_Q2-2021_005	E235.CI-L	11-Jun-2021	----	----	----		12-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_PIZDC1306_WG_Q2-2021_NP	E378-U	11-Jun-2021	----	----	----		12-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_PIZP1105_WG_Q2-2021_N	E378-U	11-Jun-2021	----	----	----		12-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE WG_Q2-2021_005	E378-U	11-Jun-2021	----	----	----		12-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_PIZDC1306_WG_Q2-2021_NP	E235.F	11-Jun-2021	----	----	----		12-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_PIZP1105_WG_Q2-2021_N	E235.F	11-Jun-2021	----	----	----		12-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE WG_Q2-2021_005	E235.F	11-Jun-2021	----	----	----		12-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_PIZDC1306_WG_Q2-2021_NP	E235.NO3-L	11-Jun-2021	----	----	----		12-Jun-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_PIZP1105_WG_Q2-2021_N	E235.NO3-L	11-Jun-2021	----	----	----		12-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE WG_Q2-2021_005	E235.NO3-L	11-Jun-2021	----	----	----		12-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_PIZDC1306_WG_Q2-2021_NP	E235.NO2-L	11-Jun-2021	----	----	----		12-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_PIZP1105_WG_Q2-2021_N	E235.NO2-L	11-Jun-2021	----	----	----		12-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE WG_Q2-2021_005	E235.NO2-L	11-Jun-2021	----	----	----		12-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_PIZDC1306_WG_Q2-2021_NP	E235.SO4	11-Jun-2021	----	----	----		12-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_PIZP1105_WG_Q2-2021_N	E235.SO4	11-Jun-2021	----	----	----		12-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE WG_Q2-2021_005	E235.SO4	11-Jun-2021	----	----	----		12-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
Amber glass total (sulfuric acid) LC_PIZDC1306_WG_Q2-2021_NP	E318	11-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	6 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q2-2021_N	E318	11-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q2-2021_005	E318	11-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q2-2021_NP	E372-U	11-Jun-2021	18-Jun-2021	----	----		18-Jun-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q2-2021_N	E372-U	11-Jun-2021	18-Jun-2021	----	----		18-Jun-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q2-2021_005	E372-U	11-Jun-2021	18-Jun-2021	----	----		18-Jun-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1306_WG_Q2-2021_NP	E421.Cr-L	11-Jun-2021	16-Jun-2021	----	----		16-Jun-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1105_WG_Q2-2021_N	E421.Cr-L	11-Jun-2021	15-Jun-2021	----	----		18-Jun-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q2-2021_005	E421.Cr-L	11-Jun-2021	15-Jun-2021	----	----		18-Jun-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1306_WG_Q2-2021_NP	E509	11-Jun-2021	18-Jun-2021	----	----		18-Jun-2021	28 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1105_WG_Q2-2021_N	E509	11-Jun-2021	18-Jun-2021	----	----		18-Jun-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> WG_Q2-2021_005	E509	11-Jun-2021	18-Jun-2021	----	----		18-Jun-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1306_WG_Q2-2021_NP	E421	11-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1105_WG_Q2-2021_N	E421	11-Jun-2021	15-Jun-2021	----	----		18-Jun-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q2-2021_005	E421	11-Jun-2021	15-Jun-2021	----	----		18-Jun-2021	180 days	7 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_PIZP1105_WG_Q2-2021_N	E601A	11-Jun-2021	18-Jun-2021	14 days	7 days	✓	20-Jun-2021	40 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1306_WG_Q2-2021_NP	E358-L	11-Jun-2021	21-Jun-2021	----	----		21-Jun-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1105_WG_Q2-2021_N	E358-L	11-Jun-2021	21-Jun-2021	----	----		21-Jun-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> WG_Q2-2021_005	E358-L	11-Jun-2021	21-Jun-2021	----	----		21-Jun-2021	28 days	10 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q2-2021_NP	E355-L	11-Jun-2021	21-Jun-2021	----	----		21-Jun-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q2-2021_N	E355-L	11-Jun-2021	21-Jun-2021	----	----		21-Jun-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q2-2021_005	E355-L	11-Jun-2021	21-Jun-2021	----	----		21-Jun-2021	28 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q2-2021_NP	E283	11-Jun-2021	----	----	----		20-Jun-2021	14 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q2-2021_N	E283	11-Jun-2021	----	----	----		20-Jun-2021	14 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> WG_Q2-2021_005	E283	11-Jun-2021	----	----	----		20-Jun-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q2-2021_NP	E290	11-Jun-2021	----	----	----		20-Jun-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q2-2021_N	E290	11-Jun-2021	----	----	----		20-Jun-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> WG_Q2-2021_005	E290	11-Jun-2021	----	----	----		20-Jun-2021	14 days	9 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZDC1306_WG_Q2-2021_NP	E100	11-Jun-2021	----	----	----		20-Jun-2021	28 days	9 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZP1105_WG_Q2-2021_N	E100	11-Jun-2021	----	----	----		20-Jun-2021	28 days	9 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE WG_Q2-2021_005	E100	11-Jun-2021	----	----	----		20-Jun-2021	28 days	9 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZP1105_WG_Q2-2021_N	E125	11-Jun-2021	----	----	----		21-Jun-2021	0.25 hrs	240 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE WG_Q2-2021_005	E125	11-Jun-2021	----	----	----		21-Jun-2021	0.25 hrs	240 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC1306_WG_Q2-2021_NP	E125	11-Jun-2021	----	----	----		21-Jun-2021	0.25 hrs	242 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZP1105_WG_Q2-2021_N	E108	11-Jun-2021	----	----	----		20-Jun-2021	0.25 hrs	212 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE WG_Q2-2021_005	E108	11-Jun-2021	----	----	----		20-Jun-2021	0.25 hrs	212 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC1306_WG_Q2-2021_NP	E108	11-Jun-2021	----	----	----		20-Jun-2021	0.25 hrs	213 hrs		* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q2-2021_NP	E162	11-Jun-2021	----	----	----		16-Jun-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q2-2021_N	E162	11-Jun-2021	----	----	----		17-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> WG_Q2-2021_005	E162	11-Jun-2021	----	----	----		17-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZDC1306_WG_Q2-2021_NP	E160-L	11-Jun-2021	----	----	----		16-Jun-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZP1105_WG_Q2-2021_N	E160-L	11-Jun-2021	----	----	----		16-Jun-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> WG_Q2-2021_005	E160-L	11-Jun-2021	----	----	----		17-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q2-2021_NP	E121	11-Jun-2021	----	----	----		13-Jun-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q2-2021_N	E121	11-Jun-2021	----	----	----		13-Jun-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> WG_Q2-2021_005	E121	11-Jun-2021	----	----	----		13-Jun-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1306_WG_Q2-2021_NP	E420.Cr-L	11-Jun-2021	----	----	----		18-Jun-2021	180 days	7 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZP1105_WG_Q2-2021_N	E420.Cr-L	11-Jun-2021	----	----	----		18-Jun-2021	180 days	7 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> WG_Q2-2021_005	E420.Cr-L	11-Jun-2021	----	----	----		18-Jun-2021	180 days	7 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_PIZP1105_WG_Q2-2021_N	E508	11-Jun-2021	----	----	----		18-Jun-2021	28 days	7 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> WG_Q2-2021_005	E508	11-Jun-2021	----	----	----		18-Jun-2021	28 days	7 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1306_WG_Q2-2021_NP	E420	11-Jun-2021	----	----	----		18-Jun-2021	180 days	7 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_PIZP1105_WG_Q2-2021_N	E420	11-Jun-2021	----	----	----		18-Jun-2021	180 days	7 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> WG_Q2-2021_005	E420	11-Jun-2021	----	----	----		18-Jun-2021	180 days	7 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	225615	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	225588	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	227496	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	219780	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	219781	1	8	12.5	5.0	✓
Conductivity in Water	E100	225589	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	221818	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	224945	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	221445	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	225905	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	219843	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	219782	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	219783	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	219784	1	7	14.2	5.0	✓
ORP by Electrode	E125	225420	1	20	5.0	5.0	✓
pH by Meter	E108	225587	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	219776	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	222065	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	221820	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	222554	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	224836	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	221819	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	225917	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	223380	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	220085	1	7	14.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	225615	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	225588	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	227496	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	223855	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	219780	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	219781	1	8	12.5	5.0	✓
Conductivity in Water	E100	225589	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	221818	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	224945	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	221445	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	225905	1	18	5.5	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	219843	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	219782	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	219783	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	219784	1	7	14.2	5.0	✓
ORP by Electrode	E125	225420	1	20	5.0	5.0	✓
pH by Meter	E108	225587	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	219776	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	222065	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	221820	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	222554	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	224836	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	221819	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	225917	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	223380	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	222059	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	220085	1	7	14.2	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	225615	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	225588	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	227496	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	223855	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	219780	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	219781	1	8	12.5	5.0	✓
Conductivity in Water	E100	225589	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	221818	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	224945	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	221445	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	225905	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	219843	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	219782	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	219783	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	219784	1	7	14.2	5.0	✓
Sulfate in Water by IC	E235.SO4	219776	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	222065	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	221820	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	222554	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	224836	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	221819	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	225917	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	223380	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	222059	2	40	5.0	5.0	✓



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<i>Method Blanks (MB) - Continued</i>							
Turbidity by Nephelometry	E121	220085	1	7	14.2	5.0	✔
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	227496	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	219780	0	8	0.0	5.0	✘
Chloride in Water by IC (Low Level)	E235.Cl-L	219781	0	8	0.0	5.0	✘
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	221818	1	18	5.5	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	224945	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	221445	1	18	5.5	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	225905	1	18	5.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	219843	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	219782	0	8	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	219783	0	7	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	219784	0	7	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	219776	0	18	0.0	5.0	✘
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	221820	1	18	5.5	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	222554	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	224836	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	221819	1	18	5.5	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	225917	1	18	5.5	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	223380	1	20	5.0	5.0	✔





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Calgary - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
PHCs and PAHs Hexane Extraction	EP601  Calgary - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101972**

**Page** : 1 of 22

**Amendment** : **1**

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : LC\_GW\_20210611  
**Sampler** : TD/SF  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 12-Jun-2021 09:10  
**Date Analysis Commenced** : 12-Jun-2021  
**Issue Date** : 05-Nov-2021 11:29

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
James Diacon	Laboratory Analyst	Metals, Calgary, Alberta
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Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maqsood Ul Hassan	Laboratory Analyst	Organics, Calgary, Alberta

Maria Tuginay

Naeun Kim

Parker Sgarbossa

Sara Niroomand

Lab Assistant

Analyst

Laboratory Analyst

Inorganics, Calgary, Alberta

Inorganics, Calgary, Alberta

Inorganics, Calgary, Alberta

Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 220085)</b>											
CG2101971-004	Anonymous	turbidity	----	E121	0.10	NTU	0.14	0.14	0.005	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 222065)</b>											
CG2101963-027	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2010	1800	10.7%	20%	----
<b>Physical Tests (QC Lot: 223153)</b>											
CG2101972-001	LC_PIZP1105_WG_Q2-20 21_N	solids, total dissolved [TDS]	----	E162	20	mg/L	854	893	4.46%	20%	----
<b>Physical Tests (QC Lot: 225420)</b>											
CG2101971-004	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	506	507	0.217%	15%	----
<b>Physical Tests (QC Lot: 225587)</b>											
CG2101971-001	Anonymous	pH	----	E108	0.10	pH units	8.22	8.24	0.243%	4%	----
<b>Physical Tests (QC Lot: 225588)</b>											
CG2101971-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	279	285	2.20%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	279	285	2.20%	20%	----
<b>Physical Tests (QC Lot: 225589)</b>											
CG2101971-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2720	2740	0.733%	10%	----
<b>Physical Tests (QC Lot: 225615)</b>											
CG2101971-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	3.9	3.2	0.6	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 219776)</b>											
CG2101967-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	15.2	15.0	0.898%	20%	----
<b>Anions and Nutrients (QC Lot: 219780)</b>											
CG2101971-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 219781)</b>											
CG2101971-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	7.44	7.40	0.448%	20%	----
<b>Anions and Nutrients (QC Lot: 219782)</b>											
CG2101971-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.169	0.164	0.005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 219783)</b>											
CG2101971-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.969	0.888	8.82%	20%	----
<b>Anions and Nutrients (QC Lot: 219784)</b>											
CG2101971-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 219843)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 219843) - continued</b>											
CG2101968-009	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 222554)</b>											
CG2101969-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.100	mg/L	4.96	5.52	10.7%	20%	----
<b>Anions and Nutrients (QC Lot: 223380)</b>											
CG2101971-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0057	0.0055	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 227496)</b>											
CG2101971-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0158	0.0155	0.0003	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 225905)</b>											
CG2101969-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 225917)</b>											
CG2101969-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 221819)</b>											
CG2101969-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00246	0.00247	0.234%	20%	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0216	0.0215	0.364%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.110	0.109	0.0006	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	0.641 µg/L	0.000608	5.26%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	434	434	0.0631%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	41.3 µg/L	0.0409	0.812%	20%	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	0.684	0.658	3.89%	20%	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.979	0.975	0.335%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	170	170	0.567%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	0.297	0.296	0.488%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00493	0.00486	1.52%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.301	0.303	0.696%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	16.8	17.0	1.43%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	2.66 µg/L	0.00265	0.490%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	2.93	2.86	2.64%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	27.2	27.4	0.828%	20%	----





Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 221819) - continued</b>											
CG2101969-001	Anonymous	strontium, total	7440-24-6	E420	0.00040	mg/L	0.798	0.774	3.07%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	343	337	1.75%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.000251	0.000240	4.48%	20%	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0300	0.0300	0.167%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.0420	0.0413	0.0007	Diff <2x LOR	----
<b>Total Metals (QC Lot: 221820)</b>											
CG2101969-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 224836)</b>											
CG2101972-001	LC_PIZP1105_WG_Q2-20 21_N	mercury, total	7439-97-6	E508	0.0000100	mg/L	0.0000214	0.0000193	0.0000021	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 221445)</b>											
CG2101957-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0119	0.0109	8.82%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00031	0.00034	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0247	0.0247	0.0615%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	26.8	27.4	2.19%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00031	0.00031	0.000002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	7.63	7.73	1.36%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00313	0.00332	6.04%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000516	0.000539	4.38%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.432	0.435	0.004	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000104	0.000091	0.000013	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.40	2.39	0.570%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 221445) - continued</b>											
CG2101957-008	Anonymous	sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.38	2.39	0.677%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.113	0.115	2.40%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	5.62	5.78	2.80%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000666	0.000680	2.08%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0025	<0.0010	0.0015	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 221817)</b>											
CG2101963-028	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0024	0.0026	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00121	0.00110	0.00012	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0129	0.0124	3.88%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.090	0.096	0.005	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.0170 µg/L	0.0000174	0.0000004	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	286	293	2.23%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	26.9 µg/L	0.0254	5.62%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	0.967	0.933	3.52%	20%	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.132	0.135	1.89%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	158	151	4.43%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.618	0.585	5.42%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00206	0.00190	8.16%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.0802	0.0753	6.33%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	5.40	5.17	4.32%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	0.104 µg/L	0.000108	0.000005	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.59	2.53	2.58%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	7.23	6.69	7.71%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.496	0.494	0.393%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	386	371	4.10%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 221817) - continued</b>											
CG2101963-028	Anonymous	thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000113	0.000116	0.000003	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0154	0.0154	0.430%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	1.45	1.39	4.44%	20%	----
<b>Dissolved Metals (QC Lot: 221818)</b>											
CG2101963-028	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 224945)</b>											
CG2101963-028	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 220085)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 222059)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 222065)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 223146)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 223153)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 225588)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 225589)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 225615)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 219776)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 219780)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 219781)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 219782)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 219783)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 219784)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 219843)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 222554)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 222554) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 223380)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 227496)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 225905)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 225917)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 221819)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 221819) - continued</b>						
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 221820)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 224836)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 221445)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 221445) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	---
<b>Dissolved Metals (QCLot: 221817)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	# 0.0052	B
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 221817) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 221818)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 222357)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 224945)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Hydrocarbons (QCLot: 223855)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----

**Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 220085)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100.0	85.0	115	---
<b>Physical Tests (QCLot: 222059)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 222065)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	95.2	85.0	115	---
<b>Physical Tests (QCLot: 223146)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 223153)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 225420)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	98.8	95.4	104	---
<b>Physical Tests (QCLot: 225587)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 225588)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 225589)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	105	90.0	110	---
<b>Physical Tests (QCLot: 225615)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 219776)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 219780)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.8	85.0	115	---
<b>Anions and Nutrients (QCLot: 219781)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 219782)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	92.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 219783)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 219784)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 219843)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 219843) - continued</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	103	80.0	120	----
<b>Anions and Nutrients (QCLot: 222554)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	94.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 223380)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	104	80.0	120	----
<b>Anions and Nutrients (QCLot: 227496)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.2	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 225905)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.6	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 225917)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	98.0	80.0	120	----
<b>Total Metals (QCLot: 221819)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	109	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.6	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.6	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.9	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	102	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 221819) - continued</b>									
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	106	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.6	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.4	80.0	120	----
<b>Total Metals (QCLot: 221820)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Total Metals (QCLot: 224836)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	94.7	80.0	120	----
<b>Dissolved Metals (QCLot: 221445)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.5	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.2	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	96.9	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.7	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	107	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	94.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	93.9	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.6	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	93.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	90.6	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.4	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.0	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.3	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	96.8	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.9	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.2	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	98.5	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 221445) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	94.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.1	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.1	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	96.2	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	89.0	80.0	120	----
<b>Dissolved Metals (QCLot: 221817)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.6	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.2	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	92.5	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	90.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	95.1	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	94.4	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	94.3	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.2	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	97.1	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	106	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.6	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.6	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 221817) - continued</b>									
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.00005	mg/L	0.5 mg/L	95.8	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	108	80.0	120	----
<b>Dissolved Metals (QCLot: 221818)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
<b>Dissolved Metals (QCLot: 222357)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	93.4	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	93.2	80.0	120	----
<b>Hydrocarbons (QCLot: 223855)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	102	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	100	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	102	70.0	130	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 219843)</b>										
CG2101968-010	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0559 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 222554)</b>										
CG2101971-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.51 mg/L	2.5 mg/L	100	70.0	130	----
<b>Anions and Nutrients (QCLot: 223380)</b>										
CG2101975-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0558 mg/L	0.0676 mg/L	82.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 227496)</b>										
CG2101978-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.107 mg/L	0.1 mg/L	107	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 225905)</b>										
CG2101969-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.8 mg/L	23.9 mg/L	99.6	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 225917)</b>										
CG2101969-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.2 mg/L	23.9 mg/L	101	70.0	130	----
<b>Total Metals (QCLot: 221819)</b>										
CG2101969-001	Anonymous	aluminum, total	7429-90-5	E420	0.407 mg/L	0.4 mg/L	102	70.0	130	----
		antimony, total	7440-36-0	E420	0.0437 mg/L	0.04 mg/L	109	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	0.0396 mg/L	0.04 mg/L	98.9	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0787 mg/L	0.08 mg/L	98.4	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		boron, total	7440-42-8	E420	0.182 mg/L	0.2 mg/L	91.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00838 mg/L	0.008 mg/L	105	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, total	7440-50-8	E420	0.0369 mg/L	0.04 mg/L	92.2	70.0	130	----
		iron, total	7439-89-6	E420	3.77 mg/L	4 mg/L	94.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0430 mg/L	0.04 mg/L	108	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 221819) - continued</b>										
CG2101969-001	Anonymous	potassium, total	7440-09-7	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0852 mg/L	0.08 mg/L	106	70.0	130	----
		silicon, total	7440-21-3	E420	17.8 mg/L	20 mg/L	89.0	70.0	130	----
		silver, total	7440-22-4	E420	0.00798 mg/L	0.008 mg/L	99.7	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00757 mg/L	0.008 mg/L	94.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		titanium, total	7440-32-6	E420	0.0802 mg/L	0.08 mg/L	100	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.201 mg/L	0.2 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.738 mg/L	0.8 mg/L	92.3	70.0	130	----
<b>Total Metals (QCLot: 221820)</b>										
CG2101969-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
<b>Total Metals (QCLot: 224836)</b>										
CG2101972-002	WG_Q2-2021_005	mercury, total	7439-97-6	E508	0.0000988 mg/L	0.0001 mg/L	98.8	70.0	130	----
<b>Dissolved Metals (QCLot: 221445)</b>										
CG2101957-008	Anonymous	aluminum, dissolved	7429-90-5	E421	1.98 mg/L	2 mg/L	99.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.214 mg/L	0.2 mg/L	107	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.204 mg/L	0.2 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.204 mg/L	0.2 mg/L	102	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.423 mg/L	0.4 mg/L	106	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		boron, dissolved	7440-42-8	E421	1.16 mg/L	1 mg/L	116	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0418 mg/L	0.04 mg/L	105	70.0	130	----
		calcium, dissolved	7440-70-2	E421	38.9 mg/L	40 mg/L	97.2	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.207 mg/L	0.2 mg/L	104	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		iron, dissolved	7439-89-6	E421	20.5 mg/L	20 mg/L	102	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.213 mg/L	0.2 mg/L	106	70.0	130	----
		lithium, dissolved	7439-93-2	E421	1.11 mg/L	1 mg/L	111	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	8.97 mg/L	10 mg/L	89.7	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.215 mg/L	0.2 mg/L	107	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.200 mg/L	0.2 mg/L	100	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.415 mg/L	0.4 mg/L	104	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 221445) - continued</b>										
CG2101957-008	Anonymous	potassium, dissolved	7440-09-7	E421	40.6 mg/L	40 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.426 mg/L	0.4 mg/L	106	70.0	130	----
		silicon, dissolved	7440-21-3	E421	97.7 mg/L	100 mg/L	97.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		sodium, dissolved	17341-25-2	E421	20.2 mg/L	20 mg/L	101	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.212 mg/L	0.2 mg/L	106	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	199 mg/L	200 mg/L	99.7	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0431 mg/L	0.04 mg/L	108	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.428 mg/L	0.4 mg/L	107	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	1.02 mg/L	1 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.99 mg/L	4 mg/L	99.8	70.0	130	----
<b>Dissolved Metals (QCLot: 221817)</b>										
CG2101963-028	Anonymous	aluminum, dissolved	7429-90-5	E421	0.397 mg/L	0.4 mg/L	99.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0373 mg/L	0.04 mg/L	93.3	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0774 mg/L	0.08 mg/L	96.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0177 mg/L	0.02 mg/L	88.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.197 mg/L	0.2 mg/L	98.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00732 mg/L	0.008 mg/L	91.5	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0346 mg/L	0.04 mg/L	86.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0356 mg/L	0.04 mg/L	89.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.70 mg/L	4 mg/L	92.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.171 mg/L	0.2 mg/L	85.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	6.89 mg/L	8 mg/L	86.1	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0810 mg/L	0.08 mg/L	101	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.1 mg/L	20 mg/L	90.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00763 mg/L	0.008 mg/L	95.4	70.0	130	----





Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 221817) - continued</b>										
CG2101963-028	Anonymous	sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00730 mg/L	0.008 mg/L	91.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0372 mg/L	0.04 mg/L	93.0	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0798 mg/L	0.08 mg/L	99.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.187 mg/L	0.2 mg/L	93.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	ND mg/L	0.8 mg/L	ND	70.0	130	----
<b>Dissolved Metals (QCLot: 221818)</b>										
CG2101963-028	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0769 mg/L	0.08 mg/L	96.2	70.0	130	----
<b>Dissolved Metals (QCLot: 224945)</b>										
CG2101969-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----

COC ID: **LC\_GW\_20210611**

TURNAROUND TIME:

RUSH:

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	*	*
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		*
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	*	*
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	*	*
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	tanva.dick@teck.com	*	*
	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930		
				Phone Number	403 407 1794						

Environmental Division  
Calgary  
Work Order Reference  
**CG2101972**



Telephone : +1 403 407 1800

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered : F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED												
								PH	Y	N	N	Y	N	Y	N	N				
								ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA					
LC_PIZP1105_WG_Q2-2021_N	LC_PIZP1105	WG		11-Jun	12:00	G	9	1	2	1	1	1	1	1	1					
WG_Q2-2021_005	LC_PIZP1105	WG		11-Jun	12:00	G	7	1		1	1	1	1	1	1					
LC_PIZDC1306_WG_Q2-2021_NP	LC_PIZPDC1306	WG		11-Jun	10:55	G	6	1		1	1		1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
PLEASE FORK LIFT ALL SAMPLES TO ALS BURNARY FOR ANALYSIS	T. Dick/S.Fossen	11-Jun	<i>[Signature]</i>	6/12/2021

SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name	T. Dick/S.Fossen	Mobile #		
Sampler's Signature	<i>[Signature]</i>	Date/Time	June 11, 2021	<i>[Signature]</i>



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102198**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
 Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : GW ER4 AB  
**Sampler** : D.Tymstra/S.Fossen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 24-Jun-2021 15:30  
**Date Analysis Commenced** : 24-Jun-2021  
**Issue Date** : 28-Jun-2021 16:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erick Magalhaes	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maqsood Ul Hassan	Laboratory Analyst	Organics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID		LC_MW_ER4A_	LC_MW_ER4B_	---	---	---
(Matrix: Water)					WG_Q2-2021-N	WG_Q2-2021-N					
Client sampling date / time					23-Jun-2021 12:55	23-Jun-2021 13:45	---	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2102198-001	CG2102198-002	-----	-----	-----	-----	-----
					Result	Result	---	---	---	---	---
<b>Physical Tests</b>											
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	<2.0	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	178	184	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	178	184	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	466	434	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	244	228	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	308	466	---	---	---	---	---
pH	---	E108	0.10	pH units	8.06	8.01	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	311	291	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	1.6	<1.0	---	---	---	---	---
turbidity	---	E121	0.10	NTU	<0.10	0.29	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	218	225	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0329	<0.0050	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.90	1.15	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.166	0.210	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.059	0.120	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0053	1.78	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	84.1	54.8	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	1.57 <small>DTC,RRV</small>	0.79	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	0.70 <small>DTC,RRV</small>	<0.50	---	---	---	---	---
<b>Ion Balance</b>											



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_ER4A_ WG_Q2-2021-N	LC_MW_ER4B_ WG_Q2-2021-N	---	---	---
Client sampling date / time					23-Jun-2021 12:55	23-Jun-2021 13:45	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2102198-001	CG2102198-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	5.37	4.99	---	---	---	
cation sum	---	EC101	0.10	meq/L	5.01	4.64	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	93.3	93.0	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	3.47	3.63	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0057	<0.0030	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	0.00012	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0489	0.0689	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	0.0151	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	68.5	63.3	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00015	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	0.163	<0.010	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0057	0.0080	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	18.3	18.3	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0504	<0.00010	---	---	---	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00347	0.00134	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	0.553	0.448	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	8.25	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	2.41	2.18	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	2.57	1.89	---	---	---	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.297	0.214	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_ER4A_ WG_Q2-2021-N	LC_MW_ER4B_ WG_Q2-2021-N	----	----	----
Client sampling date / time					23-Jun-2021 12:55	23-Jun-2021 13:45	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102198-001	CG2102198-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	29.0	18.9	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000249	0.000968	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0016	<0.0010	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0486	0.0672	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0132	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	67.5	61.0	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.140	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0054	0.0075	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.3	18.3	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0486	<0.00010	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00334	0.00126	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.515	0.411	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	9.35	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.28	2.08	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_ER4A_ WG_Q2-2021-N	LC_MW_ER4B_ WG_Q2-2021-N	----	----	----
Client sampling date / time					23-Jun-2021 12:55	23-Jun-2021 13:45	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102198-001 Result	CG2102198-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.69	1.89	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.287	0.203	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	28.6	18.4	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000237	0.000902	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	<0.25	----	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	<0.40	----	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	<0.25	----	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	<0.25	----	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	71.0	68.0	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102198</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 24-Jun-2021 15:30
PO	: VPO00739930	Issue Date	: 28-Jun-2021 16:26
C-O-C number	: GW ER4 AB		
Sampler	: D.Tymstra/S.Fossen		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q2-2021-N	E298	23-Jun-2021	26-Jun-2021	----	3 days	✓	26-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q2-2021-N	E298	23-Jun-2021	26-Jun-2021	----	3 days	✓	26-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q2-2021-N	E235.Br-L	23-Jun-2021	----	----	----		24-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q2-2021-N	E235.Br-L	23-Jun-2021	----	----	----		24-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q2-2021-N	E235.Cl-L	23-Jun-2021	----	----	----		24-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q2-2021-N	E235.Cl-L	23-Jun-2021	----	----	----		24-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q2-2021-N	E378-U	23-Jun-2021	----	----	----		24-Jun-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_MW_ER4B_WG_Q2-2021-N	E378-U	23-Jun-2021	----	----	----		24-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_MW_ER4A_WG_Q2-2021-N	E235.F	23-Jun-2021	----	----	----		24-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_MW_ER4B_WG_Q2-2021-N	E235.F	23-Jun-2021	----	----	----		24-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_MW_ER4A_WG_Q2-2021-N	E235.NO3-L	23-Jun-2021	----	----	----		24-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_MW_ER4B_WG_Q2-2021-N	E235.NO3-L	23-Jun-2021	----	----	----		24-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_MW_ER4A_WG_Q2-2021-N	E235.NO2-L	23-Jun-2021	----	----	----		24-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_MW_ER4B_WG_Q2-2021-N	E235.NO2-L	23-Jun-2021	----	----	----		24-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_MW_ER4A_WG_Q2-2021-N	E235.SO4	23-Jun-2021	----	----	----		24-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_MW_ER4B_WG_Q2-2021-N	E235.SO4	23-Jun-2021	----	----	----		24-Jun-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q2-2021-N	E318	23-Jun-2021	25-Jun-2021	----	2 days	✔	25-Jun-2021	28 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q2-2021-N	E318	23-Jun-2021	25-Jun-2021	----	2 days	✔	25-Jun-2021	28 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q2-2021-N	E372-U	23-Jun-2021	25-Jun-2021	----	2 days	✔	25-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q2-2021-N	E372-U	23-Jun-2021	25-Jun-2021	----	2 days	✔	25-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4A_WG_Q2-2021-N	E421.Cr-L	23-Jun-2021	26-Jun-2021	----	3 days	✔	28-Jun-2021	180 days	2 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4B_WG_Q2-2021-N	E421.Cr-L	23-Jun-2021	26-Jun-2021	----	3 days	✔	28-Jun-2021	180 days	2 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_ER4A_WG_Q2-2021-N	E509	23-Jun-2021	26-Jun-2021	----	3 days	✔	26-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_ER4B_WG_Q2-2021-N	E509	23-Jun-2021	26-Jun-2021	----	3 days	✔	26-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4A_WG_Q2-2021-N	E421	23-Jun-2021	26-Jun-2021	----	3 days	✔	28-Jun-2021	180 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4B_WG_Q2-2021-N	E421	23-Jun-2021	26-Jun-2021	----	3 days	✓	28-Jun-2021	180 days	2 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_MW_ER4A_WG_Q2-2021-N	E601A	23-Jun-2021	26-Jun-2021	14 days	4 days	✓	27-Jun-2021	40 days	1 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_MW_ER4B_WG_Q2-2021-N	E601A	23-Jun-2021	26-Jun-2021	14 days	4 days	✓	27-Jun-2021	40 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_ER4A_WG_Q2-2021-N	E358-L	23-Jun-2021	26-Jun-2021	----	4 days	✓	26-Jun-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_ER4B_WG_Q2-2021-N	E358-L	23-Jun-2021	26-Jun-2021	----	4 days	✓	26-Jun-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q2-2021-N	E355-L	23-Jun-2021	26-Jun-2021	----	4 days	✓	26-Jun-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q2-2021-N	E355-L	23-Jun-2021	26-Jun-2021	----	4 days	✓	26-Jun-2021	28 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q2-2021-N	E283	23-Jun-2021	----	----	----		24-Jun-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q2-2021-N	E283	23-Jun-2021	----	----	----		24-Jun-2021	14 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_MW_ER4A_WG_Q2-2021-N	E290	23-Jun-2021	----	----	----		26-Jun-2021	14 days	4 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_MW_ER4B_WG_Q2-2021-N	E290	23-Jun-2021	----	----	----		26-Jun-2021	14 days	4 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_MW_ER4A_WG_Q2-2021-N	E100	23-Jun-2021	----	----	----		26-Jun-2021	28 days	4 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_MW_ER4B_WG_Q2-2021-N	E100	23-Jun-2021	----	----	----		26-Jun-2021	28 days	4 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_MW_ER4B_WG_Q2-2021-N	E125	23-Jun-2021	----	----	----		26-Jun-2021	0.34 hrs	70 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_MW_ER4A_WG_Q2-2021-N	E125	23-Jun-2021	----	----	----		26-Jun-2021	0.34 hrs	71 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_MW_ER4B_WG_Q2-2021-N	E108	23-Jun-2021	----	----	----		26-Jun-2021	0.25 hrs	75 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_MW_ER4A_WG_Q2-2021-N	E108	23-Jun-2021	----	----	----		26-Jun-2021	0.25 hrs	76 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_MW_ER4A_WG_Q2-2021-N	E162	23-Jun-2021	----	----	----		25-Jun-2021	7 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q2-2021-N	E162	23-Jun-2021	----	----	----		25-Jun-2021	7 days	2 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_MW_ER4A_WG_Q2-2021-N	E160-L	23-Jun-2021	----	----	----		25-Jun-2021	7 days	2 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_MW_ER4B_WG_Q2-2021-N	E160-L	23-Jun-2021	----	----	----		25-Jun-2021	7 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q2-2021-N	E121	23-Jun-2021	----	----	----		25-Jun-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q2-2021-N	E121	23-Jun-2021	----	----	----		25-Jun-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_MW_ER4A_WG_Q2-2021-N	E420.Cr-L	23-Jun-2021	----	----	----		28-Jun-2021	180 days	5 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_MW_ER4B_WG_Q2-2021-N	E420.Cr-L	23-Jun-2021	----	----	----		28-Jun-2021	180 days	5 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_MW_ER4A_WG_Q2-2021-N	E508	23-Jun-2021	----	----	----		26-Jun-2021	28 days	3 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_MW_ER4B_WG_Q2-2021-N	E508	23-Jun-2021	----	----	----		26-Jun-2021	28 days	3 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_MW_ER4A_WG_Q2-2021-N	E420	23-Jun-2021	----	----	----		28-Jun-2021	180 days	5 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_MW_ER4B_WG_Q2-2021-N	E420	23-Jun-2021	----	----	----		28-Jun-2021	180 days	5 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	229527	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	231170	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	230824	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	229430	1	2	50.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	229431	1	2	50.0	5.0	✓
Conductivity in Water	E100	231171	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	230732	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	230673	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	230731	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	231146	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	230129	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	229428	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	229432	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	229433	1	2	50.0	5.0	✓
ORP by Electrode	E125	230246	1	5	20.0	5.0	✓
pH by Meter	E108	231169	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	229429	1	2	50.0	5.0	✓
TDS by Gravimetry	E162	229810	1	4	25.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	230635	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	229400	1	12	8.3	5.0	✓
Total Mercury in Water by CVAAS	E508	230662	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	230636	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	231147	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	229540	1	2	50.0	5.0	✓
Turbidity by Nephelometry	E121	229925	1	9	11.1	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	229527	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	231170	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	230824	1	19	5.2	5.0	✓
BC PHC - EPH by GC-FID	E601A	231050	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	229430	1	2	50.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	229431	1	2	50.0	5.0	✓
Conductivity in Water	E100	231171	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	230732	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	230673	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	230731	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	231146	1	17	5.8	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	230129	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	229428	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	229432	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	229433	1	2	50.0	5.0	✓
ORP by Electrode	E125	230246	1	5	20.0	5.0	✓
pH by Meter	E108	231169	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	229429	1	2	50.0	5.0	✓
TDS by Gravimetry	E162	229810	1	4	25.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	230635	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	229400	1	12	8.3	5.0	✓
Total Mercury in Water by CVAAS	E508	230662	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	230636	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	231147	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	229540	1	2	50.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	229808	1	11	9.0	5.0	✓
Turbidity by Nephelometry	E121	229925	1	9	11.1	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	229527	1	6	16.6	5.0	✓
Alkalinity Species by Titration	E290	231170	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	230824	1	19	5.2	5.0	✓
BC PHC - EPH by GC-FID	E601A	231050	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	229430	1	2	50.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	229431	1	2	50.0	5.0	✓
Conductivity in Water	E100	231171	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	230732	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	230673	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	230731	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	231146	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	230129	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	229428	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	229432	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	229433	1	2	50.0	5.0	✓
Sulfate in Water by IC	E235.SO4	229429	1	2	50.0	5.0	✓
TDS by Gravimetry	E162	229810	1	4	25.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	230635	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	229400	1	12	8.3	5.0	✓
Total Mercury in Water by CVAAS	E508	230662	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	230636	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	231147	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	229540	1	2	50.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	229808	1	11	9.0	5.0	✓



Matrix: **Water**

Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
Method Blanks (MB) - Continued							
Turbidity by Nephelometry	E121	229925	1	9	11.1	5.0	✔
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	230824	1	19	5.2	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	229430	0	2	0.0	5.0	✘
Chloride in Water by IC (Low Level)	E235.Cl-L	229431	0	2	0.0	5.0	✘
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	230732	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	230673	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	230731	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	231146	1	17	5.8	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	230129	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	229428	0	2	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	229432	0	2	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	229433	0	2	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	229429	0	2	0.0	5.0	✘
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	230635	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	229400	1	12	8.3	5.0	✔
Total Mercury in Water by CVAAS	E508	230662	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	230636	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	231147	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	229540	1	2	50.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
PHCs and PAHs Hexane Extraction	EP601  Calgary - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102198**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : GW ER4 AB  
**Sampler** : D.Tymstra/S.Fossen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 24-Jun-2021 15:30  
**Date Analysis Commenced** : 24-Jun-2021  
**Issue Date** : 28-Jun-2021 16:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erick Magalhaes	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
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Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta



Page : 2 of 17  
Work Order : CG2102198  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 229527)</b>											
CG2102170-012	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 229810)</b>											
CG2102171-014	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	395	388	1.66%	20%	----
<b>Physical Tests (QC Lot: 229925)</b>											
CG2102193-001	Anonymous	turbidity	----	E121	0.10	NTU	91.3	92.7	1.52%	15%	----
<b>Physical Tests (QC Lot: 230246)</b>											
CG2102171-014	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	343	342	0.322%	15%	----
<b>Physical Tests (QC Lot: 231169)</b>											
CG2102196-001	Anonymous	pH	----	E108	0.10	pH units	7.69	7.70	0.130%	4%	----
<b>Physical Tests (QC Lot: 231170)</b>											
CG2102196-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	417	420	0.884%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	417	420	0.884%	20%	----
<b>Physical Tests (QC Lot: 231171)</b>											
CG2102196-001	Anonymous	conductivity	----	E100	2.0	µS/cm	716	701	2.12%	10%	----
<b>Anions and Nutrients (QC Lot: 229400)</b>											
CG2102194-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.444	0.441	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 229428)</b>											
CG2102198-001	LC_MW_ER4A_WG_Q2-2 021-N	fluoride	16984-48-8	E235.F	0.020	mg/L	0.166	0.163	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 229429)</b>											
CG2102198-001	LC_MW_ER4A_WG_Q2-2 021-N	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	84.1	84.2	0.0312%	20%	----
<b>Anions and Nutrients (QC Lot: 229430)</b>											
CG2102198-001	LC_MW_ER4A_WG_Q2-2 021-N	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 229431)</b>											
CG2102198-001	LC_MW_ER4A_WG_Q2-2 021-N	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.90	1.85	2.52%	20%	----
<b>Anions and Nutrients (QC Lot: 229432)</b>											
CG2102198-001	LC_MW_ER4A_WG_Q2-2 021-N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0053	<0.0050	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 229433)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 229433) - continued</b>											
CG2102198-001	LC_MW_ER4A_WG_Q2-2 021-N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 229540)</b>											
CG2102198-001	LC_MW_ER4A_WG_Q2-2 021-N	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0035	0.0015	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 230129)</b>											
CG2102202-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0015	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 230824)</b>											
CG2102171-014	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0183	0.0134	0.0049	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 231146)</b>											
CG2102194-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.14	1.16	0.02	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 231147)</b>											
CG2102194-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.11	1.31	0.20	Diff <2x LOR	----
<b>Total Metals (QC Lot: 230635)</b>											
CG2102153-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00026	0.00038	0.00011	Diff <2x LOR	----
<b>Total Metals (QC Lot: 230636)</b>											
CG2102153-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.206	0.245	17.3%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00039	0.00040	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0325	0.0334	2.92%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0058 µg/L	0.0000058	0.000000002	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	30.0	29.4	2.14%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.14 µg/L	0.00013	0.0000010	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00050	0.00054	0.00004	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.209	0.217	3.82%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000230	0.000229	0.000002	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0018	0.0018	0.00001	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	8.04	8.29	3.01%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00750	0.00768	2.49%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000577	0.000520	10.3%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.487	0.529	8.32%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	0.791 µg/L	0.000781	1.28%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 230636) - continued</b>											
CG2102153-001	Anonymous	silicon, total	7440-21-3	E420	0.10	mg/L	2.47	2.71	9.46%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	1.79	1.95	8.36%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.109	0.109	0.238%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	5.74	5.99	4.27%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00510	mg/L	<0.00510	<0.00510	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000643	0.000623	3.15%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00060	0.00064	0.00005	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 230662)</b>											
CG2102198-001	LC_MW_ER4A_WG_Q2-2 021-N	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 230673)</b>											
CG2102135-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 230731)</b>											
CG2102171-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0298	0.0248	18.3%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00118	0.00119	0.00001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.00852	0.00825	3.27%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	0.103 µg/L	0.000095	0.000008	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.132	0.134	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.491 µg/L	0.000472	3.88%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	362	359	0.848%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	65.4 µg/L	0.0649	0.823%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	0.645	0.634	1.70%	20%	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.114	0.112	1.76%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	169	165	2.52%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.444	0.442	0.597%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00334	0.00334	0.0137%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.288	0.285	0.812%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	7.11	6.86	3.70%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 230731) - continued</b>											
CG2102171-001	Anonymous	selenium, dissolved	7782-49-2	E421	0.100	mg/L	2.60 µg/L	0.00291	11.3%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.60	2.68	2.92%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	83.0	80.6	2.99%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	1.41	1.38	1.62%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	454	479	5.44%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000101	0.000093	0.00007	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	0.00045	<0.00020	0.00025	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0137	0.0131	4.31%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0815	0.0802	1.53%	20%	----
<b>Dissolved Metals (QC Lot: 230732)</b>											
CG2102171-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 229527)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 229808)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 229810)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 229925)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 231170)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 231171)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 229400)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 229428)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 229429)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 229430)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 229431)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 229432)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 229433)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 229540)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 230129)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 230824)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 230824) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 231146)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 231147)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 230635)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 230636)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 230636) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 230662)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 230673)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 230731)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----





Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 230731) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 230732)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Hydrocarbons (QCLot: 231050)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 229527)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 229808)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 229810)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 229925)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	---
<b>Physical Tests (QCLot: 230246)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Physical Tests (QCLot: 231169)</b>									
pH	---	E108	---	pH units	7 pH units	99.8	98.6	101	---
<b>Physical Tests (QCLot: 231170)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 231171)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 229400)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	90.5	75.0	125	---
<b>Anions and Nutrients (QCLot: 229428)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 229429)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 229430)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 229431)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 229432)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 229433)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 229540)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 230129)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 230129) - continued</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 230824)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 231146)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	88.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 231147)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	86.2	80.0	120	----
<b>Total Metals (QCLot: 230635)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 230636)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	96.2	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	96.9	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.0	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.2	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.4	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.4	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	95.4	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.5	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	96.5	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	95.4	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	104	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.6	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	96.9	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	100	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 230636) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	95.9	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.4	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	105	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	94.6	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 230662)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	93.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.0	80.0	120	----
<b>Dissolved Metals (QCLot: 230731)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.2	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	100	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.3	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	107	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.5	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 230731) - continued</b>									
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 230732)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
<b>Hydrocarbons (QCLot: 231050)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	79.0	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	89.2	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	76.8	70.0	130	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 229400)</b>										
CG2102196-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.32 mg/L	2.5 mg/L	92.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 229540)</b>										
CG2102198-002	LC_MW_ER4B_WG_Q2-20 21-N	phosphorus, total	7723-14-0	E372-U	0.0559 mg/L	0.0676 mg/L	82.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 230129)</b>										
CG2102202-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0506 mg/L	0.05 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 230824)</b>										
CG2102196-009	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.107 mg/L	0.1 mg/L	107	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 231146)</b>										
CG2102194-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.5 mg/L	23.9 mg/L	98.3	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 231147)</b>										
CG2102194-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.9 mg/L	23.9 mg/L	100.0	70.0	130	----
<b>Total Metals (QCLot: 230635)</b>										
CG2102153-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
<b>Total Metals (QCLot: 230636)</b>										
CG2102153-001	Anonymous	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00989 mg/L	0.01 mg/L	98.9	70.0	130	----
		boron, total	7440-42-8	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		iron, total	7439-89-6	E420	2.00 mg/L	2 mg/L	100	70.0	130	----
		lead, total	7439-92-1	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0978 mg/L	0.1 mg/L	97.8	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 230636) - continued</b>										
CG2102153-001	Anonymous	manganese, total	7439-96-5	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		nickel, total	7440-02-0	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		potassium, total	7440-09-7	E420	3.99 mg/L	4 mg/L	99.8	70.0	130	----
		selenium, total	7782-49-2	E420	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
		silicon, total	7440-21-3	E420	9.19 mg/L	10 mg/L	91.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		sodium, total	17341-25-2	E420	2.04 mg/L	2 mg/L	102	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	20.4 mg/L	20 mg/L	102	70.0	130	----
		thallium, total	7440-28-0	E420	0.00392 mg/L	0.004 mg/L	98.1	70.0	130	----
		tin, total	7440-31-5	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0436 mg/L	0.04 mg/L	109	70.0	130	----
		uranium, total	7440-61-1	E420	0.00400 mg/L	0.004 mg/L	99.9	70.0	130	----
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.390 mg/L	0.4 mg/L	97.4	70.0	130	----
<b>Total Metals (QCLot: 230662)</b>										
CG2102198-002	LC_MW_ER4B_WG_Q2-20 21-N	mercury, total	7439-97-6	E508	0.0000992 mg/L	0.0001 mg/L	99.2	70.0	130	----
<b>Dissolved Metals (QCLot: 230673)</b>										
CG2102135-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000993 mg/L	0.0001 mg/L	99.3	70.0	130	----
<b>Dissolved Metals (QCLot: 230731)</b>										
CG2102171-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.398 mg/L	0.4 mg/L	99.4	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0432 mg/L	0.04 mg/L	108	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0380 mg/L	0.04 mg/L	95.0	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0745 mg/L	0.08 mg/L	93.1	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0178 mg/L	0.02 mg/L	89.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.212 mg/L	0.2 mg/L	106	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00785 mg/L	0.008 mg/L	98.1	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0368 mg/L	0.04 mg/L	92.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.88 mg/L	4 mg/L	96.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0375 mg/L	0.04 mg/L	93.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.190 mg/L	0.2 mg/L	95.1	70.0	130	----



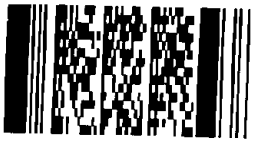
Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 230731) - continued</b>										
CG2102171-001	Anonymous	magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	7.81 mg/L	8 mg/L	97.6	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0992 mg/L	0.08 mg/L	124	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.6 mg/L	20 mg/L	92.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00746 mg/L	0.008 mg/L	93.3	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00717 mg/L	0.008 mg/L	89.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0376 mg/L	0.04 mg/L	94.0	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0804 mg/L	0.08 mg/L	100	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.208 mg/L	0.2 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.756 mg/L	0.8 mg/L	94.4	70.0	130	----
<b>Dissolved Metals (QCLot: 230732)</b>										
CG2102171-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0792 mg/L	0.08 mg/L	99.0	70.0	130	----



COC ID:	GW ER4 AB			TURNAROUND TIME:	Priority	RUSH: 2-3 day	
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>	
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary		Report Format / Distribution
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets		Excel PDF EDD
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 1: tom.jeffery@teck.com x x
Address	Box 2003			Address	2559 29 Street NE		Email 2: teckcoal@equisonline.com x
	15km North Hwy 43						Email 3: drake.tymstra@teck.com x x
City	Sparwood	Province	BC	City	Calgary	Province	AB
	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada
				Phone Number	403 407 1794		Email 4: Shanise.fossen@teck.com x x
							PO number VPO00739930

Environmental Division  
Calgary  
Work Order Reference  
**CG2102198**



Telephone : + 1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PH	Y	N	Y	Y	N	N	N	N	N
								PRESERV	H2SO4	NAHSO4	H2SO4	HCL	HCL	HNO3	HNO3	NONE	
								ANALYSIS	ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	
LC_MW_ER4A_WG_Q2-2021_N	LC_MW_ER4A	WG		23-Jun	12:55	G	9		1	2	1	1	1	1	1	1	
LC_MW_ER4B_WG_Q2-2021_N	LC_MW_ER4B	WG		23-Jun	13:45	G	9		1	2	1	1	1	1	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S.Fossen	23-Jun		
				6/24 3:30h

<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default)	Sampler's Name	D.Tymstra/S.Fossen	Mobile #	
Priority (2-3 business days) - 50% surcharge X	Sampler's Signature		Date/Time	June 23, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

60

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2102220**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : GW 1404S\_D  
**Sampler** : D.Tymstra/S.Fossen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 25-Jun-2021 14:45  
**Date Analysis Commenced** : 25-Jun-2021  
**Issue Date** : 29-Jun-2021 15:14

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1404 D_WG_Q2-2021 _NP	LC_PIZDC1404 S_WG_Q2-2021 _NP	---	---	---
Client sampling date / time					24-Jun-2021 13:50	24-Jun-2021 12:45	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2102220-001 Result	CG2102220-002 Result	----- ---	----- ---	----- ---	
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	<2.0	---	---	---	
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	407	203	---	---	---	
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	407	203	---	---	---	
conductivity	---	E100	2.0	µS/cm	687	352	---	---	---	
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	293	197	---	---	---	
oxidation-reduction potential [ORP]	---	E125	0.10	mV	364	217	---	---	---	
pH	---	E108	0.10	pH units	8.23	8.04	---	---	---	
solids, total dissolved [TDS]	---	E162	10	mg/L	350	204 <sup>HTD</sup>	---	---	---	
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	7.4	2.0	---	---	---	
turbidity	---	E121	0.10	NTU	16.2	6.46	---	---	---	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	497	248	---	---	---	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	2.79	0.0063	---	---	---	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	---	---	---	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.59	0.20	---	---	---	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.192	0.143	---	---	---	
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	2.69	<0.050	---	---	---	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.0107	---	---	---	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0114	0.0076	---	---	---	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	4.75	---	---	---	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	3.33	3.33	---	---	---	
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	3.35	2.40	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1404 D_WG_Q2-2021 _NP	LC_PIZDC1404 S_WG_Q2-2021 _NP	---	---	---
Client sampling date / time					24-Jun-2021 13:50	24-Jun-2021 12:45	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2102220-001 Result	CG2102220-002 Result	----- ---	----- ---	----- ---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	8.16	4.17	---	---	---	
cation sum	----	EC101	0.10	meq/L	8.23	4.05	---	---	---	
ion balance (cations/anions ratio)	----	EC101	0.010	%	101	97.1	---	---	---	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.427	1.46	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0052	0.0072	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00016	<0.00010	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00178	0.00209	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	4.19	0.237	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	0.025	<0.010	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0200 <sup>DLM</sup>	<0.0100 <sup>DLM</sup>	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	60.8	49.3	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	1.06	0.32	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	2.25	0.996	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.547	0.0050	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	35.0	17.9	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0310	0.0283	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0203	0.00329	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00070	0.00130	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	26.1	1.48	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	<0.050	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	2.89	3.39	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	32.4	0.877	---	---	---	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.234	0.0464	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1404 D_WG_Q2-2021 _NP	LC_PIZDC1404 S_WG_Q2-2021 _NP	---	---	---
Client sampling date / time					24-Jun-2021 13:50	24-Jun-2021 12:45	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2102220-001 Result	CG2102220-002 Result	-----	-----	-----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	1.83	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000116	0.000511	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0042	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0015	0.0017	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00012	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00199	0.00210	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	4.09	0.234	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.026	<0.010	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	57.2	48.7	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	1.06	0.31	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00047	<0.00020	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	1.99	0.883	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.585	0.0054	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	36.4	18.4	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0323	0.0281	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0204	0.00333	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00064	0.00129	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	25.6	1.50	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1404 D_WG_Q2-2021 _NP	LC_PIZDC1404 S_WG_Q2-2021 _NP	---	---	---
Client sampling date / time					24-Jun-2021 13:50	24-Jun-2021 12:45	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2102220-001 Result	CG2102220-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.82	3.47	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	33.4	0.840	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.229	0.0459	---	---	---	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	1.73	---	---	---	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000123	0.000519	---	---	---	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0028	<0.0010	---	---	---	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	---	---	---	
dissolved metals filtration location	----	EP421	-	-	Field	Field	---	---	---	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102220</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 25-Jun-2021 14:45
PO	: VPO00739930	Issue Date	: 29-Jun-2021 15:14
C-O-C number	: GW 1404S_D		
Sampler	: D.Tymstra/S.Fossen		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404D_WG_Q2-2021_NP	E298	24-Jun-2021	27-Jun-2021	----	3 days	✓	27-Jun-2021	28 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404S_WG_Q2-2021_NP	E298	24-Jun-2021	27-Jun-2021	----	3 days	✓	27-Jun-2021	28 days	0 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1404D_WG_Q2-2021_NP	E235.Br-L	24-Jun-2021	----	----	----		26-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1404S_WG_Q2-2021_NP	E235.Br-L	24-Jun-2021	----	----	----		26-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1404D_WG_Q2-2021_NP	E235.Cl-L	24-Jun-2021	----	----	----		26-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1404S_WG_Q2-2021_NP	E235.Cl-L	24-Jun-2021	----	----	----		26-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_PIZDC1404D_WG_Q2-2021_NP	E378-U	24-Jun-2021	----	----	----		25-Jun-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_PIZDC1404S_WG_Q2-2021_NP	E378-U	24-Jun-2021	----	----	----		25-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZDC1404D_WG_Q2-2021_NP	E235.F	24-Jun-2021	----	----	----		26-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZDC1404S_WG_Q2-2021_NP	E235.F	24-Jun-2021	----	----	----		26-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_PIZDC1404D_WG_Q2-2021_NP	E235.NO3-L	24-Jun-2021	----	----	----		26-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_PIZDC1404S_WG_Q2-2021_NP	E235.NO3-L	24-Jun-2021	----	----	----		26-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_PIZDC1404D_WG_Q2-2021_NP	E235.NO2-L	24-Jun-2021	----	----	----		26-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_PIZDC1404S_WG_Q2-2021_NP	E235.NO2-L	24-Jun-2021	----	----	----		26-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_PIZDC1404D_WG_Q2-2021_NP	E235.SO4	24-Jun-2021	----	----	----		26-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_PIZDC1404S_WG_Q2-2021_NP	E235.SO4	24-Jun-2021	----	----	----		26-Jun-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404D_WG_Q2-2021_NP	E318	24-Jun-2021	28-Jun-2021	----	4 days	✓	28-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404S_WG_Q2-2021_NP	E318	24-Jun-2021	28-Jun-2021	----	4 days	✓	28-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404D_WG_Q2-2021_NP	E372-U	24-Jun-2021	26-Jun-2021	----	2 days	✓	26-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404S_WG_Q2-2021_NP	E372-U	24-Jun-2021	26-Jun-2021	----	2 days	✓	26-Jun-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1404D_WG_Q2-2021_NP	E421.Cr-L	24-Jun-2021	27-Jun-2021	----	4 days	✓	28-Jun-2021	180 days	2 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1404S_WG_Q2-2021_NP	E421.Cr-L	24-Jun-2021	27-Jun-2021	----	4 days	✓	28-Jun-2021	180 days	2 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1404D_WG_Q2-2021_NP	E509	24-Jun-2021	28-Jun-2021	----	5 days	✓	28-Jun-2021	28 days	0 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1404S_WG_Q2-2021_NP	E509	24-Jun-2021	28-Jun-2021	----	5 days	✓	28-Jun-2021	28 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1404D_WG_Q2-2021_NP	E421	24-Jun-2021	27-Jun-2021	----	4 days	✓	28-Jun-2021	180 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1404S_WG_Q2-2021_NP	E421	24-Jun-2021	27-Jun-2021	----	4 days	✓	28-Jun-2021	180 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1404D_WG_Q2-2021_NP	E358-L	24-Jun-2021	27-Jun-2021	----	3 days	✓	27-Jun-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1404S_WG_Q2-2021_NP	E358-L	24-Jun-2021	27-Jun-2021	----	3 days	✓	27-Jun-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404D_WG_Q2-2021_NP	E355-L	24-Jun-2021	27-Jun-2021	----	3 days	✓	27-Jun-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404S_WG_Q2-2021_NP	E355-L	24-Jun-2021	27-Jun-2021	----	3 days	✓	27-Jun-2021	28 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1404D_WG_Q2-2021_NP	E283	24-Jun-2021	----	----	----		28-Jun-2021	14 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1404S_WG_Q2-2021_NP	E283	24-Jun-2021	----	----	----		28-Jun-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1404D_WG_Q2-2021_NP	E290	24-Jun-2021	----	----	----		26-Jun-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1404S_WG_Q2-2021_NP	E290	24-Jun-2021	----	----	----		26-Jun-2021	14 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_PIZDC1404D_WG_Q2-2021_NP	E100	24-Jun-2021	----	----	----		26-Jun-2021	28 days	3 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_PIZDC1404S_WG_Q2-2021_NP	E100	24-Jun-2021	----	----	----		26-Jun-2021	28 days	3 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE LC_PIZDC1404D_WG_Q2-2021_NP	E125	24-Jun-2021	----	----	----		28-Jun-2021	0.34 hrs	93 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE LC_PIZDC1404S_WG_Q2-2021_NP	E125	24-Jun-2021	----	----	----		28-Jun-2021	0.34 hrs	95 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_PIZDC1404D_WG_Q2-2021_NP	E108	24-Jun-2021	----	----	----		26-Jun-2021	0.25 hrs	51 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_PIZDC1404S_WG_Q2-2021_NP	E108	24-Jun-2021	----	----	----		26-Jun-2021	0.25 hrs	52 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_PIZDC1404D_WG_Q2-2021_NP	E162	24-Jun-2021	----	----	----		27-Jun-2021	7 days	4 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_PIZDC1404S_WG_Q2-2021_NP	E162	24-Jun-2021	----	----	----		28-Jun-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] LC_PIZDC1404D_WG_Q2-2021_NP	E160-L	24-Jun-2021	----	----	----		27-Jun-2021	7 days	4 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_PIZDC1404S_WG_Q2-2021_NP	E160-L	24-Jun-2021	----	----	----		27-Jun-2021	7 days	4 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_PIZDC1404D_WG_Q2-2021_NP	E121	24-Jun-2021	----	----	----		26-Jun-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_PIZDC1404S_WG_Q2-2021_NP	E121	24-Jun-2021	----	----	----		26-Jun-2021	3 days	3 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1404D_WG_Q2-2021_NP	E420.Cr-L	24-Jun-2021	----	----	----		28-Jun-2021	180 days	5 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1404S_WG_Q2-2021_NP	E420.Cr-L	24-Jun-2021	----	----	----		28-Jun-2021	180 days	5 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1404D_WG_Q2-2021_NP	E420	24-Jun-2021	----	----	----		28-Jun-2021	180 days	5 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1404S_WG_Q2-2021_NP	E420	24-Jun-2021	----	----	----		28-Jun-2021	180 days	5 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	231869	1	8	12.5	5.0	✓
Alkalinity Species by Titration	E290	231174	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	231361	1	15	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	230755	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	230756	1	20	5.0	5.0	✓
Conductivity in Water	E100	231172	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	231428	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	231975	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	231429	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	231335	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	230472	1	4	25.0	5.0	✓
Fluoride in Water by IC	E235.F	230759	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	230757	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	230758	1	20	5.0	5.0	✓
ORP by Electrode	E125	230772	1	20	5.0	5.0	✓
pH by Meter	E108	231173	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	230754	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	231482	1	15	6.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	231300	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	231252	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	231301	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	231338	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	230747	1	4	25.0	5.0	✓
Turbidity by Nephelometry	E121	231060	1	16	6.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	231869	1	8	12.5	5.0	✓
Alkalinity Species by Titration	E290	231174	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	231361	1	15	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	230755	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	230756	1	20	5.0	5.0	✓
Conductivity in Water	E100	231172	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	231428	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	231975	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	231429	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	231335	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	230472	1	4	25.0	5.0	✓
Fluoride in Water by IC	E235.F	230759	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	230757	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	230758	1	20	5.0	5.0	✓
ORP by Electrode	E125	230772	1	20	5.0	5.0	✓
pH by Meter	E108	231173	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	230754	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	231482	1	15	6.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	231300	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	231252	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	231301	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	231338	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	230747	1	4	25.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	231483	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	231060	1	16	6.2	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	231869	1	8	12.5	5.0	✓
Alkalinity Species by Titration	E290	231174	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	231361	1	15	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	230755	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	230756	1	20	5.0	5.0	✓
Conductivity in Water	E100	231172	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	231428	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	231975	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	231429	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	231335	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	230472	1	4	25.0	5.0	✓
Fluoride in Water by IC	E235.F	230759	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	230757	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	230758	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	230754	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	231482	1	15	6.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	231300	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	231252	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	231301	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	231338	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	230747	1	4	25.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	231483	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	231060	1	16	6.2	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	231361	1	15	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	230755	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	230756	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	231428	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	231975	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	231429	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	231335	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	230472	1	4	25.0	5.0	✓
Fluoride in Water by IC	E235.F	230759	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	230757	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	230758	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	230754	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	231300	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	231252	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	231301	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	231338	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	230747	1	4	25.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102220**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : GW 1404S\_D  
**Sampler** : D.Tymstra/S.Fossen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 25-Jun-2021 14:45  
**Date Analysis Commenced** : 25-Jun-2021  
**Issue Date** : 29-Jun-2021 15:14

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2102220  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 230772)</b>											
CG2102116-015	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	332	323	2.72%	15%	----
<b>Physical Tests (QC Lot: 231060)</b>											
CG2102204-001	Anonymous	turbidity	----	E121	0.10	NTU	1.06	1.14	0.08	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 231172)</b>											
CG2102210-003	Anonymous	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 231173)</b>											
CG2102210-003	Anonymous	pH	----	E108	0.10	pH units	5.22	5.24	0.382%	4%	----
<b>Physical Tests (QC Lot: 231174)</b>											
CG2102210-003	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 231482)</b>											
CG2102204-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	294	300	1.68%	20%	----
<b>Physical Tests (QC Lot: 231869)</b>											
CG2102220-001	LC_PIZDC1404D_WG_Q2-2021_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 230472)</b>											
CG2102220-001	LC_PIZDC1404D_WG_Q2-2021_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 230747)</b>											
CG2102209-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.283	0.271	4.33%	20%	----
<b>Anions and Nutrients (QC Lot: 230754)</b>											
CG2102221-017	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 230755)</b>											
CG2102221-017	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 230756)</b>											
CG2102221-017	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 230757)</b>											
CG2102221-017	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 230758)</b>											
CG2102221-017	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 230759)</b>											
CG2102221-017	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 231252)</b>											
CG2102220-001	LC_PIZDC1404D_WG_Q2-2021_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	2.69	2.41	11.0%	20%	----
<b>Anions and Nutrients (QC Lot: 231361)</b>											
CG2102204-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0061	0.0052	0.0009	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 231335)</b>											
CG2102220-001	LC_PIZDC1404D_WG_Q2-2021_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.33	3.46	0.13	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 231338)</b>											
CG2102220-001	LC_PIZDC1404D_WG_Q2-2021_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.35	3.30	0.05	Diff <2x LOR	----
<b>Total Metals (QC Lot: 231300)</b>											
CG2102166-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00013	0.000008	Diff <2x LOR	----
<b>Total Metals (QC Lot: 231301)</b>											
CG2102166-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0177	0.0159	0.0019	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00016	0.00015	0.00002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00011	0.00011	0.000001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0338	0.0338	0.00000296	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0343 µg/L	0.0000319	0.0000024	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	60.7	57.8	4.89%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.15 µg/L	0.00016	0.00001	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.028	0.027	0.001	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0169	0.0168	0.336%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	22.9	21.6	6.01%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000976	0.000966	1.04%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00250	0.00251	0.000007	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.977	0.973	0.382%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	16.7 µg/L	0.0170	1.78%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.55	1.53	1.36%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 231301) - continued</b>											
CG2102166-001	Anonymous	sodium, total	17341-25-2	E420	0.050	mg/L	0.869	0.865	0.463%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0913	0.0895	1.93%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	28.6	29.5	2.93%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00123	0.00119	3.46%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 231428)</b>											
CG2102204-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 231429)</b>											
CG2102204-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0044	0.0045	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00045	0.00045	0.000002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00020	0.00024	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.188	0.181	4.07%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0884 µg/L	0.0000778	12.8%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	65.1	64.3	1.14%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00024	0.00022	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0172	0.0169	2.02%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	22.6	22.6	0.00651%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00216	0.00211	2.59%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00363	0.00366	0.714%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00344	0.00343	0.000002	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.61	1.61	0.123%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	27.9 µg/L	0.0287	2.98%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.27	2.19	3.41%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.24	3.27	0.897%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 231429) - continued</b>											
CG2102204-001	Anonymous	strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0951	0.0920	3.29%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	27.5	27.1	1.43%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000918	0.000970	5.54%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00092	0.00099	0.00007	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0029	0.0026	0.0003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 231975)</b>											
CG2102210-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 231060)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 231172)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 231174)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 231482)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 231483)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 231869)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 230472)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 230747)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 230754)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 230755)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 230756)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 230757)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 230758)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 230759)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 231252)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 231361)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 231361) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 231335)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 231338)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 231300)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 231301)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 231301) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 231428)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 231429)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 231429) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 231975)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 230772)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
<b>Physical Tests (QCLot: 231060)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	99.0	85.0	115	----
<b>Physical Tests (QCLot: 231172)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	104	90.0	110	----
<b>Physical Tests (QCLot: 231173)</b>									
pH	----	E108	----	pH units	7 pH units	99.8	98.6	101	----
<b>Physical Tests (QCLot: 231174)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	500 mg/L	96.2	85.0	115	----
<b>Physical Tests (QCLot: 231482)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.5	85.0	115	----
<b>Physical Tests (QCLot: 231483)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	110	85.0	115	----
<b>Physical Tests (QCLot: 231869)</b>									
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	50 mg/L	107	85.0	115	----
<b>Anions and Nutrients (QCLot: 230472)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	99.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 230747)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	96.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 230754)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 230755)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	96.8	85.0	115	----
<b>Anions and Nutrients (QCLot: 230756)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 230757)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 230758)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 230759)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 231252)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 231252) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	117	75.0	125	----
<b>Anions and Nutrients (QCLot: 231361)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 231335)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	109	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 231338)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Total Metals (QCLot: 231300)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
<b>Total Metals (QCLot: 231301)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	94.9	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.6	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	96.9	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	96.5	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.1	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	96.8	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	95.5	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	93.7	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	91.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.4	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	94.9	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	99.6	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.3	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	97.6	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	90.8	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 231301) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	95.5	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	94.0	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.2	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	91.2	80.0	120	----
<b>Dissolved Metals (QCLot: 231428)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 231429)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.2	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.9	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	102	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 231429) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.0	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.3	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	93.1	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 230472)</b>										
CG2102220-002	LC_PIZDC1404S_WG_Q2-2021_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0488 mg/L	0.05 mg/L	97.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 230747)</b>										
CG2102218-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0673 mg/L	0.0676 mg/L	99.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 230754)</b>										
CG2102221-017	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 230755)</b>										
CG2102221-017	Anonymous	bromide	24959-67-9	E235.Br-L	0.504 mg/L	0.5 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 230756)</b>										
CG2102221-017	Anonymous	chloride	16887-00-6	E235.Cl-L	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 230757)</b>										
CG2102221-017	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.67 mg/L	2.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 230758)</b>										
CG2102221-017	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.535 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 230759)</b>										
CG2102221-017	Anonymous	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 231252)</b>										
CG2102220-002	LC_PIZDC1404S_WG_Q2-2021_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.97 mg/L	2.5 mg/L	119	70.0	130	----
<b>Anions and Nutrients (QCLot: 231361)</b>										
CG2102210-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.110 mg/L	0.1 mg/L	110	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 231335)</b>										
CG2102220-001	LC_PIZDC1404D_WG_Q2-2021_NP	carbon, dissolved organic [DOC]	----	E358-L	24.4 mg/L	23.9 mg/L	102	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 231338)</b>										
CG2102220-001	LC_PIZDC1404D_WG_Q2-2021_NP	carbon, total organic [TOC]	----	E355-L	25.0 mg/L	23.9 mg/L	105	70.0	130	----
<b>Total Metals (QCLot: 231300)</b>										
CG2102166-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----
<b>Total Metals (QCLot: 231301)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 231301) - continued</b>										
CG2102166-001	Anonymous	aluminum, total	7429-90-5	E420	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, total	7440-36-0	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00911 mg/L	0.01 mg/L	91.1	70.0	130	----
		boron, total	7440-42-8	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00406 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		copper, total	7440-50-8	E420	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		iron, total	7439-89-6	E420	1.95 mg/L	2 mg/L	97.5	70.0	130	----
		lead, total	7439-92-1	E420	0.0177 mg/L	0.02 mg/L	88.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		nickel, total	7440-02-0	E420	0.0367 mg/L	0.04 mg/L	91.8	70.0	130	----
		potassium, total	7440-09-7	E420	3.99 mg/L	4 mg/L	99.8	70.0	130	----
		selenium, total	7782-49-2	E420	0.0426 mg/L	0.04 mg/L	107	70.0	130	----
		silicon, total	7440-21-3	E420	9.05 mg/L	10 mg/L	90.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00410 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, total	17341-25-2	E420	2.07 mg/L	2 mg/L	104	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00357 mg/L	0.004 mg/L	89.3	70.0	130	----
		tin, total	7440-31-5	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		uranium, total	7440-61-1	E420	0.00373 mg/L	0.004 mg/L	93.2	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0992 mg/L	0.1 mg/L	99.2	70.0	130	----
		zinc, total	7440-66-6	E420	0.370 mg/L	0.4 mg/L	92.6	70.0	130	----
<b>Dissolved Metals (QCLot: 231428)</b>										
CG2102204-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
<b>Dissolved Metals (QCLot: 231429)</b>										
CG2102204-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.188 mg/L	0.2 mg/L	94.1	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 231429) - continued</b>										
CG2102204-001	Anonymous	barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00882 mg/L	0.01 mg/L	88.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.096 mg/L	0.1 mg/L	95.9	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	96.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0177 mg/L	0.02 mg/L	88.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0988 mg/L	0.1 mg/L	98.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0367 mg/L	0.04 mg/L	91.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.05 mg/L	4 mg/L	101	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.75 mg/L	10 mg/L	87.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00403 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00358 mg/L	0.004 mg/L	89.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0376 mg/L	0.04 mg/L	94.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00379 mg/L	0.004 mg/L	94.7	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.364 mg/L	0.4 mg/L	90.9	70.0	130	----
<b>Dissolved Metals (QCLot: 231975)</b>										
CG2102210-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000848 mg/L	0.0001 mg/L	84.8	70.0	130	----

COC ID:	<b>GW 1404S_D</b>	TURNAROUND TIME:	Priority	RUSH: 2-3 day					
<b>PROJECT/CLIENT INFO</b>			<b>LABORATORY</b>		<b>OTHER INFO</b>				
Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager	Tom Jeffery	Lab Contact	Lyudmyla Shvets		Email 1:	tom.jeffery@teck.com	x	x	
Email	tom.jeffery@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	teckcoal@equisonline.com			x
Address	Box 2003	Address	2559 29 Street NE		Email 3:	drake.tymstra@teck.com	x	x	
	15km North Hwy 43				Email 4:	Shanise.fossen@teck.com	x	x	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	
	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930
Environmental Division				Phone Number		403 407 1794			
Calgary									

Environmental Division  
Calgary

Work Order Reference  
**CG2102220**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED								
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Y	N	Y	N	Y	N	N	N	N
								PRESERV	H2SO4	NAHSO4	H2SO4	HCL	HCL	HNO3	HNO3	NONE
								ANALYSIS	ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/IOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
LC_PIZDC1404D_WG_Q2-2021_NP	LC_PIZDC1404D	WG		24-Jun	13:50	G	6		1		1	1		1	1	1
LC_PIZDC1404S_WG_Q2-2021_NP	LC_PIZDC1404S	WG		24-Jun	12:45	G	6		1		1	1		1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S.Fossen	24-Jun		
<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default)	Sampler's Name	D.Tymstra/S.Fossen	Mobile #	
Priority (2-3 business days) - 50% surcharge X	Sampler's Signature		Date/Time	June 24, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2102275**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : LC\_WEK\_20210628  
**Sampler** : S. Fossen/D. Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 12  
**No. of samples analysed** : 12

**Page** : 1 of 16  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-Jun-2021 08:50  
**Date Analysis Commenced** : 29-Jun-2021  
**Issue Date** : 06-Jul-2021 08:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

Sample	Client Id	Comment
CG2102275-011	LC_NLX_6	Ultra HG bottles not received -011,012.
CG2102275-012	LC_BRX_2	Ultra HG bottles not received -011,012.

## Qualifiers

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.



RRV

*Reported result verified by repeat analysis.*

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## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					LC_CC1_WS_2 021-06-28_N	LC_HSP_WS_2 021-06-28_N	LC_LC1_WS_2 021-06-28_N	LC_LC12_WS_ 2021-06-28_N	LC_LC2_WS_2 021-06-28_N
Client sampling date / time					28-Jun-2021 15:23	28-Jun-2021 12:00	28-Jun-2021 11:00	28-Jun-2021 11:15	28-Jun-2021 11:30
Analyte	CAS Number	Method	LOR	Unit	CG2102275-001 Result	CG2102275-002 Result	CG2102275-003 Result	CG2102275-004 Result	CG2102275-005 Result
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	162	132	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	5.8	8.2	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	167	140	----	----	----
conductivity	----	E100	2.0	µS/cm	616	434	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	302	216	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	432	444	----	----	----
pH	----	E108	0.10	pH units	8.36	8.46	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	403	293	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	1.1	<1.0
turbidity	----	E121	0.10	NTU	0.15	1.40	0.20	0.84	<0.10
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	197	161	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	3.5	4.9	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0074	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.18	0.18	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.200	0.251	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	8.03	1.08	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0057	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0043	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	134	98.7	----	----	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.23	1.40 <small>DTC, RRV</small>	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.15	1.13 <small>DTC, RRV</small>	----	----	----
<b>Ion Balance</b>									



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_CC1_WS_2 021-06-28_N	LC_HSP_WS_2 021-06-28_N	LC_LC1_WS_2 021-06-28_N	LC_LC12_WS_ 2021-06-28_N	LC_LC2_WS_2 021-06-28_N
Client sampling date / time					28-Jun-2021 15:23	28-Jun-2021 12:00	28-Jun-2021 11:00	28-Jun-2021 11:15	28-Jun-2021 11:30	
Analyte	CAS Number	Method	LOR	Unit	CG2102275-001	CG2102275-002	CG2102275-003	CG2102275-004	CG2102275-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.83	4.95	----	----	----	
cation sum	----	EC101	0.10	meq/L	6.28	4.46	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	91.9	90.1	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.20	5.21	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0045	0.0231	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00030	0.00030	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00012	0.00014	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0301	0.0379	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.012	0.015	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.388	0.0579	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	66.8	49.4	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00015	0.00016	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	0.47	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	0.00056	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.019	0.042	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000164	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0324	0.0168	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	29.1	21.0	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00020	0.00330	----	----	----	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	0.00086	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00144	0.00125	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00822	0.00558	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.25	1.12	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	25.0	9.10	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	1.93	1.52	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	4.94	2.59	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.150	0.0968	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_CC1_WS_2 021-06-28_N	LC_HSP_WS_2 021-06-28_N	LC_LC1_WS_2 021-06-28_N	LC_LC12_WS_ 2021-06-28_N	LC_LC2_WS_2 021-06-28_N
Client sampling date / time					28-Jun-2021 15:23	28-Jun-2021 12:00	28-Jun-2021 11:00	28-Jun-2021 11:15	28-Jun-2021 11:30	
Analyte	CAS Number	Method	LOR	Unit	CG2102275-001	CG2102275-002	CG2102275-003	CG2102275-004	CG2102275-005	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	45.6	31.8	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000012	0.000012	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00239	0.00131	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0190	0.0056	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0034	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00030	0.00030	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	0.00012	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0340	0.0400	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.016	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.393	0.0261	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	71.7	51.3	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00015	0.00013	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.20	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00036	0.00029	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0361	0.0195	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	29.8	21.4	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00013	0.00034	---	---	---	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00153	0.00141	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00822	0.00528	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.27	1.11	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	22.8	8.94	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.77	1.41	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_CC1_WS_2 021-06-28_N	LC_HSP_WS_2 021-06-28_N	LC_LC1_WS_2 021-06-28_N	LC_LC12_WS_ 2021-06-28_N	LC_LC2_WS_2 021-06-28_N
Client sampling date / time					28-Jun-2021 15:23	28-Jun-2021 12:00	28-Jun-2021 11:00	28-Jun-2021 11:15	28-Jun-2021 11:30	
Analyte	CAS Number	Method	LOR	Unit	CG2102275-001	CG2102275-002	CG2102275-003	CG2102275-004	CG2102275-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.96	2.61	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.162	0.105	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	42.7	30.5	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	0.000013	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00227	0.00129	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0166	0.0035	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_LCUSWLC_ WS_2021-06-28_N	LC_MT1_WS_2 021-06-28_N	LC_RD1_WS_2 021-06-28_N	LC_WLC_WS_2 021-06-28_N	LC_PIZDC0901 _WG_Q2-2021_ NP
Client sampling date / time					28-Jun-2021 12:30	28-Jun-2021 12:45	28-Jun-2021 14:00	28-Jun-2021 12:45	28-Jun-2021 13:50	
Analyte	CAS Number	Method	LOR	Unit	CG2102275-006	CG2102275-007	CG2102275-008	CG2102275-009	CG2102275-010	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	156	<1.0	<1.0	328	345	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	6.2	<1.0	<1.0	22.4	11.4	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	163	<1.0	<1.0	350	356	
conductivity	----	E100	2.0	µS/cm	596	<2.0	<2.0	1490	600	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	303	<0.50	<0.50	903	342	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	429	502	506	423	424	
pH	----	E108	0.10	pH units	8.37	5.36	5.19	8.43	8.36	
solids, total dissolved [TDS]	----	E162	10	mg/L	416	<10	<10	1240	384	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
turbidity	----	E121	0.10	NTU	0.45	<0.10	<0.10	<0.10	0.42	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	191	<1.0	<1.0	400	420	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	3.7	<1.0	<1.0	13.4	6.8	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0091 <sup>RRV</sup>	<0.0050	<0.0050	0.124	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.250 <sup>DLDS</sup>	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.12	<0.10	<0.10	2.00	0.35	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.192	<0.020	<0.020	<0.100 <sup>DLDS</sup>	0.078	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.128	<0.050 <sup>RRV</sup>	<0.050 <sup>RRV</sup>	0.108	0.336	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	7.99	<0.0050	<0.0050	7.39	0.570	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0074	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0032	0.0154	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	0.0028	0.0152 <sup>DLM</sup>	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	135	<0.30	<0.30	457	11.8	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.44	<0.50	----	1.52	3.13	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.17	<0.50	<0.50	1.46	3.15	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_LCUSWLC_ WS_2021-06-28_N	LC_MT1_WS_2 021-06-28_N	LC_RD1_WS_2 021-06-28_N	LC_WLC_WS_2 021-06-28_N	LC_PIZDC0901 _WG_Q2-2021_ NP
Client sampling date / time					28-Jun-2021 12:30	28-Jun-2021 12:45	28-Jun-2021 14:00	28-Jun-2021 12:45	28-Jun-2021 13:50	
Analyte	CAS Number	Method	LOR	Unit	CG2102275-006	CG2102275-007	CG2102275-008	CG2102275-009	CG2102275-010	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.76	<0.10	<0.10	17.1	7.41	
cation sum	----	EC101	0.10	meq/L	6.30	<0.10	<0.10	18.2	6.98	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.2	100	100	106	94.2	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.52	<0.010	<0.010	3.12	2.99	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0037	<0.0030	<0.0030	<0.0030	0.0297	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00030	<0.00010	<0.00010	0.00040	0.00017	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00012	<0.00010	<0.00010	0.00018	0.00026	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0310	<0.00010	<0.00010	0.0156	0.243	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	0.012	<0.010	<0.010	0.022	<0.010	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.391	<0.0050	<0.0050	1.35	0.0854	
calcium, total	7440-70-2	E420	0.050	mg/L	70.0	<0.050	<0.050	177	93.4	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00015	<0.00010	<0.00010	<0.00010	0.00012	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	0.00082	0.00052	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	0.021	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0330	<0.0010	<0.0010	0.0238	0.0028	
magnesium, total	7439-95-4	E420	0.0050	mg/L	28.6	<0.0050	<0.0050	114	25.7	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00014	<0.00010	<0.00010	0.00048	0.00101	
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00051	<0.00050	----	0.00090	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00144	<0.000050	<0.000050	0.00122	0.000523	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00823	<0.00050	<0.00050	0.0276	0.00082	
potassium, total	7440-09-7	E420	0.050	mg/L	1.23	<0.050	<0.050	2.22	1.18	
selenium, total	7782-49-2	E420	0.050	µg/L	24.6	<0.050	<0.050	227	0.530	
silicon, total	7440-21-3	E420	0.10	mg/L	1.92	<0.10	<0.10	2.66	5.69	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, total	17341-25-2	E420	0.050	mg/L	4.89	<0.050	<0.050	1.65	2.47	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_LCUSWLC_ WS_2021-06-28_N	LC_MT1_WS_2 021-06-28_N	LC_RD1_WS_2 021-06-28_N	LC_WLC_WS_2 021-06-28_N	LC_PIZDC0901_WG_Q2-2021_NP
Client sampling date / time					28-Jun-2021 12:30	28-Jun-2021 12:45	28-Jun-2021 14:00	28-Jun-2021 12:45	28-Jun-2021 13:50	
Analyte	CAS Number	Method	LOR	Unit	CG2102275-006	CG2102275-007	CG2102275-008	CG2102275-009	CG2102275-010	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.151	<0.00020	<0.00020	0.125	0.167	
sulfur, total	7704-34-9	E420	0.50	mg/L	44.9	<0.50	<0.50	198	4.58	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000012	<0.000010	<0.000010	0.000024	<0.000010	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00090 <sup>DLM</sup>	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00239	<0.000010	<0.000010	0.00826	0.00267	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00080	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0195	<0.0030	<0.0030	0.0668	<0.0030	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0013	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00028	<0.00010	<0.00010	0.00040	0.00016	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00013	0.00025	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0336	<0.00010	<0.00010	0.0154	0.235	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	<0.010	<0.010	0.020	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.416	<0.0050	<0.0050	1.38	0.0876	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	71.0	<0.050	<0.050	177	95.4	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00038	<0.00020	<0.00020	0.00082	0.00050	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0358	<0.0010	<0.0010	0.0237	0.0030	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	30.5	<0.0050	<0.0050	112	25.2	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00013	<0.00010	<0.00010	0.00046	<0.00010	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00151	<0.000050	<0.000050	0.00117	0.000583	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00827	<0.00050	<0.00050	0.0282	0.00075	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.25	<0.050	<0.050	2.27	1.14	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_LCUSWLC_ WS_2021-06-28_N	LC_MT1_WS_2 021-06-28_N	LC_RD1_WS_2 021-06-28_N	LC_WLC_WS_2 021-06-28_N	LC_PIZDC0901 _WG_Q2-2021_ NP
Client sampling date / time					28-Jun-2021 12:30	28-Jun-2021 12:45	28-Jun-2021 14:00	28-Jun-2021 12:45	28-Jun-2021 13:50	
Analyte	CAS Number	Method	LOR	Unit	CG2102275-006	CG2102275-007	CG2102275-008	CG2102275-009	CG2102275-010	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	23.8	<0.050	<0.050	245	0.607	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.77	<0.050	<0.050	2.61	5.22	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.05	<0.050	<0.050	1.64	2.46	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.157	<0.00020	<0.00020	0.124	0.179	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	44.2	<0.50	<0.50	187	4.24	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	<0.000010	<0.000010	0.000026	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00226	<0.000010	<0.000010	0.00837	0.00256	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00062	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0186	<0.0010	<0.0010	0.0698	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	
<b>Aggregate Organics</b>										
biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_NLX_6	LC_BRX_2	---	---	---
Client sampling date / time					28-Jun-2021 14:00	28-Jun-2021 14:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2102275-011	CG2102275-012	-----	-----	-----	
					Result	Result	---	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	2.3	<2.0	---	---	---	
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	343	254	---	---	---	
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	343	254	---	---	---	
conductivity	---	E100	2.0	µS/cm	1410	677	---	---	---	
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	675	298	---	---	---	
oxidation-reduction potential [ORP]	---	E125	0.10	mV	418	431	---	---	---	
pH	---	E108	0.10	pH units	8.25	8.27	---	---	---	
solids, total dissolved [TDS]	---	E162	10	mg/L	992	440	---	---	---	
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	59.6	---	---	---	
turbidity	---	E121	0.10	NTU	0.28	7.99	---	---	---	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	418	310	---	---	---	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	4.42 <sup>RRV</sup>	4.24	---	---	---	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.050	---	---	---	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	12.9	1.33	---	---	---	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.130	0.529	---	---	---	
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	3.60	4.80	---	---	---	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	15.2	5.97	---	---	---	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.934	0.564	---	---	---	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0016	<0.0010	---	---	---	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0061	---	---	---	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	317	101	---	---	---	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	1.28	1.37	---	---	---	
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	1.08	1.30	---	---	---	
<b>Total Sulfides</b>										
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	---	---	---	



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_NLX_6	LC_BRX_2	---	---	---
(Matrix: Water)					Client sampling date / time	28-Jun-2021 14:00	28-Jun-2021 14:30	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2102275-011	CG2102275-012	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	15.0	7.71	---	---	---	
cation sum	---	EC101	0.10	meq/L	16.7	7.86	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	111	102	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	5.36	0.963	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0972	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00644	0.00639	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00049	0.00100	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0280	0.142	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	0.071	0.059	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.466	0.0446	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	159	66.1	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00014	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	35.1	8.37	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00323	0.00065	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	0.012	0.078	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000600	0.000288	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.425	0.358	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	64.8	32.5	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.175	0.0301	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0196	0.0165	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.156	0.0517	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	14.2	12.9	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	4.72	3.10	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	3.01	2.90	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	56.8	28.3	---	---	---	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.340	0.619	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	139	33.6	---	---	---	



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_NLX_6	LC_BRX_2	---	---	---
(Matrix: Water)					Client sampling date / time	28-Jun-2021 14:00	28-Jun-2021 14:30	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2102275-011	CG2102275-012	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000211	0.000093	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	0.00133	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.0146	0.00337	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	0.00133	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0311	0.0067	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	0.0042	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00630	0.00600	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00050	0.00096	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0286	0.128	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.074	0.061	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.461	0.0256	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	165	64.2	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	33.5	7.18	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00252	<0.00020	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000403	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.463	0.371	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	63.9	33.4	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.169	0.0224	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0206	0.0164	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.152	0.0495	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	14.5	12.7	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	4.96	3.05	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.80	2.50	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_NLX_6	LC_BRX_2	---	---	---
Client sampling date / time					28-Jun-2021 14:00	28-Jun-2021 14:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2102275-011	CG2102275-012	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	58.2	29.4	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.363	0.629	---	---	---	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	137	32.8	---	---	---	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000219	0.000084	---	---	---	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0140	0.00311	---	---	---	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	0.00087	---	---	---	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0268	0.0024	---	---	---	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	---	---	---	
dissolved metals filtration location	----	EP421	-	-	Field	Field	---	---	---	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102275</b>	Page	: 1 of 36
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 29-Jun-2021 08:50
PO	: VPO00739930	Issue Date	: 06-Jul-2021 08:56
C-O-C number	: LC_WEK_20210628		
Sampler	: S. Fossen/D. Tymstra		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 12		
No. of samples analysed	: 12		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Method Blank (MB) Values</b>								
Dissolved Metals	QC-MRG2-2341870 01	----	tin, dissolved	7440-31-5	E421	0.00035 <sup>B</sup> mg/L	0.0001 mg/L	Blank result exceeds permitted value

**Result Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>											
<b>HDPE [BOD HT 3d]</b> LC_LCUSWLC_WS_2021-06-28_N	E550	28-Jun-2021	----	----	----		30-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_BRX_2	E298	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_CC1_WS_2021-06-28_N	E298	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_HSP_WS_2021-06-28_N	E298	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_LCUSWLC_WS_2021-06-28_N	E298	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MT1_WS_2021-06-28_N	E298	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_NLX_6	E298	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q2-2021_NP	E298	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_RD1_WS_2021-06-28_N	E298	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_WLC_WS_2021-06-28_N	E298	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_BRX_2	E235.Br-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_CC1_WS_2021-06-28_N	E235.Br-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_HSP_WS_2021-06-28_N	E235.Br-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_LCUSWLC_WS_2021-06-28_N	E235.Br-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MT1_WS_2021-06-28_N	E235.Br-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_NLX_6	E235.Br-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE LC_PIZDC0901_WG_Q2-2021_NP	E235.Br-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE LC_RD1_WS_2021-06-28_N	E235.Br-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE LC_WLC_WS_2021-06-28_N	E235.Br-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_BRX_2	E235.Cl-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_CC1_WS_2021-06-28_N	E235.Cl-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_HSP_WS_2021-06-28_N	E235.Cl-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_LCUSWLC_WS_2021-06-28_N	E235.Cl-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_MT1_WS_2021-06-28_N	E235.Cl-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_NLX_6	E235.Cl-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_PIZDC0901_WG_Q2-2021_NP	E235.CI-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_RD1_WS_2021-06-28_N	E235.CI-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_WLC_WS_2021-06-28_N	E235.CI-L	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_BRX_2	E378-U	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_CC1_WS_2021-06-28_N	E378-U	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_HSP_WS_2021-06-28_N	E378-U	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_LCUSWLC_WS_2021-06-28_N	E378-U	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_MT1_WS_2021-06-28_N	E378-U	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_NLX_6	E378-U	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_PIZDC0901_WG_Q2-2021_NP	E378-U	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_RD1_WS_2021-06-28_N	E378-U	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_WLC_WS_2021-06-28_N	E378-U	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_BRX_2	E235.F	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_CC1_WS_2021-06-28_N	E235.F	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_HSP_WS_2021-06-28_N	E235.F	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_LCUSWLC_WS_2021-06-28_N	E235.F	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_MT1_WS_2021-06-28_N	E235.F	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_NLX_6	E235.F	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_PIZDC0901_WG_Q2-2021_NP	E235.F	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_RD1_WS_2021-06-28_N	E235.F	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_WLC_WS_2021-06-28_N	E235.F	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_BRX_2	E235.NO3-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_CC1_WS_2021-06-28_N	E235.NO3-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_HSP_WS_2021-06-28_N	E235.NO3-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_LCUSWLC_WS_2021-06-28_N	E235.NO3-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_MT1_WS_2021-06-28_N	E235.NO3-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_NLX_6	E235.NO3-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_PIZDC0901_WG_Q2-2021_NP	E235.NO3-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_RD1_WS_2021-06-28_N	E235.NO3-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_WLC_WS_2021-06-28_N	E235.NO3-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_BRX_2	E235.NO2-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_CC1_WS_2021-06-28_N	E235.NO2-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_HSP_WS_2021-06-28_N	E235.NO2-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_LCUSWLC_WS_2021-06-28_N	E235.NO2-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_MT1_WS_2021-06-28_N	E235.NO2-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_NLX_6	E235.NO2-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_PIZDC0901_WG_Q2-2021_NP	E235.NO2-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_RD1_WS_2021-06-28_N	E235.NO2-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_WLC_WS_2021-06-28_N	E235.NO2-L	28-Jun-2021	----	----	----		29-Jun-2021	3 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_BRX_2	E235.SO4	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_CC1_WS_2021-06-28_N	E235.SO4	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_HSP_WS_2021-06-28_N	E235.SO4	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_LCUSWLC_WS_2021-06-28_N	E235.SO4	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_MT1_WS_2021-06-28_N	E235.SO4	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_NLX_6	E235.SO4	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✔





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q2-2021_NP	E235.SO4	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_RD1_WS_2021-06-28_N	E235.SO4	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_WLC_WS_2021-06-28_N	E235.SO4	28-Jun-2021	----	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_BRX_2	E318	28-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_CC1_WS_2021-06-28_N	E318	28-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_HSP_WS_2021-06-28_N	E318	28-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_LCUSWLC_WS_2021-06-28_N	E318	28-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MT1_WS_2021-06-28_N	E318	28-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_NLX_6	E318	28-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q2-2021_NP	E318	28-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_RD1_WS_2021-06-28_N	E318	28-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_WLC_WS_2021-06-28_N	E318	28-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_BRX_2	E372-U	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_CC1_WS_2021-06-28_N	E372-U	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_HSP_WS_2021-06-28_N	E372-U	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_LCUSWLC_WS_2021-06-28_N	E372-U	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MT1_WS_2021-06-28_N	E372-U	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_NLX_6	E372-U	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q2-2021_NP	E372-U	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_RD1_WS_2021-06-28_N	E372-U	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_WLC_WS_2021-06-28_N	E372-U	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_BRX_2	E421.Cr-L	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_CC1_WS_2021-06-28_N	E421.Cr-L	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_HSP_WS_2021-06-28_N	E421.Cr-L	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_LCUSWLC_WS_2021-06-28_N	E421.Cr-L	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MT1_WS_2021-06-28_N	E421.Cr-L	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_NLX_6	E421.Cr-L	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC0901_WG_Q2-2021_NP	E421.Cr-L	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_RD1_WS_2021-06-28_N	E421.Cr-L	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_WLC_WS_2021-06-28_N	E421.Cr-L	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_BRX_2	E509	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_CC1_WS_2021-06-28_N	E509	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_HSP_WS_2021-06-28_N	E509	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_LCUSWLC_WS_2021-06-28_N	E509	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MT1_WS_2021-06-28_N	E509	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_NLX_6	E509	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC0901_WG_Q2-2021_NP	E509	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_WLC_WS_2021-06-28_N	E509	28-Jun-2021	02-Jul-2021	----	----		02-Jul-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_BRX_2	E421	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_CC1_WS_2021-06-28_N	E421	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_HSP_WS_2021-06-28_N	E421	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_LCUSWLC_WS_2021-06-28_N	E421	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MT1_WS_2021-06-28_N	E421	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_NLX_6	E421	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC0901_WG_Q2-2021_NP	E421	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_RD1_WS_2021-06-28_N	E421	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_WLC_WS_2021-06-28_N	E421	28-Jun-2021	30-Jun-2021	----	----		01-Jul-2021	180 days	3 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_BRX_2	E358-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_CC1_WS_2021-06-28_N	E358-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_HSP_WS_2021-06-28_N	E358-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_LCUSWLC_WS_2021-06-28_N	E358-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MT1_WS_2021-06-28_N	E358-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_NLX_6	E358-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC0901_WG_Q2-2021_NP	E358-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_WLC_WS_2021-06-28_N	E358-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_BRX_2	E355-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_CC1_WS_2021-06-28_N	E355-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_HSP_WS_2021-06-28_N	E355-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_LCUSWLC_WS_2021-06-28_N	E355-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MT1_WS_2021-06-28_N	E355-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_NLX_6	E355-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q2-2021_NP	E355-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_RD1_WS_2021-06-28_N	E355-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_WLC_WS_2021-06-28_N	E355-L	28-Jun-2021	30-Jun-2021	----	----		30-Jun-2021	28 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_BRX_2	E283	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_CC1_WS_2021-06-28_N	E283	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_HSP_WS_2021-06-28_N	E283	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_LCUSWLC_WS_2021-06-28_N	E283	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_MT1_WS_2021-06-28_N	E283	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_NLX_6	E283	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q2-2021_NP	E283	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_RD1_WS_2021-06-28_N	E283	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE LC_WLC_WS_2021-06-28_N	E283	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_BRX_2	E290	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_CC1_WS_2021-06-28_N	E290	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_HSP_WS_2021-06-28_N	E290	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_LCUSWLC_WS_2021-06-28_N	E290	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_MT1_WS_2021-06-28_N	E290	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_NLX_6	E290	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_PIZDC0901_WG_Q2-2021_NP	E290	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_RD1_WS_2021-06-28_N	E290	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE LC_WLC_WS_2021-06-28_N	E290	28-Jun-2021	----	----	----		30-Jun-2021	14 days	2 days	✔
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_BRX_2	E100	28-Jun-2021	----	----	----		30-Jun-2021	28 days	2 days	✔
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_CC1_WS_2021-06-28_N	E100	28-Jun-2021	----	----	----		30-Jun-2021	28 days	2 days	✔
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_HSP_WS_2021-06-28_N	E100	28-Jun-2021	----	----	----		30-Jun-2021	28 days	2 days	✔
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_LCUSWLC_WS_2021-06-28_N	E100	28-Jun-2021	----	----	----		30-Jun-2021	28 days	2 days	✔
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_MT1_WS_2021-06-28_N	E100	28-Jun-2021	----	----	----		30-Jun-2021	28 days	2 days	✔
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_NLX_6	E100	28-Jun-2021	----	----	----		30-Jun-2021	28 days	2 days	✔
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_PIZDC0901_WG_Q2-2021_NP	E100	28-Jun-2021	----	----	----		30-Jun-2021	28 days	2 days	✔
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_RD1_WS_2021-06-28_N	E100	28-Jun-2021	----	----	----		30-Jun-2021	28 days	2 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Physical Tests : Conductivity in Water</b>										
<b>HDPE</b> LC_WLC_WS_2021-06-28_N	E100	28-Jun-2021	----	----	----		30-Jun-2021	28 days	2 days	✓
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> LC_CC1_WS_2021-06-28_N	E125	28-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	46 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> LC_BRX_2	E125	28-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	47 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> LC_NLX_6	E125	28-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	47 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> LC_RD1_WS_2021-06-28_N	E125	28-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	47 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q2-2021_NP	E125	28-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	48 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> LC_HSP_WS_2021-06-28_N	E125	28-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	49 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> LC_LCUSWLC_WS_2021-06-28_N	E125	28-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	49 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> LC_MT1_WS_2021-06-28_N	E125	28-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	49 hrs	* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : ORP by Electrode</b>										
HDPE LC_WLC_WS_2021-06-28_N	E125	28-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	49 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_CC1_WS_2021-06-28_N	E108	28-Jun-2021	----	----	----		30-Jun-2021	0.25 hrs	49 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_BRX_2	E108	28-Jun-2021	----	----	----		30-Jun-2021	0.25 hrs	50 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_NLX_6	E108	28-Jun-2021	----	----	----		30-Jun-2021	0.25 hrs	50 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_PIZDC0901_WG_Q2-2021_NP	E108	28-Jun-2021	----	----	----		30-Jun-2021	0.25 hrs	50 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_RD1_WS_2021-06-28_N	E108	28-Jun-2021	----	----	----		30-Jun-2021	0.25 hrs	50 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_MT1_WS_2021-06-28_N	E108	28-Jun-2021	----	----	----		30-Jun-2021	0.25 hrs	51 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_WLC_WS_2021-06-28_N	E108	28-Jun-2021	----	----	----		30-Jun-2021	0.25 hrs	51 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_HSP_WS_2021-06-28_N	E108	28-Jun-2021	----	----	----		30-Jun-2021	0.25 hrs	52 hrs	* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : pH by Meter</b>										
HDPE LC_LCUSWLC_WS_2021-06-28_N	E108	28-Jun-2021	----	----	----		30-Jun-2021	0.25 hrs	52 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_BRX_2	E162	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_CC1_WS_2021-06-28_N	E162	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_HSP_WS_2021-06-28_N	E162	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_LCUSWLC_WS_2021-06-28_N	E162	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_MT1_WS_2021-06-28_N	E162	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_NLX_6	E162	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_PIZDC0901_WG_Q2-2021_NP	E162	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_RD1_WS_2021-06-28_N	E162	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_WLC_WS_2021-06-28_N	E162	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_BRX_2	E160-L	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_CC1_WS_2021-06-28_N	E160-L	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_HSP_WS_2021-06-28_N	E160-L	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_LC1_WS_2021-06-28_N	E160-L	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_LC12_WS_2021-06-28_N	E160-L	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_LC2_WS_2021-06-28_N	E160-L	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_LCUSWLC_WS_2021-06-28_N	E160-L	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_MT1_WS_2021-06-28_N	E160-L	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_NLX_6	E160-L	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_PIZDC0901_WG_Q2-2021_NP	E160-L	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_RD1_WS_2021-06-28_N	E160-L	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_WLC_WS_2021-06-28_N	E160-L	28-Jun-2021	----	----	----		01-Jul-2021	7 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_BRX_2	E121	28-Jun-2021	----	----	----		30-Jun-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_CC1_WS_2021-06-28_N	E121	28-Jun-2021	----	----	----		30-Jun-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_HSP_WS_2021-06-28_N	E121	28-Jun-2021	----	----	----		30-Jun-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_LC1_WS_2021-06-28_N	E121	28-Jun-2021	----	----	----		30-Jun-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_LC12_WS_2021-06-28_N	E121	28-Jun-2021	----	----	----		30-Jun-2021	3 days	2 days	✔





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE LC_LC2_WS_2021-06-28_N	E121	28-Jun-2021	----	----	----		30-Jun-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE LC_LCUSWLC_WS_2021-06-28_N	E121	28-Jun-2021	----	----	----		30-Jun-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE LC_MT1_WS_2021-06-28_N	E121	28-Jun-2021	----	----	----		30-Jun-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE LC_NLX_6	E121	28-Jun-2021	----	----	----		30-Jun-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE LC_PIZDC0901_WG_Q2-2021_NP	E121	28-Jun-2021	----	----	----		30-Jun-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE LC_RD1_WS_2021-06-28_N	E121	28-Jun-2021	----	----	----		30-Jun-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE LC_WLC_WS_2021-06-28_N	E121	28-Jun-2021	----	----	----		30-Jun-2021	3 days	2 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
HDPE total (nitric acid) LC_BRX_2	E420.Cr-L	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
HDPE total (nitric acid) LC_CC1_WS_2021-06-28_N	E420.Cr-L	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_HSP_WS_2021-06-28_N	E420.Cr-L	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_LCUSWLC_WS_2021-06-28_N	E420.Cr-L	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_MT1_WS_2021-06-28_N	E420.Cr-L	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_NLX_6	E420.Cr-L	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC0901_WG_Q2-2021_NP	E420.Cr-L	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_RD1_WS_2021-06-28_N	E420.Cr-L	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_WLC_WS_2021-06-28_N	E420.Cr-L	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✓	
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - total (lab preserved)</b> LC_CC1_WS_2021-06-28_N	E508-L	28-Jun-2021	----	----	----		02-Jul-2021	28 days	4 days	✓	
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - total (lab preserved)</b> LC_HSP_WS_2021-06-28_N	E508-L	28-Jun-2021	----	----	----		02-Jul-2021	28 days	4 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> LC_LCUSWLC_WS_2021-06-28_N	E508-L	28-Jun-2021	----	----	----		02-Jul-2021	28 days	4 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> LC_MT1_WS_2021-06-28_N	E508-L	28-Jun-2021	----	----	----		02-Jul-2021	28 days	4 days	✔
<b>Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - total (lab preserved)</b> LC_WLC_WS_2021-06-28_N	E508-L	28-Jun-2021	----	----	----		02-Jul-2021	28 days	4 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_BRX_2	E420	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_CC1_WS_2021-06-28_N	E420	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_HSP_WS_2021-06-28_N	E420	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_LCUSWLC_WS_2021-06-28_N	E420	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_MT1_WS_2021-06-28_N	E420	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_NLX_6	E420	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC0901_WG_Q2-2021_NP	E420	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_RD1_WS_2021-06-28_N	E420	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_WLC_WS_2021-06-28_N	E420	28-Jun-2021	----	----	----		02-Jul-2021	180 days	4 days	✓
<b>Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)</b>										
<b>HDPE total (zinc acetate+sodium hydroxide)</b> LC_BRX_2	E395	28-Jun-2021	----	----	----		02-Jul-2021	7 days	4 days	✓
<b>Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)</b>										
<b>HDPE total (zinc acetate+sodium hydroxide)</b> LC_NLX_6	E395	28-Jun-2021	----	----	----		02-Jul-2021	7 days	4 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	233924	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	233921	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	233426	1	19	5.2	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	233819	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	232976	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	232977	1	20	5.0	5.0	✓
Conductivity in Water	E100	233922	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	234187	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	234765	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	234188	1	9	11.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	234070	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	232795	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	232980	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	232978	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	232979	1	20	5.0	5.0	✓
ORP by Electrode	E125	233774	1	17	5.8	5.0	✓
pH by Meter	E108	233920	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	232975	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	234336	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	234664	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	232900	1	16	6.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	234759	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	234663	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	234072	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	233612	2	40	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	234991	1	12	8.3	5.0	✓
Turbidity by Nephelometry	E121	233509	2	22	9.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	233924	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	233921	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	233426	1	19	5.2	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	233819	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	232976	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	232977	1	20	5.0	5.0	✓
Conductivity in Water	E100	233922	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	234187	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	234765	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	234188	1	9	11.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	234070	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	232795	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	232980	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	232978	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	232979	1	20	5.0	5.0	✓
ORP by Electrode	E125	233774	1	17	5.8	5.0	✓
pH by Meter	E108	233920	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	232975	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	234336	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	234664	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	232900	1	16	6.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	234759	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	234663	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	234072	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	233612	2	40	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	234991	1	12	8.3	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	234334	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	233509	2	22	9.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	233924	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	233921	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	233426	1	19	5.2	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	233819	1	16	6.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	232976	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	232977	1	20	5.0	5.0	✓
Conductivity in Water	E100	233922	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	234187	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	234765	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	234188	1	9	11.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	234070	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	232795	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	232980	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	232978	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	232979	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	232975	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	234336	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	234664	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	232900	1	16	6.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	234759	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	234663	1	18	5.5	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Method Blanks (MB) - Continued</b>							
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	234072	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	233612	2	40	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	234991	1	12	8.3	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	234334	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	233509	2	22	9.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	233426	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	232976	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	232977	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	234187	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	234765	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	234188	1	9	11.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	234070	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	232795	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	232980	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	232978	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	232979	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	232975	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	234664	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	232900	1	16	6.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	234759	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	234663	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	234072	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	233612	2	40	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	234991	1	12	8.3	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Sulfide by Colourimetry (Automated Flow)	E395 Vancouver - Environmental	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methylene blue colourimetric method. Results expressed "as H <sub>2</sub> S" if reported represent the maximum possible H <sub>2</sub> S concentration based on the total sulfide concentration in the sample. The H <sub>2</sub> S calculation converts Total Sulphide as (S <sub>2</sub> -) and reports it as Total Sulphide as (H <sub>2</sub> S)
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> , dissolved)" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.  Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102275**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : LC\_WEK\_20210628  
**Sampler** : S. Fossen/D. Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 12  
**No. of samples analysed** : 12

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-Jun-2021 08:50  
**Date Analysis Commenced** : 29-Jun-2021  
**Issue Date** : 06-Jul-2021 08:56

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
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Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 18  
Work Order : CG2102275  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 233509)</b>											
CG2102274-002	Anonymous	turbidity	----	E121	0.10	NTU	4.21	4.26	1.18%	15%	----
<b>Physical Tests (QC Lot: 233510)</b>											
CG2102275-012	LC_BRX_2	turbidity	----	E121	0.10	NTU	7.99	7.92	0.880%	15%	----
<b>Physical Tests (QC Lot: 233774)</b>											
CG2102263-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	467	466	0.129%	15%	----
<b>Physical Tests (QC Lot: 233920)</b>											
CG2102275-001	LC_CC1_WS_2021-06-28_N	pH	----	E108	0.10	pH units	8.36	8.35	0.120%	4%	----
<b>Physical Tests (QC Lot: 233921)</b>											
CG2102275-001	LC_CC1_WS_2021-06-28_N	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	162	158	2.13%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	5.8	5.4	0.4	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	167	164	2.30%	20%	----
<b>Physical Tests (QC Lot: 233922)</b>											
CG2102275-001	LC_CC1_WS_2021-06-28_N	conductivity	----	E100	2.0	µS/cm	616	605	1.80%	10%	----
<b>Physical Tests (QC Lot: 233924)</b>											
CG2102274-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 234336)</b>											
CG2102263-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	361	348	3.53%	20%	----
<b>Anions and Nutrients (QC Lot: 232795)</b>											
CG2102273-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 232900)</b>											
CG2102272-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 232975)</b>											
CG2102268-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	3.00	mg/L	2860	2990	4.20%	20%	----
<b>Anions and Nutrients (QC Lot: 232976)</b>											
CG2102268-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.500	mg/L	<0.500	<0.500	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 232977)</b>											
CG2102268-001	Anonymous	chloride	16887-00-6	E235.Cl-L	1.00	mg/L	1.00	1.08	0.08	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 232978)</b>											
CG2102268-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0500	mg/L	<0.0500	<0.0500	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 232979)</b>											
CG2102268-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 232980)</b>											
CG2102268-001	Anonymous	fluoride	16984-48-8	E235.F	0.200	mg/L	10.7	11.3	5.65%	20%	----
<b>Anions and Nutrients (QC Lot: 233426)</b>											
CG2102230-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0501	0.0502	0.199%	20%	----
<b>Anions and Nutrients (QC Lot: 233612)</b>											
CG2102217-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0054	0.0061	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 233613)</b>											
CG2102275-007	LC_MT1_WS_2021-06-28_N	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 234070)</b>											
CG2102263-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.52	1.73	0.21	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 234072)</b>											
CG2102263-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.82	1.72	0.10	Diff <2x LOR	----
<b>Total Sulfides (QC Lot: 234991)</b>											
CG2102243-009	Anonymous	sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 234663)</b>											
CG2102259-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.107	0.0891	18.3%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00021	0.00019	0.00002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00032	0.00028	0.00003	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0694	0.0714	2.94%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.030	0.030	0.0002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0250 µg/L	0.0000280	0.0000030	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	150	153	1.82%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00061	0.00056	0.00005	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.122	0.106	14.0%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000084	0.000072	0.000012	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0238	0.0236	0.783%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	96.9	96.4	0.477%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00885	0.00872	1.43%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00150	0.00147	2.01%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00191	0.00184	0.00007	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.00	1.98	0.630%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 234663) - continued</b>											
CG2102259-001	Anonymous	selenium, total	7782-49-2	E420	0.050	mg/L	87.3 µg/L	0.0880	0.727%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.68	2.66	0.853%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	8.90	8.82	0.865%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.452	0.449	0.623%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	214	217	1.42%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000014	0.000014	0.0000005	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00326	0.00358	9.15%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00390	0.00376	3.57%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00053	0.00051	0.00002	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 234664)</b>											
CG2102259-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00017	0.00014	0.00002	Diff <2x LOR	----
<b>Total Metals (QC Lot: 234759)</b>											
CG2102152-008	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 234187)</b>											
CG2102275-001	LC_CC1_WS_2021-06-28_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00015	0.00016	0.00001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 234188)</b>											
CG2102275-001	LC_CC1_WS_2021-06-28_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00030	0.00028	0.00001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	<0.00010	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0340	0.0337	0.813%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.012	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.393 µg/L	0.000415	5.35%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	71.7	72.3	0.829%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00036	0.00039	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0361	0.0366	1.32%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	29.8	30.1	0.990%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 234188) - continued</b>											
CG2102275-001	LC_CC1_WS_2021-06-28_N	manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00013	0.00012	0.000009	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00153	0.00146	4.50%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00822	0.00818	0.389%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.27	1.24	2.27%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	22.8 µg/L	0.0239	4.57%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.77	1.83	2.92%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.96	5.00	0.806%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.162	0.156	3.96%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	42.7	45.2	5.68%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	0.000014	0.0000007	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00227	0.00228	0.646%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0166	0.0168	1.11%	20%	----
<b>Dissolved Metals (QC Lot: 234765)</b>											
CG2102259-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 233819)</b>											
CG2102265-011	Anonymous	biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 233509)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 233510)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 233921)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 233922)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 233924)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 234334)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 234336)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 232795)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 232900)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 232975)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 232976)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 232977)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 232978)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 232979)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 232980)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 233426)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 233426) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 233612)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 233613)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 234070)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 234072)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Sulfides (QCLot: 234991)</b>						
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	---
<b>Total Metals (QCLot: 234663)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 234663) - continued</b>						
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 234664)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 234759)</b>						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	---
<b>Dissolved Metals (QCLot: 234187)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 234188)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 234188) - continued</b>						
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	# 0.00035	B
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 234765)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Aggregate Organics (QCLot: 233819)</b>						
biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----

**Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 233509)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	98.4	85.0	115	----
<b>Physical Tests (QCLot: 233510)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	98.4	85.0	115	----
<b>Physical Tests (QCLot: 233774)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----
<b>Physical Tests (QCLot: 233920)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 233921)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	102	85.0	115	----
<b>Physical Tests (QCLot: 233922)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	106	90.0	110	----
<b>Physical Tests (QCLot: 233924)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	109	85.0	115	----
<b>Physical Tests (QCLot: 234334)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	96.4	85.0	115	----
<b>Physical Tests (QCLot: 234336)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 232795)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	103	80.0	120	----
<b>Anions and Nutrients (QCLot: 232900)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	88.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 232975)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 232976)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.8	85.0	115	----
<b>Anions and Nutrients (QCLot: 232977)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 232978)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	107	90.0	110	----
<b>Anions and Nutrients (QCLot: 232979)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 232980)</b>									



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 232980) - continued</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 233426)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	108	85.0	115	----
<b>Anions and Nutrients (QCLot: 233612)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	92.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 233613)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	92.8	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 234070)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 234072)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Total Sulfides (QCLot: 234991)</b>									
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.08 mg/L	107	80.0	120	----
<b>Total Metals (QCLot: 234663)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.9	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.1	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.1	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.2	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	92.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	94.1	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.8	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.8	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	94.4	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.6	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.7	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	100	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 234663) - continued</b>									
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	95.7	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	98.1	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	97.1	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.2	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	95.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.0	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	107	80.0	120	----
<b>Total Metals (QCLot: 234664)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	95.6	80.0	120	----
<b>Total Metals (QCLot: 234759)</b>									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	106	80.0	120	----
<b>Dissolved Metals (QCLot: 234187)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
<b>Dissolved Metals (QCLot: 234188)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.0	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	94.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.6	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.3	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.8	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	94.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	91.6	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.3	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.0	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 234188) - continued</b>									
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.1	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.6	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	85.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	93.1	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.5	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	92.2	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	96.4	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	90.4	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.9	80.0	120	----
<b>Aggregate Organics (QCLot: 233819)</b>									
biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	108	85.0	115	----





## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 232795)</b>										
CG2102273-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 232900)</b>										
CG2102272-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.86 mg/L	2.5 mg/L	114	70.0	130	----
<b>Anions and Nutrients (QCLot: 232975)</b>										
CG2102274-008	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 232976)</b>										
CG2102274-008	Anonymous	bromide	24959-67-9	E235.Br-L	0.532 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 232977)</b>										
CG2102274-008	Anonymous	chloride	16887-00-6	E235.Cl-L	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 232978)</b>										
CG2102274-008	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.72 mg/L	2.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 232979)</b>										
CG2102274-008	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.547 mg/L	0.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 232980)</b>										
CG2102274-008	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 233426)</b>										
CG2102275-007	LC_MT1_WS_2021-06-28_N	ammonia, total (as N)	7664-41-7	E298	0.112 mg/L	0.1 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 233612)</b>										
CG2102217-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0591 mg/L	0.0676 mg/L	87.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 233613)</b>										
CG2102275-008	LC_RD1_WS_2021-06-28_N	phosphorus, total	7723-14-0	E372-U	0.0577 mg/L	0.0676 mg/L	85.4	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 234070)</b>										
CG2102263-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.1 mg/L	23.9 mg/L	105	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 234072)</b>										
CG2102263-001	Anonymous	carbon, total organic [TOC]	----	E355-L	26.7 mg/L	23.9 mg/L	112	70.0	130	----
<b>Total Sulfides (QCLot: 234991)</b>										
CG2102259-001	Anonymous	sulfide, total (as S)	18496-25-8	E395	0.195 mg/L	0.2 mg/L	97.4	75.0	125	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 234663)</b>										
CG2102259-001	Anonymous	aluminum, total	7429-90-5	E420	0.168 mg/L	0.2 mg/L	84.0	70.0	130	----
		antimony, total	7440-36-0	E420	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0359 mg/L	0.04 mg/L	89.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00881 mg/L	0.01 mg/L	88.1	70.0	130	----
		boron, total	7440-42-8	E420	0.094 mg/L	0.1 mg/L	94.1	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00364 mg/L	0.004 mg/L	91.1	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0185 mg/L	0.02 mg/L	92.6	70.0	130	----
		copper, total	7440-50-8	E420	0.0181 mg/L	0.02 mg/L	90.3	70.0	130	----
		iron, total	7439-89-6	E420	1.80 mg/L	2 mg/L	90.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0183 mg/L	0.02 mg/L	91.5	70.0	130	----
		lithium, total	7439-93-2	E420	0.0846 mg/L	0.1 mg/L	84.6	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		nickel, total	7440-02-0	E420	0.0360 mg/L	0.04 mg/L	90.1	70.0	130	----
		potassium, total	7440-09-7	E420	3.71 mg/L	4 mg/L	92.8	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	8.91 mg/L	10 mg/L	89.1	70.0	130	----
		silver, total	7440-22-4	E420	0.00363 mg/L	0.004 mg/L	90.8	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00359 mg/L	0.004 mg/L	89.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		titanium, total	7440-32-6	E420	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----
		uranium, total	7440-61-1	E420	0.00358 mg/L	0.004 mg/L	89.5	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0984 mg/L	0.1 mg/L	98.4	70.0	130	----
		zinc, total	7440-66-6	E420	0.389 mg/L	0.4 mg/L	97.3	70.0	130	----
<b>Total Metals (QCLot: 234664)</b>										
CG2102259-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
<b>Total Metals (QCLot: 234759)</b>										
CG2102152-009	Anonymous	mercury, total	7439-97-6	E508-L	4.34 ng/L	5 ng/L	86.8	70.0	130	----
<b>Dissolved Metals (QCLot: 234187)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 234187) - continued</b>										
CG2102275-001	LC_CC1_WS_2021-06-28_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0370 mg/L	0.04 mg/L	92.6	70.0	130	----
<b>Dissolved Metals (QCLot: 234188)</b>										
CG2102275-001	LC_CC1_WS_2021-06-28_N	aluminum, dissolved	7429-90-5	E421	0.183 mg/L	0.2 mg/L	91.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00812 mg/L	0.01 mg/L	81.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.098 mg/L	0.1 mg/L	97.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0178 mg/L	0.02 mg/L	89.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0175 mg/L	0.02 mg/L	87.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.66 mg/L	2 mg/L	82.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0185 mg/L	0.02 mg/L	92.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0889 mg/L	0.1 mg/L	88.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0183 mg/L	0.02 mg/L	91.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0347 mg/L	0.04 mg/L	86.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.49 mg/L	4 mg/L	87.3	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.75 mg/L	10 mg/L	87.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00385 mg/L	0.004 mg/L	96.3	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00368 mg/L	0.004 mg/L	91.9	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0369 mg/L	0.04 mg/L	92.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00378 mg/L	0.004 mg/L	94.4	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0939 mg/L	0.1 mg/L	93.9	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.350 mg/L	0.4 mg/L	87.5	70.0	130	----
<b>Dissolved Metals (QCLot: 234765)</b>										
CG2102259-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000966 mg/L	0.0001 mg/L	96.6	70.0	130	----



**Teck**

COC ID: **LC\_WEK\_20210628**

TURNAROUND TIME:

PRIORITY

RUSH: 2 - 3 Days

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

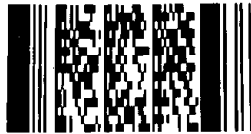
Facility Name / Job# Line Creek Operation  
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 V0B 2G0

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**Environmental Division  
 Calgary**

Work Order Reference  
**CG2102275**



Telephone : +1 403 407 1800

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED													
								ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNIG-T-CL	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-TSS/TURB	ALS_Package-BOD	ALS_Package-Sulfide-T	NaOH/Zn Ac			
LC_CCI_WS_2021-06-28_N	LC_LCUSWLC	WS		2021/06/28	15:23	G	7	1	1	1	1	1	1	1							
LC_HSP_WS_2021-06-28_N	LC_HSP	WS		2021/06/28	12:00	G	7	1	1	1	1	1	1	1							
LC_LC1_WS_2021-06-28_N	LC_LC1	WS		2021/06/28	11:00	G	1														
LC_LC12_WS_2021-06-28_N	LC_LC12	WS		2021/06/28	11:15	G	1														
LC_LC2_WS_2021-06-28_N	LC_LC2	WS		2021/06/28	11:30	G	1														
LC_LCUSWLC_WS_2021-06-28_N	LC_LCUSWLC	WS		2021/06/28	12:30	G	8	1	1	1	1	1	1	1			1				
LC_MTI_WS_2021-06-28_N	LC_WLC	WS		2021/06/28	12:45	G	7	1	1	1	1	1	1	1							
LC_RD1_WS_2021-06-28_N	LC_RD1	WS		2021/06/28	14:00	G	4			1	1	1	1	1							
LC_WLC_WS_2021-06-28_N	LC_WLC	WS		2021/06/28	12:45	G	7	1	1	1	1	1	1	1							
LC_PIZDC0901_WG_Q2-2021_NP	LC_PIZDC0901	WG		2021/06/27	13:50	G	6	1	1	1	1	1	1	1							
LC_NLX_6	LC_NLX	WS		2021/06/28	14:00	G	8	1	1	1	1	1	1	1							1
LC_BRX_2	LC_BRX	WS		2021/06/28	14:30	G	8	1	1	1	1	1	1	1							1

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

Additional comments area (partially obscured)

D.Tymstra/S.Fossen

June 28, 2021

Accepted signature

6/29/21

**SERVICE REQUEST (rush - subject to availability)**

Regular (default)  
 Priority (2-3 business days) - 50% surcharge X  
 Emergency (1 Business Day) - 100% surcharge  
 For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

S. Fossen/D. Tymstra

Mobile #

Sampler's Signature

Date/Time

June 28, 2021

Signature

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103457**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : PIZDC0901 20210819  
**Sampler** : T.Dick/D.Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Aug-2021 08:30  
**Date Analysis Commenced** : 20-Aug-2021  
**Issue Date** : 03-Sep-2021 14:37

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruby Pham	Lab Assistant	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.





## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_PIZDC0901	---	---	---	---
(Matrix: Water)						_WG_Q3-2021_				
					Client sampling date / time	19-Aug-2021	---	---	---	---
						12:50				
Analyte	CAS Number	Method	LOR	Unit	CG2103457-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	5.2	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	366	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	366	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	600	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	361	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	440	---	---	---	---	---
pH	---	E108	0.10	pH units	7.95	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	405	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	6.6	---	---	---	---	---
turbidity	---	E121	0.10	NTU	27.0	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	447	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.74	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.062	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.123	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.275	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0116	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0287	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	12.2	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	2.55	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	3.07	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC0901 _WG_Q3-2021_ NP	----	----	----	----
Client sampling date / time					19-Aug-2021 12:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103457-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	7.61	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	7.35	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.6	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.74	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.180	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00023	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00037	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.225	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.157	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	98.5	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00042	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.34	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00127	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.300	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000220	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0032	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	27.9	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0223	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000614	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00218	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.41	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	0.522	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	6.97	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000011	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	2.46	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.161	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC0901 _WG_Q3-2021_ NP	----	----	----	----
Client sampling date / time					19-Aug-2021 12:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103457-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	4.96	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000023	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00323	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00230	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00138	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0058	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0017	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00020	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00020	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.224	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0806	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	100	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0120 <sup>DTC</sup>	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000084	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0029	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	27.1	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00038	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000602	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00134	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.28	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.544	----	----	----	----	



**Analytical Results**

Sub-Matrix: <b>Water</b>					Client sample ID	LC_PIZDC0901 _WG_Q3-2021_ NP	----	----	----	----
(Matrix: <b>Water</b> )					Client sampling date / time	19-Aug-2021 12:50	----	----	----	----
<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	CG2103457-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.79	----	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.36	----	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.152	----	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.29	----	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000010	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00219	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0044	----	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103457</b>	Page	: 1 of 11
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 20-Aug-2021 08:30
PO	: VPO00739930	Issue Date	: 03-Sep-2021 14:37
C-O-C number	: PIZDC0901 20210819		
Sampler	: T.Dick/D.Tymstra		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E298	19-Aug-2021	24-Aug-2021	----	----		24-Aug-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E235.Br-L	19-Aug-2021	----	----	----		20-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E235.Cl-L	19-Aug-2021	----	----	----		20-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E378-U	19-Aug-2021	----	----	----		20-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E235.F	19-Aug-2021	----	----	----		20-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E235.NO3-L	19-Aug-2021	----	----	----		20-Aug-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E235.NO2-L	19-Aug-2021	----	----	----		20-Aug-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E235.SO4	19-Aug-2021	----	----	----		20-Aug-2021	28 days	1 days		✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E318	19-Aug-2021	25-Aug-2021	----	----		30-Aug-2021	28 days	11 days		✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E372-U	19-Aug-2021	25-Aug-2021	----	----		25-Aug-2021	28 days	6 days		✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E421.Cr-L	19-Aug-2021	25-Aug-2021	----	----		26-Aug-2021	180 days	7 days		✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E509	19-Aug-2021	25-Aug-2021	----	----		25-Aug-2021	28 days	6 days		✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E421	19-Aug-2021	25-Aug-2021	----	----		26-Aug-2021	180 days	7 days		✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E358-L	19-Aug-2021	22-Aug-2021	----	----		24-Aug-2021	28 days	5 days		✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E355-L	19-Aug-2021	22-Aug-2021	----	----		24-Aug-2021	28 days	5 days		✔
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E283	19-Aug-2021	----	----	----		26-Aug-2021	14 days	7 days		✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE LC_PIZDC0901_WG_Q3-2021_NP	E290	19-Aug-2021	----	----	----		27-Aug-2021	14 days	8 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_PIZDC0901_WG_Q3-2021_NP	E100	19-Aug-2021	----	----	----		27-Aug-2021	28 days	8 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE LC_PIZDC0901_WG_Q3-2021_NP	E125	19-Aug-2021	----	----	----		27-Aug-2021	0.34 hrs	187 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_PIZDC0901_WG_Q3-2021_NP	E108	19-Aug-2021	----	----	----		27-Aug-2021	0.25 hrs	190 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_PIZDC0901_WG_Q3-2021_NP	E162	19-Aug-2021	----	----	----		25-Aug-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE LC_PIZDC0901_WG_Q3-2021_NP	E160-L	19-Aug-2021	----	----	----		25-Aug-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE LC_PIZDC0901_WG_Q3-2021_NP	E121	19-Aug-2021	----	----	----		21-Aug-2021	3 days	2 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
HDPE total (nitric acid) LC_PIZDC0901_WG_Q3-2021_NP	E420.Cr-L	19-Aug-2021	----	----	----		25-Aug-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
HDPE total (nitric acid) LC_PIZDC0901_WG_Q3-2021_NP	E420	19-Aug-2021	----	----	----		25-Aug-2021	180 days	6 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended



Page : 5 of 11  
Work Order : CG2103457  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	276847	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	277849	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	274628	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	272468	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	272469	1	20	5.0	5.0	✓
Conductivity in Water	E100	277850	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	275070	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	275399	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	275071	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	273617	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	272197	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	272466	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	272470	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	272471	1	20	5.0	5.0	✓
ORP by Electrode	E125	276970	1	18	5.5	5.0	✓
pH by Meter	E108	277851	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	272467	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	275384	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	275090	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	276238	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	275089	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	273618	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	274442	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	273071	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	276847	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	277849	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	274628	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	272468	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	272469	1	20	5.0	5.0	✓
Conductivity in Water	E100	277850	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	275070	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	275399	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	275071	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	273617	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	272197	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	272466	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	272470	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	272471	1	20	5.0	5.0	✓
ORP by Electrode	E125	276970	1	18	5.5	5.0	✓
pH by Meter	E108	277851	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	272467	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	275384	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	275090	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	276238	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	275089	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	273618	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	274442	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	275378	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	273071	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	276847	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	277849	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	274628	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	272468	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	272469	1	20	5.0	5.0	✓
Conductivity in Water	E100	277850	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	275070	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	275399	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	275071	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	273617	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	272197	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	272466	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	272470	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	272471	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	272467	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	275384	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	275090	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	276238	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	275089	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	273618	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	274442	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	275378	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	273071	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	274628	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	272468	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	272469	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	275070	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	275399	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	275071	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	273617	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	272197	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	272466	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	272470	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	272471	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	272467	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	275090	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	276238	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	275089	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	273618	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	274442	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2103457**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : PIZDC0901 20210819  
**Sampler** : T.Dick/D.Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Aug-2021 08:30  
**Date Analysis Commenced** : 20-Aug-2021  
**Issue Date** : 03-Sep-2021 14:37

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

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Page : 2 of 17  
Work Order : CG2103457  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 273071)</b>											
CG2103448-001	Anonymous	turbidity	----	E121	0.10	NTU	2.50	2.24	10.9%	15%	----
<b>Physical Tests (QC Lot: 275384)</b>											
CG2103455-005	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	346	355	2.57%	20%	----
<b>Physical Tests (QC Lot: 276847)</b>											
CG2103455-003	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	5.5	4.3	1.2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 276970)</b>											
CG2103455-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	256	256	0.196%	15%	----
<b>Physical Tests (QC Lot: 277849)</b>											
CG2103455-003	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	402	398	1.00%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	402	398	1.00%	20%	----
<b>Physical Tests (QC Lot: 277850)</b>											
CG2103455-003	Anonymous	conductivity	----	E100	2.0	µS/cm	1240	1240	0.0804%	10%	----
<b>Physical Tests (QC Lot: 277851)</b>											
CG2103455-003	Anonymous	pH	----	E108	0.10	pH units	7.98	8.02	0.500%	4%	----
<b>Anions and Nutrients (QC Lot: 272197)</b>											
CG2103455-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 272466)</b>											
CG2103455-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.170	0.170	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 272467)</b>											
CG2103455-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	155	155	0.0118%	20%	----
<b>Anions and Nutrients (QC Lot: 272468)</b>											
CG2103455-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 272469)</b>											
CG2103455-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.59	0.58	0.01	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 272470)</b>											
CG2103455-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	7.53	7.53	0.0650%	20%	----
<b>Anions and Nutrients (QC Lot: 272471)</b>											
CG2103455-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0065	0.0063	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 274442)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 274442) - continued</b>											
CG2103455-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0045	0.0047	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 274628)</b>											
CG2103448-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0118	0.0101	0.0017	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 276238)</b>											
CG2103455-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.272	0.247	0.025	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 273617)</b>											
CG2103448-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.57	2.66	0.09	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 273618)</b>											
CG2103448-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.56	2.55	0.01	Diff <2x LOR	----
<b>Total Metals (QC Lot: 275089)</b>											
CG2103418-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0101	0.0100	0.0002	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00025	0.00024	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0879	0.0892	1.52%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0290 µg/L	0.0000288	0.0000002	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	110	107	3.08%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.011	<0.010	0.001	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0083	0.0082	0.00006	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	84.2	81.7	3.05%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00096	0.00092	0.00004	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00290	0.00301	3.80%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00137	0.00139	0.00002	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.21	1.19	1.43%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	66.1 µg/L	0.0651	1.52%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.58	2.64	1.99%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	1.07	1.05	1.37%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.145	0.147	1.48%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	146	143	2.14%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 275089) - continued</b>											
CG2103418-001	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	0.000013	0.000012	0.0000004	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00507	0.00508	0.102%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0071	0.0066	0.0004	Diff <2x LOR	----
<b>Total Metals (QC Lot: 275090)</b>											
CG2103418-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00023	0.00023	0.000005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 275070)</b>											
CG2103419-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	0.00013	0.000006	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 275071)</b>											
CG2103419-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0117	0.0132	11.9%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00050	0.00050	0.0000009	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00025	0.00025	0.0000007	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.158	0.155	2.46%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.029	0.028	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0979 µg/L	0.000109	10.8%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	134	131	1.88%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.26 µg/L	0.00029	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00054	0.00057	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	0.000054	0.000004	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0307	0.0283	8.05%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	59.9	57.8	3.49%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0273	0.0278	1.99%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00304	0.00304	0.206%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00125	0.00130	0.00005	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.80	4.83	0.572%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	65.5 µg/L	0.0675	3.05%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.00	1.98	1.17%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	11.1	10.8	2.76%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.06	1.08	1.92%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 275071) - continued</b>											
CG2103419-001	Anonymous	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	88.7	89.2	0.517%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000021	0.000020	0.0000005	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00272	0.00264	3.04%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0026	0.0038	0.0013	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 275399)</b>											
CG2103455-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 273071)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 275378)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 275384)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 276847)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 277849)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 277850)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 272197)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 272466)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 272467)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 272468)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 272469)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 272470)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 272471)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 274442)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 274628)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 276238)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 276238) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 273617)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 273618)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 275089)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 275089) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 275090)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 275070)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 275071)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---



Page : 10 of 17  
Work Order : CG2103457  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 275071) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 275399)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 273071)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.0	85.0	115	---
<b>Physical Tests (QCLot: 275378)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.1	85.0	115	---
<b>Physical Tests (QCLot: 275384)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 276847)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 276970)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	104	95.4	104	---
<b>Physical Tests (QCLot: 277849)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 277850)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	96.4	90.0	110	---
<b>Physical Tests (QCLot: 277851)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Anions and Nutrients (QCLot: 272197)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 272466)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 272467)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 272468)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.7	85.0	115	---
<b>Anions and Nutrients (QCLot: 272469)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 272470)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 272471)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 274442)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	92.8	80.0	120	---
<b>Anions and Nutrients (QCLot: 274628)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 274628) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Anions and Nutrients (QCLot: 276238)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 273617)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 273618)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 275089)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.5	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.7	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 275089) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.5	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.5	80.0	120	----
<b>Total Metals (QCLot: 275090)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 275070)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
<b>Dissolved Metals (QCLot: 275071)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.5	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.3	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	107	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.7	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.7	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 275071) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.2	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.1	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 272197)</b>										
CG2103455-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0491 mg/L	0.05 mg/L	98.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 272466)</b>										
CG2103460-011	Anonymous	fluoride	16984-48-8	E235.F	0.922 mg/L	1 mg/L	92.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 272467)</b>										
CG2103460-011	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	97.0 mg/L	100 mg/L	97.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 272468)</b>										
CG2103460-011	Anonymous	bromide	24959-67-9	E235.Br-L	0.490 mg/L	0.5 mg/L	98.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 272469)</b>										
CG2103460-011	Anonymous	chloride	16887-00-6	E235.Cl-L	95.4 mg/L	100 mg/L	95.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 272470)</b>										
CG2103460-011	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.40 mg/L	2.5 mg/L	95.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 272471)</b>										
CG2103460-011	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.474 mg/L	0.5 mg/L	94.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 274442)</b>										
CG2103455-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0685 mg/L	0.0676 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 274628)</b>										
CG2103448-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 276238)</b>										
CG2103455-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.70 mg/L	2.5 mg/L	108	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 273617)</b>										
CG2103448-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.1 mg/L	23.9 mg/L	101	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 273618)</b>										
CG2103448-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.4 mg/L	23.9 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 275089)</b>										
CG2103418-002	Anonymous	aluminum, total	7429-90-5	E420	0.203 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, total	7440-36-0	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 275089) - continued</b>										
CG2103418-002	Anonymous	beryllium, total	7440-41-7	E420	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00943 mg/L	0.01 mg/L	94.3	70.0	130	----
		boron, total	7440-42-8	E420	0.100 mg/L	0.1 mg/L	99.9	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00385 mg/L	0.004 mg/L	96.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		copper, total	7440-50-8	E420	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		iron, total	7439-89-6	E420	1.90 mg/L	2 mg/L	94.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		lithium, total	7439-93-2	E420	0.0904 mg/L	0.1 mg/L	90.4	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0194 mg/L	0.02 mg/L	97.3	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		potassium, total	7440-09-7	E420	3.96 mg/L	4 mg/L	98.9	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.16 mg/L	10 mg/L	91.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00380 mg/L	0.004 mg/L	94.9	70.0	130	----
		tin, total	7440-31-5	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		titanium, total	7440-32-6	E420	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		uranium, total	7440-61-1	E420	0.00379 mg/L	0.004 mg/L	94.8	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.381 mg/L	0.4 mg/L	95.2	70.0	130	----
<b>Total Metals (QCLot: 275090)</b>										
CG2103418-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 275070)</b>										
CG2103419-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----
<b>Dissolved Metals (QCLot: 275071)</b>										
CG2103419-002	Anonymous	zinc, dissolved	7440-66-6	E421	0.380 mg/L	0.4 mg/L	95.0	70.0	130	----
CG2103419-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.190 mg/L	0.2 mg/L	95.1	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0216 mg/L	0.02 mg/L	108	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 275071) - continued</b>										
CG2103419-002	Anonymous	barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0389 mg/L	0.04 mg/L	97.4	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00907 mg/L	0.01 mg/L	90.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.099 mg/L	0.1 mg/L	99.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0181 mg/L	0.02 mg/L	90.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	96.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0979 mg/L	0.1 mg/L	97.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0355 mg/L	0.04 mg/L	88.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.54 mg/L	10 mg/L	85.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00374 mg/L	0.004 mg/L	93.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0977 mg/L	0.1 mg/L	97.7	70.0	130	----
<b>Dissolved Metals (QCLot: 275399)</b>										
CG2103455-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000998 mg/L	0.0001 mg/L	99.8	70.0	130	----



COC ID: <b>PIZDC0901 20210819</b>		TURNAROUND TIME:			RUSH:					
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO		
Facility Name / Job# Line Creek Operation				Lab Name ALS Calgary				Report Format / Distribution		
Project Manager Tom Jeffery				Lab Contact Lyudmyla Shvets				Excel PDF EDD		
Email tom.jeffery@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com				Email 1: <a href="mailto:aric.blurton@teck.com">aric.blurton@teck.com</a>		
Address Box 2003				Address 2559 29 Street NE				Email 2: <a href="mailto:teckcoal@equisonline.com">teckcoal@equisonline.com</a>		
15km North Hwy 43								Email 3: <a href="mailto:drake.tymstra@teck.com">drake.tymstra@teck.com</a>		
City Sparwood				Province BC		City Calgary		Province AB		Email 4: <a href="mailto:Shanise.fossen@teck.com">Shanise.fossen@teck.com</a>
V0B 2G0				Country Canada		Postal Code T1Y 7B5		Country Canada		PO number <b>43000739930</b>
5-8478				Phone Number 403 407 1794						

Environmental Division  
Calgary  
Work Order Reference  
**CG2103457**



Telephone : + 1 403 407 1800

SAMPLE DETAILS							ANALYSIS REQUESTED									
Sample ID	Sample Location (sys_loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-Sulfate-T	ALS_Package-TKN/TOC
LC_PIZDC0901_WG_Q3-2021_NP	LC_PIZDC0901	WG		19-Aug	12:50	G	6		1	1		1	1	1		1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/T.Dick	19-Aug	<i>[Signature]</i>	<i>[Signature]</i>

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	T.Dick/D.Tymstra	Mobile #
Regular (default) <input checked="" type="checkbox"/>		Sampler's Signature	<i>[Signature]</i>	Date/Time
Priority (2-3 business days) - 50% surcharge				August 19, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103481**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : PIZP1103 20210819  
**Sampler** : T.Dick/D.Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Aug-2021 08:30  
**Date Analysis Commenced** : 22-Aug-2021  
**Issue Date** : 03-Sep-2021 14:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_PIZP1103_	---	---	---	---
(Matrix: Water)					WG_Q3-2021_N					
					P					
					Client sampling date / time	20-Aug-2021	---	---	---	---
					13:30					
Analyte	CAS Number	Method	LOR	Unit	CG2103481-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	2.0	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	433	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	433	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	741	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	137	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	536	---	---	---	---	---
pH	---	E108	0.10	pH units	8.05	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	444	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	16.4	---	---	---	---	---
turbidity	---	E121	0.10	NTU	17.5	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	528	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0491	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.99	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.347	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.086	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0999	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0109	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0483	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0786	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	28.1	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	2.56	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	1.70	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1103_	---	---	---	---
					WG_Q3-2021_N					
					P					
					Client sampling date / time	20-Aug-2021	---	---	---	---
					13:30					
Analyte	CAS Number	Method	LOR	Unit	CG2103481-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.35	---	---	---	---	---
cation sum	----	EC101	0.10	meq/L	8.98	---	---	---	---	---
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.0	---	---	---	---	---
ion balance (cation-anion difference)	----	EC101	0.010	%	2.02	---	---	---	---	---
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.447	---	---	---	---	---
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00036	---	---	---	---	---
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00118	---	---	---	---	---
barium, total	7440-39-3	E420	0.00010	mg/L	0.0724	---	---	---	---	---
beryllium, total	7440-41-7	E420	0.020	µg/L	0.023	---	---	---	---	---
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	---	---	---	---	---
boron, total	7440-42-8	E420	0.010	mg/L	0.524	---	---	---	---	---
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0488	---	---	---	---	---
calcium, total	7440-70-2	E420	0.050	mg/L	27.0	---	---	---	---	---
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00118	---	---	---	---	---
cobalt, total	7440-48-4	E420	0.10	µg/L	0.96	---	---	---	---	---
copper, total	7440-50-8	E420	0.00050	mg/L	0.00720	---	---	---	---	---
iron, total	7439-89-6	E420	0.010	mg/L	0.601	---	---	---	---	---
lead, total	7439-92-1	E420	0.000050	mg/L	0.000762	---	---	---	---	---
lithium, total	7439-93-2	E420	0.0010	mg/L	0.109	---	---	---	---	---
magnesium, total	7439-95-4	E420	0.0050	mg/L	15.1	---	---	---	---	---
manganese, total	7439-96-5	E420	0.00010	mg/L	0.476	---	---	---	---	---
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0273	---	---	---	---	---
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00186	---	---	---	---	---
potassium, total	7440-09-7	E420	0.050	mg/L	1.76	---	---	---	---	---
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	---	---	---	---	---
silicon, total	7440-21-3	E420	0.10	mg/L	5.26	---	---	---	---	---
silver, total	7440-22-4	E420	0.000010	mg/L	0.000011	---	---	---	---	---
sodium, total	17341-25-2	E420	0.050	mg/L	129	---	---	---	---	---
strontium, total	7440-24-6	E420	0.00020	mg/L	0.787	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1103_ WG_Q3-2021_N P	----	----	----	----
Client sampling date / time					20-Aug-2021 13:30	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103481-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	10.9	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000019	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00034	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0113	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00195	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00191	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0138	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0018	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00025	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00100	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0672	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.543	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0150 <sup>DLM</sup>	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	28.0	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00020	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.24	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00126	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.019	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.114	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	16.4	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.172	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0282	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00068	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.64	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1103_	---	---	---	---
					WG_Q3-2021_N					
					P					
					Client sampling date / time	20-Aug-2021	---	---	---	---
					13:30					
Analyte	CAS Number	Method	LOR	Unit	CG2103481-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.06	---	---	---	---	---
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	---	---	---	---	---
sodium, dissolved	17341-25-2	E421	0.050	mg/L	142	---	---	---	---	---
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.833	---	---	---	---	---
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	10.0	---	---	---	---	---
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000011	---	---	---	---	---
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	---	---	---	---	---
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00197	---	---	---	---	---
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00066	---	---	---	---	---
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0029	---	---	---	---	---
dissolved mercury filtration location	----	EP509	-	-	Field	---	---	---	---	---
dissolved metals filtration location	----	EP421	-	-	Field	---	---	---	---	---

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2103481</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Tom Jeffery <b>Address</b> : PO BOX 2003 15km North Hwy 43 Sparwood BC Canada <b>Telephone</b> : 250-433-8467 <b>Project</b> : LINE CREEK OPERATION <b>PO</b> : VPO00739930 <b>C-O-C number</b> : PIZP1103 20210819 <b>Sampler</b> : T.Dick/D.Tymstra <b>Site</b> : ---- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 1 <b>No. of samples analysed</b> : 1	<b>Page</b> : 1 of 11 <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Lyudmyla Shvets <b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5 <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 21-Aug-2021 08:30 <b>Issue Date</b> : 03-Sep-2021 14:55
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### **Summary of Outliers**

#### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

#### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E298	20-Aug-2021	25-Aug-2021	----	----		25-Aug-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E235.Br-L	20-Aug-2021	----	----	----		22-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E235.Cl-L	20-Aug-2021	----	----	----		22-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E378-U	20-Aug-2021	----	----	----		22-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E235.F	20-Aug-2021	----	----	----		22-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E235.NO3-L	20-Aug-2021	----	----	----		22-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E235.NO2-L	20-Aug-2021	----	----	----		22-Aug-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E235.SO4	20-Aug-2021	----	----	----		22-Aug-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E318	20-Aug-2021	26-Aug-2021	----	----		31-Aug-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E372-U	20-Aug-2021	26-Aug-2021	----	----		26-Aug-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E421.Cr-L	20-Aug-2021	26-Aug-2021	----	----		27-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E509	20-Aug-2021	26-Aug-2021	----	----		26-Aug-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E421	20-Aug-2021	26-Aug-2021	----	----		27-Aug-2021	180 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E358-L	20-Aug-2021	25-Aug-2021	----	----		26-Aug-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E355-L	20-Aug-2021	25-Aug-2021	----	----		27-Aug-2021	28 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E283	20-Aug-2021	----	----	----		28-Aug-2021	14 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE LC_PIZP1103_WG_Q3-2021_NP	E290	20-Aug-2021	----	----	----		27-Aug-2021	14 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_PIZP1103_WG_Q3-2021_NP	E100	20-Aug-2021	----	----	----		27-Aug-2021	28 days	7 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE LC_PIZP1103_WG_Q3-2021_NP	E125	20-Aug-2021	----	----	----		30-Aug-2021	0.34 hrs	242 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_PIZP1103_WG_Q3-2021_NP	E108	20-Aug-2021	----	----	----		27-Aug-2021	0.25 hrs	167 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_PIZP1103_WG_Q3-2021_NP	E162	20-Aug-2021	----	----	----		25-Aug-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] LC_PIZP1103_WG_Q3-2021_NP	E160-L	20-Aug-2021	----	----	----		25-Aug-2021	7 days	5 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE LC_PIZP1103_WG_Q3-2021_NP	E121	20-Aug-2021	----	----	----		22-Aug-2021	3 days	2 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
HDPE total (nitric acid) LC_PIZP1103_WG_Q3-2021_NP	E420.Cr-L	20-Aug-2021	----	----	----		27-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
HDPE total (nitric acid) LC_PIZP1103_WG_Q3-2021_NP	E420	20-Aug-2021	----	----	----		27-Aug-2021	180 days	7 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 5 of 11  
Work Order : CG2103481  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	278844	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	277975	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	275526	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	273440	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	273441	1	8	12.5	5.0	✓
Conductivity in Water	E100	277973	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	276335	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	276467	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	276336	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	276063	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	273330	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	273444	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	273442	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	273443	1	8	12.5	5.0	✓
ORP by Electrode	E125	279662	1	19	5.2	5.0	✓
pH by Meter	E108	277974	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	273439	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	275386	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	276450	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	277175	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	276451	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	276064	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	275500	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	273414	1	6	16.6	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	278844	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	277975	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	275526	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	273440	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	273441	1	8	12.5	5.0	✓
Conductivity in Water	E100	277973	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	276335	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	276467	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	276336	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	276063	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	273330	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	273444	1	8	12.5	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	273442	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	273443	1	8	12.5	5.0	✓
ORP by Electrode	E125	279662	1	19	5.2	5.0	✓
pH by Meter	E108	277974	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	273439	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	275386	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	276450	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	277175	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	276451	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	276064	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	275500	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	275379	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	273414	1	6	16.6	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	278844	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	277975	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	275526	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	273440	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	273441	1	8	12.5	5.0	✓
Conductivity in Water	E100	277973	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	276335	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	276467	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	276336	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	276063	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	273330	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	273444	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	273442	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	273443	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	273439	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	275386	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	276450	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	277175	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	276451	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	276064	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	275500	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	275379	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	273414	1	6	16.6	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	275526	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	273440	1	8	12.5	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	273441	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	276335	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	276467	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	276336	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	276063	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	273330	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	273444	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	273442	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	273443	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	273439	1	8	12.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	276450	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	277175	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	276451	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	276064	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	275500	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2103481**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : PIZP1103 20210819  
**Sampler** : T.Dick/D.Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Aug-2021 08:30  
**Date Analysis Commenced** : 22-Aug-2021  
**Issue Date** : 03-Sep-2021 14:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
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Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2103481  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 273414)</b>											
CG2103476-002	Anonymous	turbidity	----	E121	0.10	NTU	98.0	95.2	2.90%	15%	----
<b>Physical Tests (QC Lot: 275386)</b>											
CG2103474-016	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1500	1480	0.873%	20%	----
<b>Physical Tests (QC Lot: 277973)</b>											
CG2103476-002	Anonymous	conductivity	----	E100	2.0	µS/cm	679	673	0.888%	10%	----
<b>Physical Tests (QC Lot: 277974)</b>											
CG2103476-002	Anonymous	pH	----	E108	0.10	pH units	7.80	7.80	0.00%	4%	----
<b>Physical Tests (QC Lot: 277975)</b>											
CG2103476-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	260	261	0.308%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	260	261	0.307%	20%	----
<b>Physical Tests (QC Lot: 278844)</b>											
CG2103476-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	5.0	3.9	1.1	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 279662)</b>											
CG2103476-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	512	524	2.26%	15%	----
<b>Anions and Nutrients (QC Lot: 273330)</b>											
CG2103476-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0023	0.0022	0.00009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 273439)</b>											
CG2103480-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	445	448	0.680%	20%	----
<b>Anions and Nutrients (QC Lot: 273440)</b>											
CG2103480-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 273441)</b>											
CG2103480-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	6.44	6.47	0.497%	20%	----
<b>Anions and Nutrients (QC Lot: 273442)</b>											
CG2103480-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	61.0	61.4	0.599%	20%	----
<b>Anions and Nutrients (QC Lot: 273443)</b>											
CG2103480-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.128	0.127	0.860%	20%	----
<b>Anions and Nutrients (QC Lot: 273444)</b>											
CG2103480-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.114	0.115	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 275500)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 275500) - continued</b>											
CG2103476-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0358	0.0376	4.66%	20%	----
<b>Anions and Nutrients (QC Lot: 275526)</b>											
CG2103480-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0208	0.0163	0.0045	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 277175)</b>											
CG2103476-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.095	0.096	0.002	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 276063)</b>											
CG2103476-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.26	2.20	0.07	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 276064)</b>											
CG2103476-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.36	2.49	0.12	Diff <2x LOR	----
<b>Total Metals (QC Lot: 276450)</b>											
CG2103474-014	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 276451)</b>											
CG2103474-014	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00021	0.00020	0.00001	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00120	0.00127	5.22%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0132	0.0130	1.17%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.021	0.019	0.001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	230	226	2.15%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.11 µg/L	0.00012	0.000009	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.313	0.321	2.30%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0307	0.0289	5.85%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	146	146	0.0264%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0627	0.0625	0.314%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000861	0.000853	0.910%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00061	0.00069	0.00007	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	3.89	3.89	0.124%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	0.849 µg/L	0.000834	1.74%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.56	3.54	0.551%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	4.35	4.27	1.86%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 276451) - continued</b>											
CG2103474-014	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	0.285	0.292	2.28%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	273	275	0.867%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00880	0.00878	0.190%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00065	0.00066	0.00001	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 276335)</b>											
CG2103474-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 276336)</b>											
CG2103474-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0020	0.0025	0.0005	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00020	0.00022	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0120	0.0124	3.19%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.076	0.074	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.633 µg/L	0.000640	1.08%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	321	310	3.49%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	37.3 µg/L	0.0381	2.22%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00054	0.00062	0.00008	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	0.153	0.156	0.002	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.0936	0.0883	5.85%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	175	175	0.280%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.956	0.968	1.20%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00216	0.00211	1.95%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.122	0.123	0.801%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	5.00	5.03	0.695%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	1.96 µg/L	0.00181	7.48%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	3.13	3.09	1.15%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	8.99	8.98	0.0492%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.382	0.374	2.06%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 276336) - continued</b>											
CG2103474-001	Anonymous	sulfur, dissolved	7704-34-9	E421	1.00	mg/L	317	323	1.93%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000121	0.000127	0.000006	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0172	0.0172	0.0728%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0611	0.0620	1.48%	20%	----
<b>Dissolved Metals (QC Lot: 276467)</b>											
CG2103474-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 273414)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 275379)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 275386)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 277973)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 277975)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 278844)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 273330)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 273439)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 273440)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 273441)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 273442)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 273443)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 273444)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 275500)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 275526)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 277175)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 277175) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 276063)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 276064)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 276450)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 276451)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 276451) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 276335)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 276336)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----

Page : 10 of 17  
Work Order : CG2103481  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 276336) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 276467)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 273414)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.5	85.0	115	---
<b>Physical Tests (QCLot: 275379)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	95.0	85.0	115	---
<b>Physical Tests (QCLot: 275386)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.8	85.0	115	---
<b>Physical Tests (QCLot: 277973)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.2	90.0	110	---
<b>Physical Tests (QCLot: 277974)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 277975)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 278844)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 279662)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 273330)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	103	80.0	120	---
<b>Anions and Nutrients (QCLot: 273439)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 273440)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 273441)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	97.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 273442)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	97.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 273443)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 273444)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 275500)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	94.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 275526)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 275526) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.8	85.0	115	----
<b>Anions and Nutrients (QCLot: 277175)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	97.0	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 276063)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	95.6	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 276064)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	97.1	80.0	120	----
<b>Total Metals (QCLot: 276450)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 276451)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	96.2	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	98.7	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	95.5	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	92.2	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	96.7	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.7	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	94.7	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	94.4	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	94.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	96.7	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	91.7	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	95.6	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.5	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	96.0	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	95.3	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	94.8	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	99.1	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	93.6	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	96.5	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	95.2	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	101	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 276451) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.4	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	91.0	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	93.0	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.1	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	97.3	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.9	80.0	120	----
<b>Dissolved Metals (QCLot: 276335)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 276336)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.1	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.0	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	91.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	105	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.6	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	91.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.6	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.7	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 276336) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.5	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 273330)</b>										
CG2103480-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0486 mg/L	0.05 mg/L	97.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 273439)</b>										
CG2103480-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 273440)</b>										
CG2103480-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.524 mg/L	0.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 273441)</b>										
CG2103480-002	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 273442)</b>										
CG2103480-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 273443)</b>										
CG2103480-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.510 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 273444)</b>										
CG2103480-002	Anonymous	fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 275500)</b>										
CG2103478-001	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 275526)</b>										
CG2103480-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.107 mg/L	0.1 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 277175)</b>										
CG2103476-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.43 mg/L	2.5 mg/L	97.2	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 276063)</b>										
CG2103476-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	19.3 mg/L	23.9 mg/L	80.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 276064)</b>										
CG2103476-001	Anonymous	carbon, total organic [TOC]	----	E355-L	19.5 mg/L	23.9 mg/L	81.4	70.0	130	----
<b>Total Metals (QCLot: 276450)</b>										
CG2103474-015	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0822 mg/L	0.08 mg/L	103	70.0	130	----
<b>Total Metals (QCLot: 276451)</b>										
CG2103474-015	Anonymous	aluminum, total	7429-90-5	E420	0.399 mg/L	0.4 mg/L	99.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 276451) - continued</b>										
CG2103474-015	Anonymous	arsenic, total	7440-38-2	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0741 mg/L	0.08 mg/L	92.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0178 mg/L	0.02 mg/L	89.0	70.0	130	----
		boron, total	7440-42-8	E420	0.196 mg/L	0.2 mg/L	98.1	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00812 mg/L	0.008 mg/L	102	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0382 mg/L	0.04 mg/L	95.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0364 mg/L	0.04 mg/L	91.1	70.0	130	----
		iron, total	7439-89-6	E420	3.96 mg/L	4 mg/L	99.1	70.0	130	----
		lead, total	7439-92-1	E420	0.0361 mg/L	0.04 mg/L	90.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.174 mg/L	0.2 mg/L	87.0	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	8.14 mg/L	8 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0849 mg/L	0.08 mg/L	106	70.0	130	----
		silicon, total	7440-21-3	E420	18.8 mg/L	20 mg/L	94.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00758 mg/L	0.008 mg/L	94.7	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00719 mg/L	0.008 mg/L	89.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.0814 mg/L	0.08 mg/L	102	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.203 mg/L	0.2 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.776 mg/L	0.8 mg/L	97.0	70.0	130	----
<b>Dissolved Metals (QCLot: 276335)</b>										
CG2103474-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
<b>Dissolved Metals (QCLot: 276336)</b>										
CG2103474-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.190 mg/L	0.2 mg/L	94.8	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0218 mg/L	0.02 mg/L	109	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 276336) - continued</b>										
CG2103474-002	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0363 mg/L	0.04 mg/L	90.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00893 mg/L	0.01 mg/L	89.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.090 mg/L	0.1 mg/L	90.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00395 mg/L	0.004 mg/L	98.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0184 mg/L	0.02 mg/L	92.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0183 mg/L	0.02 mg/L	91.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	94.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0825 mg/L	0.1 mg/L	82.5	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0213 mg/L	0.02 mg/L	107	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0358 mg/L	0.04 mg/L	89.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0449 mg/L	0.04 mg/L	112	70.0	130	----
		silicon, dissolved	7440-21-3	E421	10.0 mg/L	10 mg/L	100	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00365 mg/L	0.004 mg/L	91.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.393 mg/L	0.4 mg/L	98.4	70.0	130	----
<b>Dissolved Metals (QCLot: 276467)</b>										
CG2103474-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000973 mg/L	0.0001 mg/L	97.3	70.0	130	----

COC ID: **PIZP1103 20210819**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	shvets.lyudmyla@teck.com		
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		
Address	Box 2003 115km North Hwy 43			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com		
	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	shanise.fossen@teck.com		
	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	WPO00739930		
78				Phone Number	403 407 1794						

Environmental Division  
Calgary  
Work Order Reference  
**CG2103481**



Telephone: +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys+loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	N	Y	Y	N	Y	N	N	N	N	N	N
								PRESERV.	H2SO4	HCl	NONE	HNO3	HNO3	NONE	NaOH/Zn Ac	H2SO4			
								ANALYSIS	ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-Sulfide-T	ALS_Package-TKN/TOC		
LC_PIZP1103_WG_Q3-2021_NP	LC_PIZP1103	WG		20-Aug	13:30 PM	G	6												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/T.Dick	20-Aug	<i>[Signature]</i>	21/08 8:30

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/>	T.Dick/D.Tymstra		<i>[Signature]</i>	August 20, 2021
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2103638**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : Q3 GW PIZDC1404S-D 20210826  
**Sampler** : S.Fossen/D.Tymstra  
**Site** : ---  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-Aug-2021 09:00  
**Date Analysis Commenced** : 27-Aug-2021  
**Issue Date** : 03-Nov-2021 15:51

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilmaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

Sample	Client Id	Comment
CG2103638-002	LC_PIZDC1404S_WG-Q3-202 1-NP	Ultra Total Hg requested on COC but regular Total Hg vial was received.

## Qualifiers

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1404 D_WG_Q3-2021 -NP	LC_PIZDC1404 S_WG-Q3-2021 -NP	---	---	---
Client sampling date / time					26-Aug-2021 12:50	26-Aug-2021 11:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103638-001 Result	CG2103638-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	<2.0	---	---	---	
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	354	179	---	---	---	
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	7.4	<1.0	---	---	---	
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	362	179	---	---	---	
conductivity	---	E100	2.0	µS/cm	643	336	---	---	---	
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	280	191	---	---	---	
oxidation-reduction potential [ORP]	---	E125	0.10	mV	432	439	---	---	---	
pH	---	E108	0.10	pH units	8.30	8.22	---	---	---	
solids, total dissolved [TDS]	---	E162	10	mg/L	392	205	---	---	---	
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	5.3	5.0	---	---	---	
turbidity	---	E121	0.10	NTU	13.4	13.7	---	---	---	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	432	218	---	---	---	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	4.4	<1.0	---	---	---	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	2.46	0.0111	---	---	---	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	---	---	---	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.48	0.12	---	---	---	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.163	0.118	---	---	---	
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	2.82	0.068	---	---	---	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	---	---	---	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0093	0.0163	---	---	---	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	4.74	---	---	---	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	5.14	5.02	---	---	---	
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	4.44	4.42	---	---	---	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1404 D_WG_Q3-2021 -NP	LC_PIZDC1404 S_WG-Q3-2021 -NP	---	---	---
Client sampling date / time					26-Aug-2021 12:50	26-Aug-2021 11:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103638-001 Result	CG2103638-002 Result	----- ---	----- ---	----- ---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	7.26	3.68	---	---	---	
cation sum	----	EC101	0.10	meq/L	7.91	3.94	---	---	---	
ion balance (cations/anions ratio)	----	EC101	0.010	%	109	107	---	---	---	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.28	3.41	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0046	0.0264	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	<0.00010	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00174	0.00361	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	3.93	0.244	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	0.027	<0.010	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0100 <sup>DLM</sup>	0.0089	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	56.9	51.6	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	1.06	0.38	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	2.24	1.96	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000053	0.000099	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.578	0.0053	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	34.2	18.5	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0318	0.0304	---	---	---	
mercury, total	7439-97-6	E508	0.0000050	mg/L	---	<0.0000050	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0208	0.00350	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00067	0.00144	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	24.3	1.56	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	<0.050	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	2.79	3.66	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	33.7	1.20	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1404 D_WG-Q3-2021 -NP	LC_PIZDC1404 S_WG-Q3-2021 -NP	---	---	---
Client sampling date / time					26-Aug-2021 12:50	26-Aug-2021 11:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103638-001 Result	CG2103638-002 Result	-----	-----	-----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.248	0.0503	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	1.86	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	0.00035	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000137	0.000630	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0032	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0022	0.0012	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00182	0.00165	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	3.97	0.231	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	<0.010	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	54.9	47.8	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	1.02	0.31	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00046	<0.00020	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	2.00	0.800	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.548	0.0054	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	34.8	17.4	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0320	0.0266	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0190	0.00320	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00055	0.00121	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	24.4	1.50	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1404 D_WG_Q3-2021 -NP	LC_PIZDC1404 S_WG-Q3-2021 -NP	---	---	---
Client sampling date / time					26-Aug-2021 12:50	26-Aug-2021 11:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103638-001 Result	CG2103638-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.84	3.49	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	33.0	1.28	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.216	0.0445	---	---	---	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	1.63	---	---	---	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000113	0.000550	---	---	---	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0022	<0.0010	---	---	---	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	---	---	---	
dissolved metals filtration location	----	EP421	-	-	Field	Field	---	---	---	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>CG2103706</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Tom Jeffery <b>Address</b> : PO BOX 2003 15km North Hwy 43 Sparwood BC Canada <b>Telephone</b> : 250-433-8467 <b>Project</b> : LINE CREEK OPERATION <b>PO</b> : VPO00739930 <b>C-O-C number</b> : Q3 GW MW_ER4A&B 20210829 <b>Sampler</b> : T. Dick/D.Tymstra <b>Site</b> : ---- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 2 <b>No. of samples analysed</b> : 2	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Lyudmyla Shvets <b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5 <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 31-Aug-2021 08:50 <b>Date Analysis Commenced</b> : 31-Aug-2021 <b>Issue Date</b> : 30-Sep-2021 12:12
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jeanie Mark	Laboratory Analyst	Organics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

Total Hg vials received instead of bottles

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID		LC_MW_ER4A_	LC_MW_ER4B_	---	---	---
(Matrix: Water)					WG_Q3-2021_N	WG_Q3-2021_N					
Client sampling date / time					29-Aug-2021 13:35	29-Aug-2021 14:30	---	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2103706-001	CG2103706-002	-----	-----	-----	-----	-----
					Result	Result	---	---	---	---	---
<b>Physical Tests</b>											
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	2.3	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	156	186	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	156	186	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	459	466	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	278	284	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	451	397	---	---	---	---	---
pH	---	E108	0.10	pH units	8.02	8.02	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	314	313	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
turbidity	---	E121	0.10	NTU	1.34	<0.10	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	190	228	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0185	0.0088	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.27	1.60	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.134	0.175	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	<0.050	0.128	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0084	1.72	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0025	<0.0020	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	96.8	65.9	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	0.90 <small>DTC,RRV</small>	1.75 <small>DTC,RRV</small>	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	<0.50 <small>DTC,RRV</small>	<0.50 <small>DTC,RRV</small>	---	---	---	---	---
<b>Ion Balance</b>											



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_MW_ER4A_WG_Q3-2021_N	LC_MW_ER4B_WG_Q3-2021_N	---	---	---
(Matrix: Water)					Client sampling date / time	29-Aug-2021 13:35	29-Aug-2021 14:30	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2103706-001	CG2103706-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	5.20	5.27	---	---	---	
cation sum	---	EC101	0.10	meq/L	5.70	5.80	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	110	110	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	4.59	4.79	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0081	<0.0030	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0517	0.0896	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	0.0203	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	73.9	74.2	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00011	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	0.160	<0.010	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0063	0.0106	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	18.7	19.9	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0511	<0.00010	---	---	---	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00422	0.00144	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00092	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	0.592	0.563	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	6.47	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	2.46	2.67	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	2.70	2.24	---	---	---	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.311	0.263	---	---	---	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_ER4A_ WG_Q3-2021_N	LC_MW_ER4B_ WG_Q3-2021_N	----	----	----
Client sampling date / time					29-Aug-2021 13:35	29-Aug-2021 14:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103706-001 Result	CG2103706-002 Result	-----	-----	-----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	32.7	22.5	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000267	0.00108	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0015	<0.0010	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0535	0.0982	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0213	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	78.3	77.6	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00012	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00037	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.146	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0064	0.0104	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	20.0	22.0	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0548	<0.00010	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00477	0.00156	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.600	0.565	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	7.47	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.48	2.81	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_ER4A_ WG_Q3-2021_N	LC_MW_ER4B_ WG_Q3-2021_N	----	----	----
Client sampling date / time					29-Aug-2021 13:35	29-Aug-2021 14:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103706-001	CG2103706-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.88	2.34	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.344	0.279	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	32.9	23.7	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000288	0.00116	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	<0.25	----	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	<0.40	----	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	<0.25	----	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	<0.25	----	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	69.0	70.0	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103706</b>	Page	: 1 of 15
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 31-Aug-2021 08:50
PO	: VPO00739930	Issue Date	: 30-Sep-2021 12:12
C-O-C number	: Q3 GW MW_ER4A&B 20210829		
Sampler	: T. Dick/D.Tymstra		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E298	29-Aug-2021	09-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E298	29-Aug-2021	09-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q3-2021_N	E235.Br-L	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q3-2021_N	E235.Br-L	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q3-2021_N	E235.Cl-L	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q3-2021_N	E235.Cl-L	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q3-2021_N	E378-U	29-Aug-2021	----	----	----		31-Aug-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_MW_ER4B_WG_Q3-2021_N	E378-U	29-Aug-2021	----	----	----		31-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_MW_ER4A_WG_Q3-2021_N	E235.F	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_MW_ER4B_WG_Q3-2021_N	E235.F	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_MW_ER4A_WG_Q3-2021_N	E235.NO3-L	29-Aug-2021	----	----	----		17-Sep-2021	3 days	19 days	* EHT
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_MW_ER4B_WG_Q3-2021_N	E235.NO3-L	29-Aug-2021	----	----	----		17-Sep-2021	3 days	19 days	* EHT
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_MW_ER4A_WG_Q3-2021_N	E235.NO2-L	29-Aug-2021	----	----	----		17-Sep-2021	3 days	19 days	* EHT
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_MW_ER4B_WG_Q3-2021_N	E235.NO2-L	29-Aug-2021	----	----	----		17-Sep-2021	3 days	19 days	* EHT
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_MW_ER4A_WG_Q3-2021_N	E235.SO4	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_MW_ER4B_WG_Q3-2021_N	E235.SO4	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E318	29-Aug-2021	04-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E318	29-Aug-2021	04-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E372-U	29-Aug-2021	07-Sep-2021	----	----		07-Sep-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E372-U	29-Aug-2021	07-Sep-2021	----	----		07-Sep-2021	28 days	9 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E421.Cr-L	29-Aug-2021	05-Sep-2021	----	----		06-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E421.Cr-L	29-Aug-2021	05-Sep-2021	----	----		06-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E509	29-Aug-2021	03-Sep-2021	----	----		03-Sep-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E509	29-Aug-2021	03-Sep-2021	----	----		03-Sep-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E421	29-Aug-2021	05-Sep-2021	----	----		06-Sep-2021	180 days	8 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E421	29-Aug-2021	05-Sep-2021	----	----		06-Sep-2021	180 days	8 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_MW_ER4A_WG_Q3-2021_N	E601A	29-Aug-2021	31-Aug-2021	14 days	2 days	✓	01-Sep-2021	40 days	1 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_MW_ER4B_WG_Q3-2021_N	E601A	29-Aug-2021	31-Aug-2021	14 days	2 days	✓	01-Sep-2021	40 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E358-L	29-Aug-2021	05-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E358-L	29-Aug-2021	05-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E355-L	29-Aug-2021	05-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E355-L	29-Aug-2021	05-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q3-2021_N	E283	29-Aug-2021	----	----	----		07-Sep-2021	14 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q3-2021_N	E283	29-Aug-2021	----	----	----		07-Sep-2021	14 days	9 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE LC_MW_ER4A_WG_Q3-2021_N	E290	29-Aug-2021	----	----	----		07-Sep-2021	14 days	9 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE LC_MW_ER4B_WG_Q3-2021_N	E290	29-Aug-2021	----	----	----		07-Sep-2021	14 days	9 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_MW_ER4A_WG_Q3-2021_N	E100	29-Aug-2021	----	----	----		07-Sep-2021	28 days	9 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_MW_ER4B_WG_Q3-2021_N	E100	29-Aug-2021	----	----	----		07-Sep-2021	28 days	9 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE LC_MW_ER4B_WG_Q3-2021_N	E125	29-Aug-2021	----	----	----		07-Sep-2021	0.34 hrs	212 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE LC_MW_ER4A_WG_Q3-2021_N	E125	29-Aug-2021	----	----	----		07-Sep-2021	0.34 hrs	213 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_MW_ER4B_WG_Q3-2021_N	E108	29-Aug-2021	----	----	----		07-Sep-2021	0.25 hrs	212 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_MW_ER4A_WG_Q3-2021_N	E108	29-Aug-2021	----	----	----		07-Sep-2021	0.25 hrs	213 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_MW_ER4A_WG_Q3-2021_N	E162	29-Aug-2021	----	----	----		02-Sep-2021	7 days	4 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q3-2021_N	E162	29-Aug-2021	----	----	----		02-Sep-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q3-2021_N	E160-L	29-Aug-2021	----	----	----		02-Sep-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q3-2021_N	E160-L	29-Aug-2021	----	----	----		02-Sep-2021	7 days	4 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q3-2021_N	E121	29-Aug-2021	----	----	----		31-Aug-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q3-2021_N	E121	29-Aug-2021	----	----	----		31-Aug-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E420.Cr-L	29-Aug-2021	----	----	----		04-Sep-2021	180 days	6 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E420.Cr-L	29-Aug-2021	----	----	----		04-Sep-2021	180 days	6 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E508	29-Aug-2021	----	----	----		04-Sep-2021	28 days	6 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E508	29-Aug-2021	----	----	----		04-Sep-2021	28 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E420	29-Aug-2021	----	----	----		04-Sep-2021	180 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E420	29-Aug-2021	----	----	----		04-Sep-2021	180 days	6 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	285564	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	285558	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	287548	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	294896	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	294897	1	15	6.6	5.0	✓
Conductivity in Water	E100	285557	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	284382	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	284207	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	284381	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	285007	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	280745	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	294900	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	294898	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	294899	1	15	6.6	5.0	✓
ORP by Electrode	E125	284551	1	20	5.0	5.0	✓
pH by Meter	E108	285556	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	294895	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	282455	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	284287	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	284599	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	284361	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	284286	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	285009	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	283870	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	280727	1	18	5.5	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	285564	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	285558	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	287548	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	281122	1	11	9.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	294896	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	294897	1	15	6.6	5.0	✓
Conductivity in Water	E100	285557	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	284382	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	284207	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	284381	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	285007	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	280745	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	294900	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	294898	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	294899	1	15	6.6	5.0	✓
ORP by Electrode	E125	284551	1	20	5.0	5.0	✓
pH by Meter	E108	285556	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	294895	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	282455	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	284287	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	284599	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	284361	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	284286	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	285009	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	283870	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	282449	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	280727	1	18	5.5	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	285564	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	285558	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	287548	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	281122	1	11	9.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	294896	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	294897	1	15	6.6	5.0	✓
Conductivity in Water	E100	285557	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	284382	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	284207	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	284381	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	285007	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	280745	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	294900	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	294898	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	294899	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	294895	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	282455	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	284287	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	284599	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	284361	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	284286	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	285009	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	283870	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	282449	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
Method Blanks (MB) - Continued							
Turbidity by Nephelometry	E121	280727	1	18	5.5	5.0	✓
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	287548	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	294896	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	294897	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	284382	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	284207	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	284381	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	285007	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	280745	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	294900	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	294898	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	294899	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	294895	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	284287	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	284599	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	284361	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	284286	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	285009	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	283870	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .





<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
	Vancouver - Environmental			
PHCs and PAHs Hexane Extraction	EP601	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
	Calgary - Environmental			

## QUALITY CONTROL REPORT

**Work Order** : **CG2103706**

**Page** : 1 of 19

**Amendment** : **1**

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : Q3 GW MW\_ER4A&B 20210829  
**Sampler** : T. Dick/D.Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 31-Aug-2021 08:50  
**Date Analysis Commenced** : 31-Aug-2021  
**Issue Date** : 30-Sep-2021 12:12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jeanie Mark	Laboratory Analyst	Organics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 280727)</b>											
CG2103673-001	Anonymous	turbidity	----	E121	0.10	NTU	3.06	3.03	0.986%	15%	----
<b>Physical Tests (QC Lot: 282455)</b>											
CG2103682-013	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 284551)</b>											
CG2103700-014	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	473	476	0.527%	15%	----
<b>Physical Tests (QC Lot: 285556)</b>											
CG2103699-001	Anonymous	pH	----	E108	0.10	pH units	7.84	7.87	0.382%	4%	----
<b>Physical Tests (QC Lot: 285557)</b>											
CG2103699-001	Anonymous	conductivity	----	E100	2.0	µS/cm	835	826	1.08%	10%	----
<b>Physical Tests (QC Lot: 285558)</b>											
CG2103700-013	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 285564)</b>											
CG2103700-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	10.0	mg/L	24.9	21.0	3.9	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 280745)</b>											
CG2103700-011	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0227	0.0228	0.538%	20%	----
<b>Anions and Nutrients (QC Lot: 283870)</b>											
CG2103700-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0027	<0.0020	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284599)</b>											
CG2103700-009	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.316	0.363	0.047	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 287548)</b>											
CG2103700-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.208	0.187	10.4%	20%	----
<b>Anions and Nutrients (QC Lot: 294895)</b>											
CG2103404-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	185	199	6.83%	20%	----
<b>Anions and Nutrients (QC Lot: 294896)</b>											
CG2103404-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 294897)</b>											
CG2103404-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.18	1.03	0.14	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 294898)</b>											



Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 294898) - continued</b>											
CG2103404-001	Anonymous	nitrate (as N)	14797-55-8	E235.N03-L	0.0250	mg/L	17.6	18.9	7.29%	20%	----
<b>Anions and Nutrients (QC Lot: 294899)</b>											
CG2103404-001	Anonymous	nitrite (as N)	14797-65-0	E235.N02-L	0.0050	mg/L	0.222	0.236	6.03%	20%	----
<b>Anions and Nutrients (QC Lot: 294900)</b>											
CG2103404-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.214	0.217	0.004	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 285007)</b>											
CG2103697-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	8.50	8.98	5.51%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 285009)</b>											
CG2103697-003	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	8.96	9.23	2.99%	20%	----
<b>Total Metals (QC Lot: 284286)</b>											
VA21B8509-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.246	0.244	0.467%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00011	0.00011	0.000002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0416	0.0420	1.16%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00399	0.00396	0.521%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.050	0.050	0.0002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.000154	0.000153	0.672%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	3.77	3.82	1.21%	20%	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00027	0.00028	0.000003	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00379	0.00381	0.00002	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.385	0.380	1.34%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.00559	0.00573	2.42%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	0.457	0.448	2.02%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0116	0.0114	1.32%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000059	0.000060	0.000001	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00061	0.00060	0.00001	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.834	0.832	0.287%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000088	0.000062	0.000027	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.88	4.79	1.80%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000029	0.000028	0.0000010	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	1.32	1.35	2.54%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.00941	0.00931	1.01%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	1.82	1.85	0.02	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 284286) - continued</b>											
VA21B8509-001	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00319	0.00339	6.12%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000012	0.000012	0.0000003	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00067	0.00063	0.00003	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0189	0.0190	0.00008	Diff <2x LOR	----
<b>Total Metals (QC Lot: 284287)</b>											
VA21B8509-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00028	0.00027	0.00001	Diff <2x LOR	----
<b>Total Metals (QC Lot: 284361)</b>											
CG2103706-001	LC_MW_ER4A_WG_Q3-2 021_N	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 284207)</b>											
CG2103698-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 284381)</b>											
CG2103706-001	LC_MW_ER4A_WG_Q3-2 021_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0015	0.0012	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0535	0.0546	2.05%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	78.3	73.8	6.00%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.146	0.144	1.02%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0064	0.0058	0.0005	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	20.0	20.3	1.54%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0548	0.0542	1.08%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00477	0.00472	0.986%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.600	0.589	1.95%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.48	2.47	0.360%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 284381) - continued</b>											
CG2103706-001	LC_MW_ER4A_WG_Q3-2 021_N	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.88	2.84	1.66%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.344	0.327	4.88%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	32.9	33.0	0.428%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000288	0.000272	5.87%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 284382)</b>											
CG2103706-001	LC_MW_ER4A_WG_Q3-2 021_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 280727)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 282449)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 282455)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 285557)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 285558)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 285564)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 280745)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 283870)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 284599)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 287548)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 294895)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 294896)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 294897)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 294898)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 294899)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 294900)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 294900) - continued</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Organic / Inorganic Carbon (QCLot: 285007)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 285009)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 284286)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 284286) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 284287)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 284361)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 284207)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 284381)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 284381) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 284382)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Hydrocarbons (QCLot: 281122)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 280727)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.6	85.0	115	---
<b>Physical Tests (QCLot: 282449)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.7	85.0	115	---
<b>Physical Tests (QCLot: 282455)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.1	85.0	115	---
<b>Physical Tests (QCLot: 284551)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.0	95.4	104	---
<b>Physical Tests (QCLot: 285556)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 285557)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.2	90.0	110	---
<b>Physical Tests (QCLot: 285558)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	92.8	85.0	115	---
<b>Physical Tests (QCLot: 285564)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 280745)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	96.8	80.0	120	---
<b>Anions and Nutrients (QCLot: 283870)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	99.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 284599)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	93.2	75.0	125	---
<b>Anions and Nutrients (QCLot: 287548)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.6	85.0	115	---
<b>Anions and Nutrients (QCLot: 294895)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 294896)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	107	85.0	115	---
<b>Anions and Nutrients (QCLot: 294897)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 294898)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 294899)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 294899) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 294900)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
<b>Organic / Inorganic Carbon (QCLot: 285007)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	99.3	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 285009)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 284286)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.0	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	97.6	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	94.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	92.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.0	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.2	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.2	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.6	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.1	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	99.0	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.7	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.0	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 284286) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	95.3	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 284287)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
<b>Total Metals (QCLot: 284361)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	99.3	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.0	80.0	120	----
<b>Dissolved Metals (QCLot: 284381)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	99.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.6	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 284381) - continued</b>									
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 284382)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
<b>Hydrocarbons (QCLot: 281122)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	79.0	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	78.8	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	79.0	70.0	130	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 280745)</b>										
CG2103700-012	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0562 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 283870)</b>										
CG2103700-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0636 mg/L	0.0676 mg/L	94.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 284599)</b>										
CG2103700-011	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.17 mg/L	2.5 mg/L	86.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 287548)</b>										
CG2103700-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0991 mg/L	0.1 mg/L	99.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 294895)</b>										
CG2103604-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	111 mg/L	100 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 294896)</b>										
CG2103604-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.539 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 294897)</b>										
CG2103604-005	Anonymous	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 294898)</b>										
CG2103604-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.70 mg/L	2.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 294899)</b>										
CG2103604-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.545 mg/L	0.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 294900)</b>										
CG2103604-005	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 285007)</b>										
CG2103697-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.0 mg/L	23.9 mg/L	96.3	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 285009)</b>										
CG2103697-003	Anonymous	carbon, total organic [TOC]	----	E355-L	24.0 mg/L	23.9 mg/L	101	70.0	130	----
<b>Total Metals (QCLot: 284286)</b>										
VA21B8510-001	Anonymous	aluminum, total	7429-90-5	E420	0.194 mg/L	0.2 mg/L	96.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		barium, total	7440-39-3	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 284286) - continued</b>										
VA21B8510-001	Anonymous	beryllium, total	7440-41-7	E420	0.0371 mg/L	0.04 mg/L	92.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00955 mg/L	0.01 mg/L	95.5	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	1.93 mg/L	2 mg/L	96.4	70.0	130	----
		lead, total	7439-92-1	E420	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0944 mg/L	0.1 mg/L	94.4	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		nickel, total	7440-02-0	E420	0.0377 mg/L	0.04 mg/L	94.2	70.0	130	----
		potassium, total	7440-09-7	E420	4.08 mg/L	4 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	----
		silicon, total	7440-21-3	E420	9.38 mg/L	10 mg/L	93.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00382 mg/L	0.004 mg/L	95.6	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		titanium, total	7440-32-6	E420	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		uranium, total	7440-61-1	E420	0.00406 mg/L	0.004 mg/L	102	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0994 mg/L	0.1 mg/L	99.4	70.0	130	----
		zinc, total	7440-66-6	E420	0.386 mg/L	0.4 mg/L	96.6	70.0	130	----
<b>Total Metals (QCLot: 284287)</b>										
VA21B8510-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
<b>Total Metals (QCLot: 284361)</b>										
CG2103706-002	LC_MW_ER4B_WG_Q3-20 21_N	mercury, total	7439-97-6	E508	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 284207)</b>										
CG2103698-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000978 mg/L	0.0001 mg/L	97.8	70.0	130	----
<b>Dissolved Metals (QCLot: 284381)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 284381) - continued</b>										
CG2103706-002	LC_MW_ER4B_WG_Q3-20 21_N	aluminum, dissolved	7429-90-5	E421	0.207 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0221 mg/L	0.02 mg/L	110	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0215 mg/L	0.02 mg/L	107	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00984 mg/L	0.01 mg/L	98.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00459 mg/L	0.004 mg/L	115	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.06 mg/L	2 mg/L	103	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0223 mg/L	0.02 mg/L	112	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.30 mg/L	4 mg/L	107	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0449 mg/L	0.04 mg/L	112	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.97 mg/L	10 mg/L	99.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00424 mg/L	0.004 mg/L	106	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00410 mg/L	0.004 mg/L	102	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0220 mg/L	0.02 mg/L	110	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0428 mg/L	0.04 mg/L	107	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.422 mg/L	0.4 mg/L	106	70.0	130	----
<b>Dissolved Metals (QCLot: 284382)</b>										
CG2103706-002	LC_MW_ER4B_WG_Q3-20 21_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0415 mg/L	0.04 mg/L	104	70.0	130	----



COC ID: **Q3 GW MW\_ER4A&B 20210829**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO								
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD				
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	ehns.bluffan@teck.com		x	x				
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			x				
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com		x	x				
City	15km North Hwy 43			City	Calgary		Province	AB		Email 4:	shanise.fossen@teck.com		x	x		
	Sparwood		Province	BC		City	Calgary		Province	AB		Email 4:	tanva.dick@teck.com		x	x
	V0B 2G0		Country	Canada		Postal Code	T1Y 7B5		Country	Canada		PO number	YPQ00739930			
	2S-8478					Phone Number	403 407 1794									

Environmental Division  
Calgary  
Work Order Reference  
**CG2103706**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	File	N	Y	Y	N	Y	N	N	N	N	N	N	N
								PRESERV.												
								ANALYSIS												
LC_MW_ER4A_WG_Q3-2021_N	LC_MW_ER4A	WG		29-Aug	13:35	G	8	ALS_Package-BOD												
LC_MW_ER4B_WG_Q3-2021_N	LC_MW_ER4B	WG		29-Aug	14:30	G	8	ALS_Package-DOC												
								HG-D-CVAF-VA												
								HG-T-U-CVAF-VA												
								TECKCOAL-MET-D-VA												
								TECKCOAL-MET-T-VA												
								TECKCOAL-ROUTINE-VA												
								ALS_Package-Sulfide-T												
								ALS_Package-TKN/TOC												
								ALS_Package-EPI												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/T. Dick	30-Aug 8:50	GT	Aug 31

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X	T. Dick/D.Tymstra	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge	<i>[Signature]</i>	August 30, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS		

90c



**Environmental**

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2104166**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : WG-Q3 20210916  
**Sampler** : T.Dick/D. Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 17-Sep-2021 10:00  
**Date Analysis Commenced** : 17-Sep-2021  
**Issue Date** : 15-Oct-2021 09:31

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

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## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jeanie Mark	Laboratory Analyst	Organics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Millicent Brentnall	Laboratory Analyst	Metals, Calgary, Alberta
Nicolina Zirpolo	Laboratory Analyst	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
RRV	Reported result verified by repeat analysis.





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1104_ WG_Q3-2021_N P	LC_PIZP1105_ WG_Q3-2021_N P	WG_Q3-2021_0 07_CC3	WG_Q3-2021_0 08_MT3	WG_Q3-2021_0 09_RD2
Client sampling date / time					16-Sep-2021 13:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	
Analyte	CAS Number	Method	LOR	Unit	CG2104166-001 Result	CG2104166-002 Result	CG2104166-003 Result	CG2104166-004 Result	CG2104166-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	10.8	24.7	25.3	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	265	416	402	<1.0	<1.0	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	265	416	402	<1.0	<1.0	
conductivity	----	E100	2.0	µS/cm	1170	1340	1340	<2.0	<2.0	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	558	687	684	<0.50	<0.50	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	453	457	471	526	529	
pH	----	E108	0.10	pH units	7.68	7.37	7.36	5.01	4.91	
solids, total dissolved [TDS]	----	E162	10	mg/L	939	989	957	<10	<10	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1740	1740	1050	<1.0	<1.0	
turbidity	----	E121	0.10	NTU	884	1240	808	<0.10	<0.10	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	323	507	491	<1.0	<1.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0151	0.0376	<0.0050	0.240 <sup>RRV</sup>	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	2.92	2.36	2.44	<0.050	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	224	192	192	<0.10	<0.10	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.304	0.249	0.248	<0.020	<0.020	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.073	0.122	0.162	<0.050	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.472	0.0543	0.0410	<0.0050	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0063	0.0075	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	1.76 <sup>DLHC</sup>	2.06 <sup>DLHC</sup>	3.58 <sup>DLHC</sup>	<0.0020	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	63.6	105	105	<0.30	<0.30	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	10.4	1.92	1.96	<0.50	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	27.9	36.7	63.9	<0.50	<0.50	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1104_ WG_Q3-2021_N P	LC_PIZP1105_ WG_Q3-2021_N P	WG_Q3-2021_0 07_CC3	WG_Q3-2021_0 08_MT3	WG_Q3-2021_0 09_RD2
Client sampling date / time					16-Sep-2021 13:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	
Analyte	CAS Number	Method	LOR	Unit	CG2104166-001 Result	CG2104166-002 Result	CG2104166-003 Result	CG2104166-004 Result	CG2104166-005 Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	13.0	15.9	15.6	<0.10	<0.10	
cation sum	----	EC101	0.10	meq/L	11.9	14.5	14.4	<0.10	<0.10	
ion balance (cations/anions ratio)	----	EC101	0.010	%	91.5	91.2	92.3	100	100	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.42	4.60	4.00	<0.010	<0.010	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	8.63	12.5	9.65	<0.0030	<0.0030	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00174	0.00187	0.00182	<0.00010	<0.00010	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0115	0.00964	0.00808	<0.00010	<0.00010	
barium, total	7440-39-3	E420	0.00010	mg/L	0.532	0.795	0.606	<0.00010	<0.00010	
beryllium, total	7440-41-7	E420	0.020	µg/L	0.818	0.936	0.718	<0.020	<0.020	
bismuth, total	7440-69-9	E420	0.000050	mg/L	0.000225	0.000236	0.000187	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	0.030	0.031	0.028	<0.010	<0.010	
cadmium, total	7440-43-9	E420	0.0050	µg/L	2.04	2.27	1.75	<0.0050	<0.0050	
calcium, total	7440-70-2	E420	0.050	mg/L	235	302	270	<0.050	<0.050	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.0248	0.0237	0.0178	<0.00010	<0.00010	
cobalt, total	7440-48-4	E420	0.10	µg/L	9.70	13.3	9.60	<0.10	<0.10	
copper, total	7440-50-8	E420	0.00050	mg/L	0.0332	0.0315	0.0241	<0.00050	<0.00050	
iron, total	7439-89-6	E420	0.010	mg/L	27.6	29.3	24.1	<0.010	<0.010	
lead, total	7439-92-1	E420	0.000050	mg/L	0.0126	0.0130	0.00977	<0.000050	<0.000050	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0328	0.0390	0.0335	<0.0010	<0.0010	
magnesium, total	7439-95-4	E420	0.0050	mg/L	68.3	85.1	74.2	<0.0050	<0.0050	
manganese, total	7439-96-5	E420	0.00010	mg/L	1.64	2.29	1.81	<0.00010	<0.00010	
mercury, total	7439-97-6	E508	0.0000050	mg/L	----	0.000265	0.000123	<0.0000050	<0.0000050	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00284	0.00147	0.00157	<0.000050	<0.000050	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0310	0.0333	0.0256	<0.00050	<0.00050	
potassium, total	7440-09-7	E420	0.050	mg/L	5.08	4.85	4.44	<0.050	<0.050	
selenium, total	7782-49-2	E420	0.050	µg/L	1.06	0.702	0.583	<0.050	<0.050	
silicon, total	7440-21-3	E420	0.10	mg/L	16.6	20.7	17.7	<0.10	<0.10	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000748	0.000413	0.000306	<0.000010	<0.000010	
sodium, total	17341-25-2	E420	0.050	mg/L	13.8	14.2	14.1	<0.050	<0.050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1104_ WG_Q3-2021_N P	LC_PIZP1105_ WG_Q3-2021_N P	WG_Q3-2021_0 07_CC3	WG_Q3-2021_0 08_MT3	WG_Q3-2021_0 09_RD2
Client sampling date / time					16-Sep-2021 13:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	
Analyte	CAS Number	Method	LOR	Unit	CG2104166-001 Result	CG2104166-002 Result	CG2104166-003 Result	CG2104166-004 Result	CG2104166-005 Result	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.671	0.599	0.580	<0.00020	<0.00020	
sulfur, total	7704-34-9	E420	0.50	mg/L	22.0	34.5	36.3	<0.50	<0.50	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000489	0.000662	0.000524	<0.000010	<0.000010	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00239	0.00109	0.00071	<0.00010	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0293	0.0330	0.0272	<0.00030	<0.00030	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00499	0.00170	0.00129	<0.000010	<0.000010	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0328	0.0338	0.0269	<0.00050	<0.00050	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.144	0.194	0.151	<0.0030	<0.0030	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0024	0.0033	0.0028	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00091	0.00096	0.00098	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00024	<0.00010	<0.00010	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.300	0.115	0.112	<0.00010	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	0.020	0.020	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.100	0.105	0.142	<0.0050	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	145	183	182	<0.050	<0.050	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.11	<0.10	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00027	0.00024	0.00027	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0232	0.0209	0.0211	<0.0010	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	47.6	55.8	55.7	<0.0050	<0.0050	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0963	0.0389	0.0822	<0.00010	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00195	0.000378	0.000297	<0.000050	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00248	0.00141	0.00143	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.70	2.12	2.12	<0.050	<0.050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1104_ WG_Q3-2021_N P	LC_PIZP1105_ WG_Q3-2021_N P	WG_Q3-2021_0 07_CC3	WG_Q3-2021_0 08_MT3	WG_Q3-2021_0 09_RD2
Client sampling date / time					16-Sep-2021 13:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55
Analyte	CAS Number	Method	LOR	Unit	CG2104166-001 Result	CG2104166-002 Result	CG2104166-003 Result	CG2104166-004 Result	CG2104166-005 Result	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.266	0.272	0.236	<0.050	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.53	4.95	5.03	<0.050	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	14.7	15.7	15.6	<0.050	<0.050	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.494	0.421	0.411	<0.00020	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	20.7	35.1	34.7	<0.50	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000075	0.000046	0.000043	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00044	0.00020	0.00020	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00327	0.000320	0.000311	<0.000010	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0016	0.0025	0.0033	<0.0010	----	
dissolved mercury filtration location	----	EP509	-	-	Laboratory	Laboratory	Laboratory	Field	----	
dissolved metals filtration location	----	EP421	-	-	Laboratory	Laboratory	Laboratory	Field	Laboratory	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	----	<0.25	<0.25	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	----	<0.40	0.47	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	----	0.38	0.47	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	----	0.43	0.52	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	----	82.0	85.0	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104166</b>	Page	: 1 of 23
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 17-Sep-2021 10:00
PO	: VPO00739930	Issue Date	: 15-Oct-2021 09:32
C-O-C number	: WG-Q3 20210916		
Sampler	: T.Dick/D. Tymstra		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E298	16-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E298	16-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_007_CC3	E298	16-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_008_MT3	E298	16-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_009_RD2	E298	16-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q3-2021_NP	E235.Br-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q3-2021_NP	E235.Br-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE WG_Q3-2021_007_CC3	E235.Br-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE WG_Q3-2021_008_MT3	E235.Br-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE WG_Q3-2021_009_RD2	E235.Br-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_PIZP1104_WG_Q3-2021_NP	E235.Cl-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_PIZP1105_WG_Q3-2021_NP	E235.Cl-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE WG_Q3-2021_007_CC3	E235.Cl-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE WG_Q3-2021_008_MT3	E235.Cl-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE WG_Q3-2021_009_RD2	E235.Cl-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_PIZP1104_WG_Q3-2021_NP	E378-U	16-Sep-2021	----	----	----		17-Sep-2021	3 days	1 days	✔





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E378-U	16-Sep-2021	----	----	----		17-Sep-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE WG_Q3-2021_007_CC3	E378-U	16-Sep-2021	----	----	----		17-Sep-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE WG_Q3-2021_008_MT3	E378-U	16-Sep-2021	----	----	----		17-Sep-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE WG_Q3-2021_009_RD2	E378-U	16-Sep-2021	----	----	----		17-Sep-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E235.F	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E235.F	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE WG_Q3-2021_007_CC3	E235.F	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE WG_Q3-2021_008_MT3	E235.F	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE WG_Q3-2021_009_RD2	E235.F	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_PIZP1104_WG_Q3-2021_NP	E235.NO3-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_PIZP1105_WG_Q3-2021_NP	E235.NO3-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE WG_Q3-2021_007_CC3	E235.NO3-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE WG_Q3-2021_008_MT3	E235.NO3-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE WG_Q3-2021_009_RD2	E235.NO3-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_PIZP1104_WG_Q3-2021_NP	E235.NO2-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_PIZP1105_WG_Q3-2021_NP	E235.NO2-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE WG_Q3-2021_007_CC3	E235.NO2-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE WG_Q3-2021_008_MT3	E235.NO2-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q3-2021_009_RD2	E235.NO2-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q3-2021_NP	E235.SO4	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q3-2021_NP	E235.SO4	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> WG_Q3-2021_007_CC3	E235.SO4	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> WG_Q3-2021_008_MT3	E235.SO4	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> WG_Q3-2021_009_RD2	E235.SO4	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E318	16-Sep-2021	22-Sep-2021	----	----		27-Sep-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E318	16-Sep-2021	22-Sep-2021	----	----		27-Sep-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_007_CC3	E318	16-Sep-2021	22-Sep-2021	----	----		27-Sep-2021	28 days	11 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_008_MT3	E318	16-Sep-2021	22-Sep-2021	----	----		27-Sep-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_009_RD2	E318	16-Sep-2021	22-Sep-2021	----	----		27-Sep-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E372-U	16-Sep-2021	22-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E372-U	16-Sep-2021	22-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_007_CC3	E372-U	16-Sep-2021	22-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_008_MT3	E372-U	16-Sep-2021	22-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_009_RD2	E372-U	16-Sep-2021	22-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q3-2021_008_MT3	E421.Cr-L	16-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E421.Cr-L	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E421.Cr-L	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q3-2021_007_CC3	E421.Cr-L	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> WG_Q3-2021_007_CC3	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> WG_Q3-2021_008_MT3	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q3-2021_009_RD2	E421	16-Sep-2021	27-Sep-2021	----	----		27-Sep-2021	180 days	11 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q3-2021_008_MT3	E421	16-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E421	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E421	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q3-2021_007_CC3	E421	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_PIZP1105_WG_Q3-2021_NP	E601A	16-Sep-2021	23-Sep-2021	14 days	7 days	✓	24-Sep-2021	40 days	1 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> WG_Q3-2021_007_CC3	E601A	16-Sep-2021	23-Sep-2021	14 days	7 days	✓	24-Sep-2021	40 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E358-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E358-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> WG_Q3-2021_007_CC3	E358-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> WG_Q3-2021_008_MT3	E358-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E355-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E355-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_007_CC3	E355-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_008_MT3	E355-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_009_RD2	E355-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q3-2021_NP	E283	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q3-2021_NP	E283	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> WG_Q3-2021_007_CC3	E283	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> WG_Q3-2021_008_MT3	E283	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> WG_Q3-2021_009_RD2	E283	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE WG_Q3-2021_007_CC3	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE WG_Q3-2021_008_MT3	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE WG_Q3-2021_009_RD2	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE WG_Q3-2021_007_CC3	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE WG_Q3-2021_008_MT3	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE WG_Q3-2021_009_RD2	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E125	16-Sep-2021	----	----	----		25-Sep-2021	0.25 hrs	214 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE WG_Q3-2021_007_CC3	E125	16-Sep-2021	----	----	----		25-Sep-2021	0.25 hrs	214 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE WG_Q3-2021_008_MT3	E125	16-Sep-2021	----	----	----		25-Sep-2021	0.25 hrs	214 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E125	16-Sep-2021	----	----	----		25-Sep-2021	0.25 hrs	215 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE WG_Q3-2021_009_RD2	E125	16-Sep-2021	----	----	----		25-Sep-2021	0.25 hrs	215 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	285 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE WG_Q3-2021_007_CC3	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	285 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE WG_Q3-2021_008_MT3	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	285 hrs		* EHTR-FM





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE WG_Q3-2021_009_RD2	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	285 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	286 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE WG_Q3-2021_007_CC3	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE WG_Q3-2021_008_MT3	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE WG_Q3-2021_009_RD2	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] LC_PIZP1104_WG_Q3-2021_NP	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] LC_PIZP1105_WG_Q3-2021_NP	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> WG_Q3-2021_007_CC3	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> WG_Q3-2021_008_MT3	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> WG_Q3-2021_009_RD2	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q3-2021_NP	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q3-2021_NP	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> WG_Q3-2021_007_CC3	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> WG_Q3-2021_008_MT3	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> WG_Q3-2021_009_RD2	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> WG_Q3-2021_007_CC3	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> WG_Q3-2021_008_MT3	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> WG_Q3-2021_009_RD2	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E508	16-Sep-2021	----	----	----		24-Sep-2021	28 days	8 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> WG_Q3-2021_007_CC3	E508	16-Sep-2021	----	----	----		24-Sep-2021	28 days	8 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> WG_Q3-2021_008_MT3	E508	16-Sep-2021	----	----	----		24-Sep-2021	28 days	8 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> WG_Q3-2021_009_RD2	E508	16-Sep-2021	----	----	----		24-Sep-2021	28 days	8 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> WG_Q3-2021_007_CC3	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> WG_Q3-2021_008_MT3	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> WG_Q3-2021_009_RD2	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	304853	2	31	6.4	5.0	✓
Alkalinity Species by Titration	E290	304800	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	304918	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	295886	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	295887	1	20	5.0	5.0	✓
Conductivity in Water	E100	304798	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300110	2	24	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301260	2	35	5.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300109	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303804	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	295349	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	295883	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	295885	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	295888	1	20	5.0	5.0	✓
ORP by Electrode	E125	302473	2	40	5.0	5.0	✓
pH by Meter	E108	304799	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	295884	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	300151	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300563	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	299955	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	301298	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300562	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303812	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	297807	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	296455	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	304853	2	31	6.4	5.0	✓
Alkalinity Species by Titration	E290	304800	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	304918	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	299782	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	295886	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	295887	1	20	5.0	5.0	✓
Conductivity in Water	E100	304798	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300110	2	24	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301260	2	35	5.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300109	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303804	1	17	5.8	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	295349	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	295883	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	295885	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	295888	1	20	5.0	5.0	✓
ORP by Electrode	E125	302473	2	40	5.0	5.0	✓
pH by Meter	E108	304799	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	295884	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	300151	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300563	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	299955	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	301298	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300562	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303812	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	297807	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	300144	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	296455	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	304853	2	31	6.4	5.0	✓
Alkalinity Species by Titration	E290	304800	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	304918	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	299782	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	295886	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	295887	1	20	5.0	5.0	✓
Conductivity in Water	E100	304798	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300110	2	24	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301260	2	35	5.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300109	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303804	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	295349	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	295883	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	295885	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	295888	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	295884	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	300151	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300563	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	299955	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	301298	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300562	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303812	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	297807	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	300144	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<i>Method Blanks (MB) - Continued</i>							
Turbidity by Nephelometry	E121	296455	1	20	5.0	5.0	✓
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	304918	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	295886	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	295887	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300110	2	24	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301260	2	35	5.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300109	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303804	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	295349	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	295883	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	295885	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	295888	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	295884	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300563	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	299955	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	301298	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300562	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303812	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	297807	2	40	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
	Vancouver - Environmental			
PHCs and PAHs Hexane Extraction	EP601	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
	Calgary - Environmental			

## QUALITY CONTROL REPORT

**Work Order** : **CG2104166**

**Page** : 1 of 26

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : WG-Q3 20210916  
**Sampler** : T.Dick/D. Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 17-Sep-2021 10:00  
**Date Analysis Commenced** : 17-Sep-2021  
**Issue Date** : 15-Oct-2021 09:31

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jeanie Mark	Laboratory Analyst	Organics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
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Robin Weeks  
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Tracy Harley  
Vladka Stamenova

Team Leader - Metals  
Analyst  
  
Analyst  
Supervisor - Water Quality Instrumentation  
Analyst

Metals, Burnaby, British Columbia  
Inorganics, Calgary, Alberta  
Inorganics, Calgary, Alberta  
Metals, Burnaby, British Columbia  
Inorganics, Burnaby, British Columbia  
Inorganics, Calgary, Alberta

Page : 3 of 26  
Work Order : CG2104166  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 296455)</b>											
CG2104165-017	Anonymous	turbidity	----	E121	0.10	NTU	1.33	1.45	8.78%	15%	----
<b>Physical Tests (QC Lot: 300151)</b>											
CG2104165-002	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	179	187	8	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 300152)</b>											
CG2104166-005	WG_Q3-2021_009_RD2	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 302473)</b>											
CG2104165-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	477	474	0.526%	15%	----
<b>Physical Tests (QC Lot: 302474)</b>											
CG2104166-005	WG_Q3-2021_009_RD2	oxidation-reduction potential [ORP]	----	E125	0.10	mV	529	536	1.35%	15%	----
<b>Physical Tests (QC Lot: 304798)</b>											
CG2104165-015	Anonymous	conductivity	----	E100	2.0	µS/cm	230	229	0.436%	10%	----
<b>Physical Tests (QC Lot: 304799)</b>											
CG2104165-015	Anonymous	pH	----	E108	0.10	pH units	8.29	8.30	0.120%	4%	----
<b>Physical Tests (QC Lot: 304800)</b>											
CG2104165-015	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	102	104	2.24%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	102	104	2.24%	20%	----
<b>Physical Tests (QC Lot: 304853)</b>											
CG2104165-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 304854)</b>											
CG2104166-005	WG_Q3-2021_009_RD2	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 295349)</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-2021_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 295883)</b>											
CG2104165-007	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.084	0.084	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 295884)</b>											
CG2104165-007	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	24.1	24.1	0.158%	20%	----
<b>Anions and Nutrients (QC Lot: 295885)</b>											
CG2104165-009	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.193	0.192	0.312%	20%	----
<b>Anions and Nutrients (QC Lot: 295886)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 295886) - continued</b>											
CG2104165-010	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 295887)</b>											
CG2104165-010	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.15	2.17	0.763%	20%	----
<b>Anions and Nutrients (QC Lot: 295888)</b>											
CG2104165-010	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0036	0.0035	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 297807)</b>											
CG2104165-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0024	0.0032	0.0008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 297808)</b>											
CG2104166-004	WG_Q3-2021_008_MT3	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 299955)</b>											
CG2104155-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.250	mg/L	8.48	7.96	6.42%	20%	----
<b>Anions and Nutrients (QC Lot: 304918)</b>											
CG2104161-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.162	0.160	1.24%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 303804)</b>											
CG2104162-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.16	1.21	0.05	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 303812)</b>											
CG2104162-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.15	1.30	0.14	Diff <2x LOR	----
<b>Total Metals (QC Lot: 300562)</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-2021_NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	8.63	8.82	2.14%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00174	0.00176	1.23%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0115	0.0117	2.32%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.532	0.540	1.46%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	0.818 µg/L	0.000804	1.66%	20%	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	0.000225	0.000232	0.000008	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.030	0.030	0.0004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	2.04 µg/L	0.00206	0.785%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	235	234	0.574%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	9.70 µg/L	0.00985	1.52%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.0332	0.0330	0.376%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	27.6	28.5	3.39%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.0126	0.0127	0.888%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0328	0.0328	0.0523%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	68.3	67.8	0.792%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	1.64	1.62	1.06%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00284	0.00299	5.41%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 300562) - continued</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-20 21_NP	nickel, total	7440-02-0	E420	0.00050	mg/L	0.0310	0.0314	1.35%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	5.08	5.04	0.813%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	1.06 µg/L	0.00103	3.36%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	16.6	17.0	1.95%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000748	0.000769	2.77%	20%	----
		sodium, total	17341-25-2	E420	0.050	mg/L	13.8	13.5	2.02%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.671	0.683	1.76%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	22.0	21.6	2.04%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000489	0.000507	3.52%	20%	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00239	0.00241	0.732%	20%	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.0293	0.0304	3.67%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00499	0.00492	1.44%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0328	0.0335	1.89%	20%	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.144	0.143	0.604%	20%	----		
<b>Total Metals (QC Lot: 300563)</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-20 21_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.0248	0.0254	2.28%	20%	----
<b>Total Metals (QC Lot: 301298)</b>											
CG2104166-002	LC_PIZP1105_WG_Q3-20 21_NP	mercury, total	7439-97-6	E508	0.0000500	mg/L	0.000265	0.000256	0.0000088	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 300109)</b>											
CG2104166-004	WG_Q3-2021_008_MT3	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 300109) - continued</b>											
CG2104166-004	WG_Q3-2021_008_MT3	manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----		
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----		
<b>Dissolved Metals (QC Lot: 300110)</b>											
CG2104166-004	WG_Q3-2021_008_MT3	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 300136)</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-2021_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0024	0.0026	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00091	0.00091	0.000002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00024	0.00025	0.000009	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.300	0.291	3.06%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	0.022	0.0004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.100 µg/L	0.000101	1.30%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	145	144	0.612%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.11 µg/L	0.00012	0.000004	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00027	0.00029	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0232	0.0239	2.92%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	47.6	48.2	1.27%	20%	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0963	0.0938	2.61%	20%	----		



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 300136) - continued</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-20 21_NP	molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00195	0.00194	0.665%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00248	0.00250	0.00002	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.70	2.74	1.64%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.266 µg/L	0.000210	0.000056	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.53	4.50	0.478%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	14.7	14.9	1.44%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.494	0.494	0.0825%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	20.7	20.3	1.77%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000075	0.000080	0.000005	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00044	0.00043	0.00001	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00327	0.00336	2.91%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0016	0.0015	0.00007	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 300137)</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-20 21_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 301260)</b>											
CG2104161-008	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 301297)</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-20 21_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 303331)</b>											
CG2104125-012	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00050	mg/L	0.00094	0.00100	0.00007	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00050	mg/L	0.00069	0.00070	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00050	mg/L	0.0130	0.0131	1.08%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000250	mg/L	0.0000636	0.0000650	0.0000014	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.250	mg/L	202	207	2.89%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00050	mg/L	0.00614	0.00632	2.78%	20%	----
		copper, dissolved	7440-50-8	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 303331) - continued</b>											
CG2104125-012	Anonymous	lead, dissolved	7439-92-1	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0050	mg/L	0.0284	0.0290	0.0006	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0250	mg/L	142	143	0.284%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00050	mg/L	0.0626	0.0618	1.22%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000250	mg/L	0.00506	0.00517	2.11%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00250	mg/L	0.0324	0.0338	4.00%	20%	----
		potassium, dissolved	7440-09-7	E421	0.250	mg/L	3.59	3.63	1.30%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000250	mg/L	0.0593	0.0628	5.86%	20%	----
		silicon, dissolved	7440-21-3	E421	0.250	mg/L	3.00	3.10	3.37%	20%	----
		silver, dissolved	7440-22-4	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.250	mg/L	3.94	3.99	1.05%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00100	mg/L	0.247	0.254	2.74%	20%	----
		sulfur, dissolved	7704-34-9	E421	2.50	mg/L	250	262	5.06%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000050	mg/L	0.000067	0.000071	0.000004	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00150	mg/L	<0.00150	<0.00150	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000050	mg/L	0.00876	0.00886	1.18%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0050	mg/L	0.0108	0.0120	0.0011	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 296455)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 300144)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 300151)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 300152)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 304798)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 304800)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 304853)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 304854)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 295349)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 295883)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 295884)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 295885)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 295886)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 295887)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 295888)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 297807)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 297807) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 297808)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 299955)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 304918)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 303804)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 303812)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 300562)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 300562) - continued</b>						
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 300563)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 301298)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 300109)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 300109) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 300110)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 300136)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 300136) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 300137)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 301260)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 301297)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 303331)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 303331) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Hydrocarbons (QCLot: 299782)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 296455)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	---
<b>Physical Tests (QCLot: 300144)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.2	85.0	115	---
<b>Physical Tests (QCLot: 300151)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	97.7	85.0	115	---
<b>Physical Tests (QCLot: 300152)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 302473)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Physical Tests (QCLot: 302474)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Physical Tests (QCLot: 304798)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	96.7	90.0	110	---
<b>Physical Tests (QCLot: 304799)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 304800)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 304853)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 304854)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 295349)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	103	80.0	120	---
<b>Anions and Nutrients (QCLot: 295883)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 295884)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 295885)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 295886)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	109	85.0	115	---
<b>Anions and Nutrients (QCLot: 295887)</b>									



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
						Low	High		
<b>Anions and Nutrients (QCLot: 295887) - continued</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 295888)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 297807)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	91.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 297808)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	91.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 299955)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 304918)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.4	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 303804)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	84.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 303812)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	88.6	80.0	120	----
<b>Total Metals (QCLot: 300562)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	108	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.3	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.5	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.7	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	96.9	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.6	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.3	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	100.0	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 300562) - continued</b>									
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	97.8	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	109	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 300563)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Total Metals (QCLot: 301298)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	94.6	80.0	120	----
<b>Dissolved Metals (QCLot: 300109)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	109	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	112	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	108	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.0	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	110	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	106	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	108	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 300109) - continued</b>									
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	111	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	111	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	106	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	112	80.0	120	----
<b>Dissolved Metals (QCLot: 300110)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
<b>Dissolved Metals (QCLot: 300136)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	110	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	114	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	110	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	109	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	107	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	109	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 300136) - continued</b>									
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	113	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	90.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	108	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	105	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	104	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 300137)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	92.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.0	80.0	120	----
<b>Dissolved Metals (QCLot: 303331)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	93.9	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	92.4	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	92.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.9	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	95.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	91.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.7	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	94.2	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	105	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	91.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	93.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.5	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	93.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	97.0	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	93.7	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.2	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	96.2	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 303331) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	93.0	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.1	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	92.4	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.5	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	92.7	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	86.3	80.0	120	----
<b>Hydrocarbons (QCLot: 299782)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	74.4	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	71.3	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	73.2	70.0	130	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 295349)</b>										
CG2104166-002	LC_PIZP1105_WG_Q3-2021_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0574 mg/L	0.05 mg/L	115	70.0	130	----
<b>Anions and Nutrients (QCLot: 295883)</b>										
CG2104165-008	Anonymous	fluoride	16984-48-8	E235.F	1.07 mg/L	1 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 295884)</b>										
CG2104165-008	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 295885)</b>										
CG2104165-010	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 295886)</b>										
CG2104165-011	Anonymous	bromide	24959-67-9	E235.Br-L	0.543 mg/L	0.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 295887)</b>										
CG2104165-011	Anonymous	chloride	16887-00-6	E235.Cl-L	100 mg/L	100 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 295888)</b>										
CG2104165-011	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.511 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 297807)</b>										
CG2104165-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0519 mg/L	0.0676 mg/L	76.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 297808)</b>										
CG2104166-005	WG_Q3-2021_009_RD2	phosphorus, total	7723-14-0	E372-U	0.0597 mg/L	0.0676 mg/L	88.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 299955)</b>										
CG2104162-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.52 mg/L	2.5 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 304918)</b>										
CG2104161-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0932 mg/L	0.1 mg/L	93.2	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 303804)</b>										
CG2104162-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.8 mg/L	23.9 mg/L	99.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 303812)</b>										
CG2104162-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.6 mg/L	23.9 mg/L	107	70.0	130	----
<b>Total Metals (QCLot: 300562)</b>										
CG2104166-002	LC_PIZP1105_WG_Q3-2021_NP	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 300562) - continued</b>										
CG2104166-002	LC_PIZP1105_WG_Q3-2021_NP	antimony, total	7440-36-0	E420	0.0425 mg/L	0.04 mg/L	106	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0729 mg/L	0.08 mg/L	91.1	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		boron, total	7440-42-8	E420	0.180 mg/L	0.2 mg/L	90.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00750 mg/L	0.008 mg/L	93.7	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0357 mg/L	0.04 mg/L	89.2	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.0363 mg/L	0.04 mg/L	90.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.187 mg/L	0.2 mg/L	93.4	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0434 mg/L	0.04 mg/L	108	70.0	130	----
		nickel, total	7440-02-0	E420	0.0694 mg/L	0.08 mg/L	86.8	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0778 mg/L	0.08 mg/L	97.2	70.0	130	----
		silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		silver, total	7440-22-4	E420	0.00836 mg/L	0.008 mg/L	104	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00711 mg/L	0.008 mg/L	88.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
		titanium, total	7440-32-6	E420	0.0794 mg/L	0.08 mg/L	99.3	70.0	130	----
		uranium, total	7440-61-1	E420	0.00756 mg/L	0.008 mg/L	94.6	70.0	130	----
		vanadium, total	7440-62-2	E420	0.197 mg/L	0.2 mg/L	98.5	70.0	130	----
		zinc, total	7440-66-6	E420	0.729 mg/L	0.8 mg/L	91.2	70.0	130	----
<b>Total Metals (QCLot: 300563)</b>										
CG2104166-002	LC_PIZP1105_WG_Q3-2021_NP	chromium, total	7440-47-3	E420.Cr-L	0.0743 mg/L	0.08 mg/L	92.9	70.0	130	----
<b>Total Metals (QCLot: 301298)</b>										
CG2104166-003	WG_Q3-2021_007_CC3	mercury, total	7439-97-6	E508	ND mg/L	0.0001 mg/L	ND	70.0	130	----
<b>Dissolved Metals (QCLot: 300109)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 300109) - continued</b>										
CG2104171-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.209 mg/L	0.2 mg/L	105	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0229 mg/L	0.02 mg/L	114	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00906 mg/L	0.01 mg/L	90.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.092 mg/L	0.1 mg/L	92.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00436 mg/L	0.004 mg/L	109	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0216 mg/L	0.02 mg/L	108	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.04 mg/L	2 mg/L	102	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0921 mg/L	0.1 mg/L	92.1	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0430 mg/L	0.04 mg/L	108	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.42 mg/L	4 mg/L	111	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0467 mg/L	0.04 mg/L	117	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.19 mg/L	10 mg/L	91.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00409 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	2.50 mg/L	2 mg/L	125	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.3 mg/L	20 mg/L	101	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00411 mg/L	0.004 mg/L	103	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.111 mg/L	0.1 mg/L	111	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.439 mg/L	0.4 mg/L	110	70.0	130	----
<b>Dissolved Metals (QCLot: 300110)</b>										
CG2104171-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0442 mg/L	0.04 mg/L	110	70.0	130	----
<b>Dissolved Metals (QCLot: 300136)</b>										
CG2104166-003	WG_Q3-2021_007_CC3	aluminum, dissolved	7429-90-5	E421	0.203 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0196 mg/L	0.02 mg/L	98.3	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 300136) - continued</b>										
CG2104166-003	WG_Q3-2021_007_CC3	arsenic, dissolved	7440-38-2	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00880 mg/L	0.01 mg/L	88.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.090 mg/L	0.1 mg/L	90.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0185 mg/L	0.02 mg/L	92.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0940 mg/L	0.1 mg/L	94.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.08 mg/L	4 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0431 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.60 mg/L	10 mg/L	86.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00376 mg/L	0.004 mg/L	94.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00375 mg/L	0.004 mg/L	93.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00397 mg/L	0.004 mg/L	99.3	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.373 mg/L	0.4 mg/L	93.3	70.0	130	----
<b>Dissolved Metals (QCLot: 300137)</b>										
CG2104166-003	WG_Q3-2021_007_CC3	chromium, dissolved	7440-47-3	E421.Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 301260)</b>										
CG2104161-009	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000943 mg/L	0.0001 mg/L	94.3	70.0	130	----
<b>Dissolved Metals (QCLot: 301297)</b>										
CG2104166-002	LC_PIZP1105_WG_Q3-2021_NP	mercury, dissolved	7439-97-6	E509	0.0000936 mg/L	0.0001 mg/L	93.6	70.0	130	----



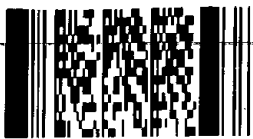
Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 303331)</b>										
CG2104125-013	Anonymous	aluminum, dissolved	7429-90-5	E421	1.72 mg/L	2 mg/L	86.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.184 mg/L	0.2 mg/L	92.0	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.166 mg/L	0.2 mg/L	83.1	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.178 mg/L	0.2 mg/L	89.3	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.327 mg/L	0.4 mg/L	81.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0857 mg/L	0.1 mg/L	85.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.835 mg/L	1 mg/L	83.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0346 mg/L	0.04 mg/L	86.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	33.9 mg/L	40 mg/L	84.8	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.172 mg/L	0.2 mg/L	86.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.172 mg/L	0.2 mg/L	86.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	17.0 mg/L	20 mg/L	85.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.174 mg/L	0.2 mg/L	87.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.878 mg/L	1 mg/L	87.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	8.32 mg/L	10 mg/L	83.2	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.170 mg/L	0.2 mg/L	84.8	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.170 mg/L	0.2 mg/L	85.0	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.343 mg/L	0.4 mg/L	85.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	36.7 mg/L	40 mg/L	91.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.356 mg/L	0.4 mg/L	89.1	70.0	130	----
		silicon, dissolved	7440-21-3	E421	86.5 mg/L	100 mg/L	86.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0368 mg/L	0.04 mg/L	91.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	17.5 mg/L	20 mg/L	87.5	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.172 mg/L	0.2 mg/L	85.9	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	170 mg/L	200 mg/L	84.9	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0351 mg/L	0.04 mg/L	87.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.176 mg/L	0.2 mg/L	87.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.361 mg/L	0.4 mg/L	90.2	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0356 mg/L	0.04 mg/L	89.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.845 mg/L	1 mg/L	84.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.37 mg/L	4 mg/L	84.3	70.0	130	----

COC ID: **WG-Q3 20210916**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	shvets.lyudmyla@teck.com	X	X
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		X
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	X	X
	th Hwy 43							Email 4:	Shanise.fossen@teck.com	X	X
	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	shvets.lyudmyla@teck.com	X	X
	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number			
	478			Phone Number	403 407 1794						

Environmental Division  
Calgary  
Work Order Reference  
**CG2104166**



Telephone : +1 403 407 1800

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED										
								ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA			
LC_PIZP1104_WG_Q3-2021_NP	LC_PIZP1104	WG		16-Sep	13:55	G	6	1		1								
LC_PIZP1105_WG_Q3-2021_NP	LC_PIZP1105	WG		16-Sep	14:55	G	9	1	2	1	1	1	1	1	1			
WG_Q3-2021_007_CC3	LC_PIZP1105	WG		16-Sep	14:55	G	9	1	2	1	1	1	1	1	1			
WG_Q3-2021_008_MT3	LC_PIZP1105	WG		16-Sep	14:55	G	7	1		1	1	1	1	1	1			
WG_Q3-2021_009_RD2	LC_RD2	WG		16-Sep	14:55	G	4			1		1		1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
PLEASE FORW. ADM. THIS SAMPLES TO ALS BERNABY FOR ANALYSIS Samples that required filtering did not get filtered or preserved.	D.Tymstra/T.Dick	16-Sep	<i>[Signature]</i>	17/09 10:00

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/> X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	T.Dick/D. Tymstra	
	Sampler's Signature	Date/Time
	<i>[Signature]</i>	September 16, 2021





## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2104185**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : WG-Q3 20210917  
**Sampler** : Drake Tymstra, Tanya Dick  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 18-Sep-2021 08:50  
**Date Analysis Commenced** : 18-Sep-2021  
**Issue Date** : 07-Oct-2021 12:07

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID		LC_PIZDC1306	LC_PIZDC1307	LC_PIZDC1308	----	----	
(Matrix: Water)					LC_PIZDC1306	LC_PIZDC1307	LC_PIZDC1308	LC_PIZDC1306	LC_PIZDC1307	LC_PIZDC1308	----	----
					_WG_Q3-2021_	_WG_Q3-2021_	_WG_Q3-2021_	_WG_Q3-2021_	_WG_Q3-2021_	_WG_Q3-2021_	----	----
					NP	NP	NP	NP	NP	NP	----	----
Client sampling date / time					17-Sep-2021	17-Sep-2021	17-Sep-2021	----	----	----	----	----
					12:00	09:45	10:40	----	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2104185-001	CG2104185-002	CG2104185-003	-----	-----	-----	-----	-----
					Result	Result	Result	----	----	----	----	----
<b>Physical Tests</b>												
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	4.3	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	268	233	399	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	6.0	<1.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	268	239	399	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	461	383	660	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	267	180	366	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	432	460	471	----	----	----	----	----
pH	----	E108	0.10	pH units	8.23	8.32	7.99	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	278	222	396	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	4.6	3.5	<1.0	----	----	----	----	----
turbidity	----	E121	0.10	NTU	3.96	12.0	0.58	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	327	284	487	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	3.6	<1.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	----	----	----
<b>Anions and Nutrients</b>												
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.103	0.0071	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.12	0.16	1.46	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.137	0.500	0.137	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.063	0.179	0.089	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.132	0.0090	0.0656	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0.0028	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0031	0.0136	<0.0020	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	6.46	<0.30	5.64	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>												
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.36	2.01	3.17	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.19	2.04	2.90	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID		LC_PIZDC1306	LC_PIZDC1307	LC_PIZDC1308	----	----	
(Matrix: Water)					LC_PIZDC1306	LC_PIZDC1307	LC_PIZDC1308	LC_PIZDC1306	LC_PIZDC1307	LC_PIZDC1308	----	----
					_WG_Q3-2021_	_WG_Q3-2021_	_WG_Q3-2021_	_WG_Q3-2021_	_WG_Q3-2021_	_WG_Q3-2021_	----	----
					NP	NP	NP	NP	NP	NP	----	----
Client sampling date / time					17-Sep-2021	17-Sep-2021	17-Sep-2021	----	----	----	----	----
					12:00	09:45	10:40	----	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2104185-001	CG2104185-002	CG2104185-003	-----	-----	-----	-----	-----
					Result	Result	Result	----	----	----	----	----
<b>Ion Balance</b>												
anion sum	----	EC101	0.10	meq/L	5.51	4.81	8.14	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	5.43	4.40	7.45	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	98.5	91.5	91.5	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	0.731	4.45	4.42	----	----	----	----	----
<b>Total Metals</b>												
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0385	0.0132	0.0058	----	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00022	<0.00010	<0.00010	----	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	0.00164	<0.00010	----	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.174	1.51	0.338	----	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	----	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	0.024	0.012	----	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.116	<0.0200 <sup>DLM</sup>	0.174	----	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	61.0	36.7	92.0	----	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	0.65	----	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	0.00054	<0.00050	----	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.036	1.31	0.087	----	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000142	<0.000050	----	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0104	0.0692	0.0097	----	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	23.0	19.9	29.5	----	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00173	0.00944	0.0256	----	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00208	0.0336	0.00228	----	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00113	<0.00050	0.00130	----	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	2.02	4.96	2.10	----	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	3.02	<0.050	0.077	----	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	2.98	2.72	5.01	----	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	0.733	13.4	1.91	----	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0786	0.154	0.118	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1306 _WG_Q3-2021_ NP	LC_PIZDC1307 _WG_Q3-2021_ NP	LC_PIZDC1308 _WG_Q3-2021_ NP	----	----
Client sampling date / time					17-Sep-2021 12:00	17-Sep-2021 09:45	17-Sep-2021 10:40	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104185-001 Result	CG2104185-002 Result	CG2104185-003 Result	-----	-----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	2.45	<0.50	1.64	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0.000019	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00090 <sup>DLM</sup>	<0.00060 <sup>DLM</sup>	<0.00030	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000887	0.000031	0.00156	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00086	<0.00050	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0034	0.0065	<0.0030	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0016	0.0014	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00020	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00157	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.165	1.41	0.300	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.024	0.012	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.121	<0.0150 <sup>DLM</sup>	0.0854	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	67.0	40.0	99.3	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	0.65	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00049	<0.00020	0.00054	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	1.02	0.038	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0112	0.0774	0.0099	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	24.3	19.5	28.6	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.00800	0.0249	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00187	0.0319	0.00213	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00105	<0.00050	0.00125	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.20	5.12	2.14	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	3.67	<0.050	0.091	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1306 _WG_Q3-2021_ NP	LC_PIZDC1307 _WG_Q3-2021_ NP	LC_PIZDC1308 _WG_Q3-2021_ NP	----	----
Client sampling date / time					17-Sep-2021 12:00	17-Sep-2021 09:45	17-Sep-2021 10:40	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104185-001 Result	CG2104185-002 Result	CG2104185-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.84	2.76	4.87	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.795	14.5	1.97	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0682	0.135	0.104	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.48	<0.50	1.98	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0.000017	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000834	0.000020	0.00144	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00057	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0033	0.0016	0.0026	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104185</b>	Page	: 1 of 17
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 18-Sep-2021 08:50
PO	: VPO00739930	Issue Date	: 07-Oct-2021 12:07
C-O-C number	: WG-Q3 20210917		
Sampler	: Drake Tymstra, Tanya Dick		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Laboratory Control Sample (LCS) Recoveries</b>								
Total Metals	QC-MRG2-3007360 02	----	antimony, total	7440-36-0	E420	122 % <sup>MES</sup>	80.0-120%	Recovery greater than upper control limit
Total Metals	QC-MRG2-3007360 02	----	strontium, total	7440-24-6	E420	122 % <sup>MES</sup>	80.0-120%	Recovery greater than upper control limit

**Result Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E298	17-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E298	17-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E298	17-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E235.Br-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E235.Br-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E235.Br-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E235.Cl-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E235.Cl-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E235.Cl-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E378-U	17-Sep-2021	----	----	----		18-Sep-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E378-U	17-Sep-2021	----	----	----		18-Sep-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E378-U	17-Sep-2021	----	----	----		18-Sep-2021	3 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E235.F	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E235.F	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E235.F	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E235.NO3-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E235.NO3-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E235.NO3-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E235.NO2-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E235.NO2-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E235.NO2-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E235.SO4	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E235.SO4	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E235.SO4	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E318	17-Sep-2021	23-Sep-2021	----	----		27-Sep-2021	28 days	10 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E318	17-Sep-2021	23-Sep-2021	----	----		27-Sep-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E318	17-Sep-2021	23-Sep-2021	----	----		27-Sep-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E372-U	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E372-U	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E372-U	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E421.Cr-L	17-Sep-2021	25-Sep-2021	----	----		26-Sep-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E421.Cr-L	17-Sep-2021	25-Sep-2021	----	----		26-Sep-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E421.Cr-L	17-Sep-2021	25-Sep-2021	----	----		26-Sep-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E509	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E509	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E509	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E421	17-Sep-2021	25-Sep-2021	----	----		26-Sep-2021	180 days	9 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E421	17-Sep-2021	25-Sep-2021	----	----		26-Sep-2021	180 days	9 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E421	17-Sep-2021	25-Sep-2021	----	----		26-Sep-2021	180 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E358-L	17-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E358-L	17-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E358-L	17-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E355-L	17-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E355-L	17-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E355-L	17-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E283	17-Sep-2021	----	----	----		29-Sep-2021	14 days	12 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E283	17-Sep-2021	----	----	----		29-Sep-2021	14 days	12 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E283	17-Sep-2021	----	----	----		29-Sep-2021	14 days	12 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E290	17-Sep-2021	----	----	----		28-Sep-2021	14 days	11 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E290	17-Sep-2021	----	----	----		28-Sep-2021	14 days	11 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E290	17-Sep-2021	----	----	----		28-Sep-2021	14 days	11 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E100	17-Sep-2021	----	----	----		28-Sep-2021	28 days	11 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZDC1307_WG_Q3-2021_NP	E100	17-Sep-2021	----	----	----		28-Sep-2021	28 days	11 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZDC1308_WG_Q3-2021_NP	E100	17-Sep-2021	----	----	----		28-Sep-2021	28 days	11 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC1306_WG_Q3-2021_NP	E125	17-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	240 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC1308_WG_Q3-2021_NP	E125	17-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	241 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC1307_WG_Q3-2021_NP	E125	17-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	242 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC1306_WG_Q3-2021_NP	E108	17-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	264 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC1308_WG_Q3-2021_NP	E108	17-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	265 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC1307_WG_Q3-2021_NP	E108	17-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	266 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZDC1306_WG_Q3-2021_NP	E162	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E162	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E162	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZDC1306_WG_Q3-2021_NP	E160-L	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZDC1307_WG_Q3-2021_NP	E160-L	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZDC1308_WG_Q3-2021_NP	E160-L	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E121	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E121	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E121	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E420.Cr-L	17-Sep-2021	----	----	----		24-Sep-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E420.Cr-L	17-Sep-2021	----	----	----		24-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E420.Cr-L	17-Sep-2021	----	----	----		24-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E420	17-Sep-2021	----	----	----		24-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E420	17-Sep-2021	----	----	----		24-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E420	17-Sep-2021	----	----	----		24-Sep-2021	180 days	7 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	306146	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304816	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	305706	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296485	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296486	1	20	5.0	5.0	✓
Conductivity in Water	E100	304815	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302378	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300937	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	302379	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303949	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	296207	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	296482	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296487	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296488	1	20	5.0	5.0	✓
ORP by Electrode	E125	303221	1	20	5.0	5.0	✓
pH by Meter	E108	304814	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	296481	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	301370	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300736	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	300307	1	11	9.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300737	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303956	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299079	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	296754	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	306146	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304816	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	305706	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296485	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296486	1	20	5.0	5.0	✓
Conductivity in Water	E100	304815	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302378	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300937	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	302379	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303949	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	296207	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	296482	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	296487	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296488	1	20	5.0	5.0	✓
ORP by Electrode	E125	303221	1	20	5.0	5.0	✓
pH by Meter	E108	304814	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	296481	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	301370	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300736	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	300307	1	11	9.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300737	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303956	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299079	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	301365	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	296754	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	306146	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304816	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	305706	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296485	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296486	1	20	5.0	5.0	✓
Conductivity in Water	E100	304815	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302378	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300937	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	302379	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303949	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	296207	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	296482	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296487	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296488	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	296481	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	301370	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300736	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	300307	1	11	9.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300737	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303956	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299079	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	301365	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	296754	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	305706	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296485	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	296486	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302378	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300937	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	302379	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303949	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	296207	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	296482	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296487	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296488	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	296481	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300736	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	300307	1	11	9.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300737	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303956	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299079	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2104185**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : WG-Q3 20210917  
**Sampler** : Drake Tymstra, Tanya Dick  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 18-Sep-2021 08:50  
**Date Analysis Commenced** : 18-Sep-2021  
**Issue Date** : 07-Oct-2021 12:07

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
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Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 18  
Work Order : CG2104185  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 296754)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	turbidity	----	E121	0.10	NTU	3.96	4.20	5.88%	15%	----
<b>Physical Tests (QC Lot: 301370)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	278	262	5.55%	20%	----
<b>Physical Tests (QC Lot: 303221)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	432	435	0.716%	15%	----
<b>Physical Tests (QC Lot: 304814)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	pH	----	E108	0.10	pH units	8.23	8.23	0.00%	4%	----
<b>Physical Tests (QC Lot: 304815)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	conductivity	----	E100	2.0	µS/cm	461	462	0.217%	10%	----
<b>Physical Tests (QC Lot: 304816)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	268	266	0.823%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	268	266	0.823%	20%	----
<b>Physical Tests (QC Lot: 306146)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296207)</b>											
CG2104181-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296481)</b>											
CG2104172-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	6.58	6.54	0.739%	20%	----
<b>Anions and Nutrients (QC Lot: 296482)</b>											
CG2104172-006	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296485)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296486)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.12	<0.10	0.02	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296487)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 296487) - continued</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.132	0.136	3.36%	20%	----
<b>Anions and Nutrients (QC Lot: 296488)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 299079)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0031	0.0030	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 300307)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.063	0.080	0.017	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 305706)</b>											
CG2104183-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0167	0.0149	0.0018	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 303949)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.36	2.44	0.08	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 303956)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.19	2.15	0.04	Diff <2x LOR	----
<b>Total Metals (QC Lot: 300736)</b>											
CG2104170-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00013	0.000006	Diff <2x LOR	----
<b>Total Metals (QC Lot: 300737)</b>											
CG2104170-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0034	0.0004	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00019	0.00020	0.000005	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0668	0.0664	0.596%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.014	0.013	0.0001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.113 µg/L	0.000110	2.19%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	89.2	87.2	2.34%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0335	0.0330	1.47%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	40.6	41.0	0.850%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00116	0.00127	9.74%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00219	0.00226	3.02%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 300737) - continued</b>											
CG2104170-001	Anonymous	nickel, total	7440-02-0	E420	0.00050	mg/L	0.00373	0.00366	0.00007	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.15	1.17	1.72%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	26.7 µg/L	0.0271	1.66%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.16	2.13	1.11%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	6.25	6.29	0.640%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.224	0.227	1.06%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	64.7	66.3	2.44%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00280	0.00278	0.974%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0054	0.0057	0.0003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 300937)</b>											
CG2104170-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 302378)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 302379)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0016	<0.0010	0.0006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00020	0.00019	0.000004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.165	0.146	11.7%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.121 µg/L	0.000107	12.1%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	67.0	63.8	4.87%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00049	0.00040	0.00009	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0112	0.0106	5.58%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	24.3	21.9	10.3%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 302379) - continued</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00187	0.00187	0.130%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00105	0.00094	0.00011	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.20	1.98	10.5%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	3.67 µg/L	0.00357	2.92%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.84	2.75	3.36%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.795	0.719	10.0%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0682	0.0652	4.48%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.48	2.70	0.22	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000834	0.000826	1.01%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00057	<0.00050	0.00007	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0033	0.0029	0.0004	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 296754)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 301365)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 301370)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 304815)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 304816)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 306146)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 296207)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 296481)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 296482)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 296485)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 296486)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 296487)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 296488)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 299079)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 300307)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 305706)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 305706) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 303949)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 303956)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 300736)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 300737)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 300737) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 300937)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 302378)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 302379)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Page : 10 of 18  
Work Order : CG2104185  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 302379) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	---





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 296754)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	97.5	85.0	115	---
<b>Physical Tests (QCLot: 301365)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 301370)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.2	85.0	115	---
<b>Physical Tests (QCLot: 303221)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Physical Tests (QCLot: 304814)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 304815)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 304816)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 306146)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 296207)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	99.7	80.0	120	---
<b>Anions and Nutrients (QCLot: 296481)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 296482)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 296485)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	107	85.0	115	---
<b>Anions and Nutrients (QCLot: 296486)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 296487)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 296488)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 299079)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	93.0	80.0	120	---
<b>Anions and Nutrients (QCLot: 300307)</b>									



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 300307) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 305706)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	108	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 303949)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 303956)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	107	80.0	120	----
<b>Total Metals (QCLot: 300736)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
<b>Total Metals (QCLot: 300737)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	110	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	# 122	80.0	120	MES
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	115	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.0	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	115	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	94.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	95.7	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	107	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	111	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.4	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	109	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	# 122	80.0	120	MES
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	101	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 300737) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	105	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	110	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	97.9	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.6	80.0	120	----
<b>Dissolved Metals (QCLot: 302378)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 302379)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.7	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.4	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	94.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.9	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.3	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	94.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.8	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.3	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 302379) - continued</b>									
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.7	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	106	80.0	120	----

### Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 296207)</b>										
CG2104181-006	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0518 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 296481)</b>										
CG2104172-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 296482)</b>										
CG2104172-007	Anonymous	fluoride	16984-48-8	E235.F	0.991 mg/L	1 mg/L	99.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 296485)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	bromide	24959-67-9	E235.Br-L	0.548 mg/L	0.5 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 296486)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	chloride	16887-00-6	E235.Cl-L	112 mg/L	100 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 296487)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.81 mg/L	2.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 296488)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.558 mg/L	0.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 299079)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	phosphorus, total	7723-14-0	E372-U	0.0578 mg/L	0.0676 mg/L	85.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 300307)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.65 mg/L	2.5 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 305706)</b>										
CG2104186-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 303949)</b>										
CG2104185-001	LC_PIZDC1306_WG_Q3-20 21_NP	carbon, dissolved organic [DOC]	----	E358-L	23.0 mg/L	23.9 mg/L	96.4	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 303956)</b>										
CG2104185-001	LC_PIZDC1306_WG_Q3-20 21_NP	carbon, total organic [TOC]	----	E355-L	24.0 mg/L	23.9 mg/L	100	70.0	130	----
<b>Total Metals (QCLot: 300736)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 300736) - continued</b>										
CG2104185-001	LC_PIZDC1306_WG_Q3-20 21_NP	chromium, total	7440-47-3	E420.Cr-L	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
<b>Total Metals (QCLot: 300737)</b>										
CG2104185-001	LC_PIZDC1306_WG_Q3-20 21_NP	aluminum, total	7429-90-5	E420	0.192 mg/L	0.2 mg/L	95.9	70.0	130	----
		antimony, total	7440-36-0	E420	0.0209 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0358 mg/L	0.04 mg/L	89.5	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00978 mg/L	0.01 mg/L	97.8	70.0	130	----
		boron, total	7440-42-8	E420	0.092 mg/L	0.1 mg/L	92.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0187 mg/L	0.02 mg/L	93.5	70.0	130	----
		iron, total	7439-89-6	E420	1.92 mg/L	2 mg/L	96.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0187 mg/L	0.02 mg/L	93.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0878 mg/L	0.1 mg/L	87.8	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0376 mg/L	0.04 mg/L	93.9	70.0	130	----
		potassium, total	7440-09-7	E420	3.83 mg/L	4 mg/L	95.8	70.0	130	----
		selenium, total	7782-49-2	E420	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		silicon, total	7440-21-3	E420	8.52 mg/L	10 mg/L	85.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00416 mg/L	0.004 mg/L	104	70.0	130	----
		sodium, total	17341-25-2	E420	1.92 mg/L	2 mg/L	95.9	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	18.2 mg/L	20 mg/L	91.3	70.0	130	----
		thallium, total	7440-28-0	E420	0.00363 mg/L	0.004 mg/L	90.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, total	7440-61-1	E420	0.00392 mg/L	0.004 mg/L	97.9	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.383 mg/L	0.4 mg/L	95.7	70.0	130	----
<b>Dissolved Metals (QCLot: 300937)</b>										
CG2104185-001	LC_PIZDC1306_WG_Q3-20 21_NP	mercury, dissolved	7439-97-6	E509	0.0000978 mg/L	0.0001 mg/L	97.8	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 302378)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 302379)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	aluminum, dissolved	7429-90-5	E421	0.201 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0194 mg/L	0.02 mg/L	97.3	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0217 mg/L	0.02 mg/L	108	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00884 mg/L	0.01 mg/L	88.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	99.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00386 mg/L	0.004 mg/L	96.5	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0973 mg/L	0.1 mg/L	97.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0451 mg/L	0.04 mg/L	113	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.92 mg/L	10 mg/L	89.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	21.3 mg/L	20 mg/L	106	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00368 mg/L	0.004 mg/L	92.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.3	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00381 mg/L	0.004 mg/L	95.3	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.438 mg/L	0.4 mg/L	110	70.0	130	----





COC ID:	WG-Q3 20210917			TURNAROUND TIME:		RUSH:					
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>				
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	shris.blurpa@teck.com	*	*
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	*	*
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	*	*
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	*	*
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	sanja.pret@teck.com	*	*
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739980		
Phone Number	250-425-8478			Phone Number	403 407 1794						

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FILE	Y	N	Y	Y	N	N						
								PRESRV.	H2SO4	NAHSO4	H2SO4	HCL	HCL	HNO3	HNO3	NONE				
								ANALYSIS	ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA				
LC_PIZDC1306_WG_Q3-2021_NP	LC_PIZDC1306	WG	N	17-Sep	12:00	G	6		1		1	1		1	1	1				
LC_PIZDC1307_WG_Q3-2021_NP	LC_PIZDC1307	WG	N	17-Sep	9:45	G	6		1		1	1		1	1	1				
LC_PIZDC1308_WG_Q3-2021_NP	LC_PIZDC1308	WG	N	17-Sep	10:40	G	6		1		1	1		1	1	1				

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
PLEASE FORWARD ALL SAMPLES TO ALS URGENTLY FOR ANALYSIS	D.Tymstra/T.Dick	17-Sep	<i>[Signature]</i>	9/18/21

<b>SERVICE REQUEST (rush - subject to availability)</b>	<b>Sampler's Name</b>	<b>T.Dick/D. Tymstra</b>	<b>Mobile #</b>
Regular (default) <input checked="" type="checkbox"/>	<b>Sampler's Signature</b>	<i>[Signature]</i>	<b>Date/Time</b>
Priority (2-3 business days) - 50% surcharge			September 17, 2021
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

Environmental Division  
Calgary  
Work Order Reference  
**CG2104185**



Telephone : + 1 403 407 1800



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2104308**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : WG-Q3\_20210921  
**Sampler** : S. Fossen/D. Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Sep-2021 08:35  
**Date Analysis Commenced** : 22-Sep-2021  
**Issue Date** : 27-Sep-2021 16:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jeanie Mark	Laboratory Analyst	Organics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
TMV	Turbidity exceeded upper limit of the nephelometric method. Minimum value reported.



## Analytical Results

Sub-Matrix: Water					Client sample ID		LC_PIZP1101_	LC_CC2_WS_2	---	---	---
(Matrix: Water)					WG_Q3-2021_N	021-09-MISS_N					
Client sampling date / time					21-Sep-2021 14:30	21-Sep-2021 14:30	---	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2104308-001	CG2104308-002	-----	-----	-----	-----	-----
					Result	Result	---	---	---	---	---
<b>Physical Tests</b>											
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	2.2	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	175	178	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	175	178	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	306	304	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	125	122	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	299	277	---	---	---	---	---
pH	---	E108	0.10	pH units	8.15	8.03	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	397	424	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	2010	2080	---	---	---	---	---
turbidity	---	E121	0.10	NTU	4000 <sup>TMV</sup>	4000 <sup>TMV</sup>	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	214	217	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0471	0.0415	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.90	0.90	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	1.89	1.87	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.116	0.111	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0045	0.0041	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	2.04 <sup>DLHC</sup>	2.03 <sup>DLHC</sup>	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	3.91	3.87	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	0.82	1.18	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	32.3	27.7	---	---	---	---	---
<b>Ion Balance</b>											



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1101_ WG_Q3-2021_N	LC_CC2_WS_2 021-09-MISS_N	---	---	---
Client sampling date / time					21-Sep-2021 14:30	21-Sep-2021 14:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2104308-001	CG2104308-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	3.70	3.76	---	---	---	
cation sum	---	EC101	0.10	meq/L	3.45	3.40	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	93.2	90.4	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	3.50	5.03	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	18.0	18.3	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00034	0.00037	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00614	0.00644	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	1.06	1.06	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	1.45	1.41	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	0.000432	0.000440	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	0.043	0.043	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	4.01	3.98	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	187	187	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.0285	0.0295	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	13.7	14.1	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	0.110	0.111	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	28.9	30.0	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	0.0211	0.0217	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0442	0.0427	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	36.9	37.6	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	1.59	1.61	---	---	---	
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.000148	0.000153	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00387	0.00443	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0516	0.0527	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	4.80	4.97	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	4.99	5.05	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	29.6	30.6	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	0.00170	0.00173	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	21.2	21.6	---	---	---	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.403	0.418	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1101_WG_Q3-2021_N	LC_CC2_WS_2 021-09-MISS_N	---	---	---
Client sampling date / time					21-Sep-2021 14:30	21-Sep-2021 14:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2104308-001	CG2104308-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	1.40	1.44	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.00130	0.00134	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00047	0.00050	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0380	0.0403	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00451	0.00455	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0463	0.0488	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.221	0.229	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0482	0.0547	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00092	0.00092	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.460	0.473	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	0.022	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0150 <sup>DLM</sup>	<0.0200 <sup>DLM</sup>	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	28.6	27.5	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.17	0.17	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00181	0.00094	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.110	0.108	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000063	0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0093	0.0093	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	13.0	13.0	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.219	0.222	---	---	---	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0123 <sup>DTMF</sup>	0.0127 <sup>DTMF</sup>	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00053	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.798	0.820	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.79	3.73	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1101_ WG_Q3-2021_N	LC_CC2_WS_2 021-09-MISS_N	----	----	----
Client sampling date / time					21-Sep-2021 14:30	21-Sep-2021 14:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104308-001	CG2104308-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	21.0	21.1	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.196	0.197	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.98	0.89	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00240 <sup>DLM</sup>	0.00183	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00169	0.00172	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00057	0.00066	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0012	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	----	----	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	83.0	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104308</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 22-Sep-2021 08:35
PO	: VPO00739930	Issue Date	: 27-Sep-2021 16:27
C-O-C number	: WG-Q3_20210921		
Sampler	: S. Fossen/D. Tymstra		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_CC2_WS_2021-09-MISS_N	E298	21-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E298	21-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_CC2_WS_2021-09-MISS_N	E235.Br-L	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1101_WG_Q3-2021_N	E235.Br-L	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_CC2_WS_2021-09-MISS_N	E235.Cl-L	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1101_WG_Q3-2021_N	E235.Cl-L	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_CC2_WS_2021-09-MISS_N	E378-U	21-Sep-2021	----	----	----		22-Sep-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E378-U	21-Sep-2021	----	----	----		22-Sep-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E235.F	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E235.F	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E235.NO3-L	21-Sep-2021	----	----	----		23-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E235.NO3-L	21-Sep-2021	----	----	----		23-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E235.NO2-L	21-Sep-2021	----	----	----		23-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E235.NO2-L	21-Sep-2021	----	----	----		23-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E235.SO4	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E235.SO4	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_CC2_WS_2021-09-MISS_N	E318	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E318	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_CC2_WS_2021-09-MISS_N	E372-U	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E372-U	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_CC2_WS_2021-09-MISS_N	E421.Cr-L	21-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E421.Cr-L	21-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_CC2_WS_2021-09-MISS_N	E509	21-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E509	21-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_CC2_WS_2021-09-MISS_N	E421	21-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	180 days	4 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E421	21-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	180 days	4 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_PIZP1101_WG_Q3-2021_N	E601A	21-Sep-2021	23-Sep-2021	14 days	2 days	✓	24-Sep-2021	40 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_CC2_WS_2021-09-MISS_N	E358-L	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E358-L	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_CC2_WS_2021-09-MISS_N	E355-L	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E355-L	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_CC2_WS_2021-09-MISS_N	E283	21-Sep-2021	----	----	----		23-Sep-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1101_WG_Q3-2021_N	E283	21-Sep-2021	----	----	----		23-Sep-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_CC2_WS_2021-09-MISS_N	E290	21-Sep-2021	----	----	----		23-Sep-2021	14 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E290	21-Sep-2021	----	----	----		23-Sep-2021	14 days	2 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E100	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E100	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E125	21-Sep-2021	----	----	----		26-Sep-2021	0.34 hrs	116 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E125	21-Sep-2021	----	----	----		26-Sep-2021	0.34 hrs	116 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E108	21-Sep-2021	----	----	----		23-Sep-2021	0.25 hrs	47 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E108	21-Sep-2021	----	----	----		23-Sep-2021	0.25 hrs	47 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E162	21-Sep-2021	----	----	----		24-Sep-2021	7 days	3 days		✓
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E162	21-Sep-2021	----	----	----		24-Sep-2021	7 days	3 days		✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_CC2_WS_2021-09-MISS_N	E160-L	21-Sep-2021	----	----	----		24-Sep-2021	7 days	3 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZP1101_WG_Q3-2021_N	E160-L	21-Sep-2021	----	----	----		24-Sep-2021	7 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_CC2_WS_2021-09-MISS_N	E121	21-Sep-2021	----	----	----		24-Sep-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZP1101_WG_Q3-2021_N	E121	21-Sep-2021	----	----	----		24-Sep-2021	3 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_CC2_WS_2021-09-MISS_N	E420.Cr-L	21-Sep-2021	----	----	----		25-Sep-2021	180 days	4 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E420.Cr-L	21-Sep-2021	----	----	----		25-Sep-2021	180 days	4 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_CC2_WS_2021-09-MISS_N	E508	21-Sep-2021	----	----	----		25-Sep-2021	28 days	4 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E508	21-Sep-2021	----	----	----		25-Sep-2021	28 days	4 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_CC2_WS_2021-09-MISS_N	E420	21-Sep-2021	----	----	----		25-Sep-2021	180 days	4 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E420	21-Sep-2021	----	----	----		25-Sep-2021	180 days	4 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	300745	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	300732	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	300309	1	2	50.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	300302	1	8	12.5	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	300303	1	8	12.5	5.0	✔
Conductivity in Water	E100	300731	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302401	1	7	14.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	302343	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	302400	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	301869	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	299587	1	16	6.2	5.0	✔
Fluoride in Water by IC	E235.F	300300	1	8	12.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	300304	1	8	12.5	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	300305	1	8	12.5	5.0	✔
ORP by Electrode	E125	303092	1	3	33.3	5.0	✔
pH by Meter	E108	300730	0	30	0.0	5.0	✖
Sulfate in Water by IC	E235.SO4	300301	1	8	12.5	5.0	✔
TDS by Gravimetry	E162	301312	1	18	5.5	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302331	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	301439	1	17	5.8	5.0	✔
Total Mercury in Water by CVAAS	E508	302345	1	19	5.2	5.0	✔
Total Metals in Water by CRC ICPMS	E420	302330	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	301875	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300197	1	19	5.2	5.0	✔
Turbidity by Nephelometry	E121	301694	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	300745	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	300732	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	300309	1	2	50.0	5.0	✔
BC PHC - EPH by GC-FID	E601A	300229	1	3	33.3	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	300302	1	8	12.5	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	300303	1	8	12.5	5.0	✔
Conductivity in Water	E100	300731	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302401	1	7	14.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	302343	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	302400	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	301869	1	19	5.2	5.0	✔





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	299587	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	300300	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	300304	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	300305	1	8	12.5	5.0	✓
ORP by Electrode	E125	303092	1	3	33.3	5.0	✓
pH by Meter	E108	300730	2	30	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	300301	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	301312	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302331	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	301439	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	302345	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	302330	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	301875	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300197	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	301311	1	10	10.0	5.0	✓
Turbidity by Nephelometry	E121	301694	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	300745	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	300732	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	300309	1	2	50.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	300229	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	300302	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	300303	1	8	12.5	5.0	✓
Conductivity in Water	E100	300731	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302401	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	302343	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	302400	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	301869	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	299587	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	300300	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	300304	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	300305	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	300301	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	301312	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302331	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	301439	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	302345	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	302330	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	301875	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300197	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	301311	1	10	10.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
Method Blanks (MB) - Continued							
Turbidity by Nephelometry	E121	301694	1	20	5.0	5.0	✓
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	300309	1	2	50.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	300302	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	300303	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302401	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	302343	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	302400	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	301869	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	299587	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	300300	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	300304	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	300305	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	300301	1	8	12.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302331	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	301439	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	302345	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	302330	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	301875	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300197	1	19	5.2	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
	Vancouver - Environmental			
PHCs and PAHs Hexane Extraction	EP601	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
	Calgary - Environmental			

## QUALITY CONTROL REPORT

**Work Order** : **CG2104308**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : WG-Q3\_20210921  
**Sampler** : S. Fossen/D. Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Sep-2021 08:35  
**Date Analysis Commenced** : 22-Sep-2021  
**Issue Date** : 27-Sep-2021 16:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
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Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 18  
Work Order : CG2104308  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 300731)</b>											
CG2104269-003	Anonymous	conductivity	----	E100	2.0	µS/cm	973	974	0.103%	10%	----
<b>Physical Tests (QC Lot: 300732)</b>											
CG2104269-003	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	157	169	7.25%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	157	169	7.25%	20%	----
<b>Physical Tests (QC Lot: 300745)</b>											
CG2104269-003	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.2	2.7	0.4	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 301312)</b>											
CG2104288-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	661	669	1.13%	20%	----
<b>Physical Tests (QC Lot: 301694)</b>											
CG2104291-001	Anonymous	turbidity	----	E121	0.10	NTU	5.30	5.40	1.94%	15%	----
<b>Physical Tests (QC Lot: 303092)</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	299	285	4.73%	15%	----
<b>Anions and Nutrients (QC Lot: 299587)</b>											
CG2104296-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0023	0.0022	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 300197)</b>											
CG2104269-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0131	0.0132	0.00006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 300300)</b>											
CG2104299-002	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 300301)</b>											
CG2104299-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	1620	1620	0.530%	20%	----
<b>Anions and Nutrients (QC Lot: 300302)</b>											
CG2104299-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 300303)</b>											
CG2104299-002	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	13.0	13.1	0.944%	20%	----
<b>Anions and Nutrients (QC Lot: 300304)</b>											
CG2104299-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	29.6	29.4	0.564%	20%	----
<b>Anions and Nutrients (QC Lot: 300305)</b>											
CG2104299-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0459	0.0492	0.0033	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 300309)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 300309) - continued</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0471	0.0464	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 301439)</b>											
CG2104288-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.492	0.492	0.0005	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 301869)</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.82	0.98	0.16	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 301875)</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	carbon, total organic [TOC]	----	E355-L	5.00	mg/L	32.3	31.8	0.48	Diff <2x LOR	----
<b>Total Metals (QC Lot: 302330)</b>											
CG2104198-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00252	0.00247	1.78%	20%	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0214	0.0206	3.71%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.115	0.116	0.001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	0.844 µg/L	0.000812	3.79%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	467	472	1.08%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	47.6 µg/L	0.0458	3.80%	20%	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	0.021	<0.020	0.0007	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	1.01	0.982	2.44%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	184	178	3.06%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	0.297	0.286	3.87%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00624	0.00628	0.604%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.330	0.316	4.34%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	15.4	15.2	1.36%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	9.83 µg/L	0.00903	8.50%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	3.29	3.16	3.96%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	27.3	26.2	3.85%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.769	0.755	1.79%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	355	331	6.79%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.000392	0.000413	5.23%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 302330) - continued</b>											
CG2104198-001	Anonymous	tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0298	0.0317	6.08%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.0566	0.0551	0.0015	Diff <2x LOR	----
<b>Total Metals (QC Lot: 302331)</b>											
CG2104198-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 302345)</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	mercury, total	7439-97-6	E508	0.0000500	mg/L	0.000148	0.000159	0.0000112	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 302343)</b>											
CG2104198-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 302400)</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0482	0.0466	3.21%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00092	0.00094	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.460	0.490	6.29%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	0.023	0.0007	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0150	mg/L	<0.0150 µg/L	<0.0000150	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	28.6	29.8	4.13%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.17 µg/L	0.00017	0.000002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00181	0.00186	0.00005	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.110	0.116	4.50%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000063	0.000064	0.000002	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0093	0.0097	0.0003	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	13.0	13.0	0.579%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.219	0.221	1.17%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0123	0.0125	2.20%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00052	0.00002	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.798	0.795	0.374%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.79	3.81	0.542%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 302400) - continued</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	sodium, dissolved	17341-25-2	E421	0.050	mg/L	21.0	21.1	0.813%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.196	0.199	1.49%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.98	0.93	0.05	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00240	mg/L	<0.00240	<0.00240	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00169	0.00172	1.94%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00057	0.00058	0.000008	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0017	0.00010	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 302401)</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 300731)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 300732)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	1.8	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	1.8	----
<b>Physical Tests (QCLot: 300745)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 301311)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 301312)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 301694)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Anions and Nutrients (QCLot: 299587)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 300197)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 300300)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 300301)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 300302)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 300303)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 300304)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 300305)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 300309)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 301439)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 301439) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 301869)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 301875)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 302330)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 302330) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 302331)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 302345)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 302343)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 302400)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 302400) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 302401)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Hydrocarbons (QCLot: 300229)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 300730)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 300731)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.3	90.0	110	---
<b>Physical Tests (QCLot: 300732)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 300733)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 300745)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	99.2	85.0	115	---
<b>Physical Tests (QCLot: 301311)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	99.5	85.0	115	---
<b>Physical Tests (QCLot: 301312)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.7	85.0	115	---
<b>Physical Tests (QCLot: 301694)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.1	85.0	115	---
<b>Physical Tests (QCLot: 303092)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 299587)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	103	80.0	120	---
<b>Anions and Nutrients (QCLot: 300197)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	93.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 300300)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	110	90.0	110	---
<b>Anions and Nutrients (QCLot: 300301)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 300302)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 300303)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 300304)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 300305)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 300305) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 300309)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	106	85.0	115	----
<b>Anions and Nutrients (QCLot: 301439)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 301869)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 301875)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Total Metals (QCLot: 302330)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	106	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	105	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	93.7	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	98.2	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	106	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	114	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	118	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	109	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	117	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	89.6	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 302330) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	98.2	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	106	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.1	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 302331)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
<b>Total Metals (QCLot: 302345)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	93.9	80.0	120	----
<b>Dissolved Metals (QCLot: 302400)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.9	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.7	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	93.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.2	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	94.5	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.9	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	94.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	97.2	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.3	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.5	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	95.7	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.4	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 302400) - continued</b>									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	86.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	94.0	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.7	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.2	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.6	80.0	120	----
<b>Dissolved Metals (QCLot: 302401)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	94.4	80.0	120	----
<b>Hydrocarbons (QCLot: 300229)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	108	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	98.1	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	104	70.0	130	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 299587)</b>										
CG2104296-006	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0562 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 300197)</b>										
CG2104269-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0548 mg/L	0.0676 mg/L	81.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 300300)</b>										
CG2104299-005	Anonymous	fluoride	16984-48-8	E235.F	1.09 mg/L	1 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 300301)</b>										
CG2104299-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	111 mg/L	100 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 300302)</b>										
CG2104299-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.536 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 300303)</b>										
CG2104299-005	Anonymous	chloride	16887-00-6	E235.Cl-L	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 300304)</b>										
CG2104299-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.61 mg/L	2.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 300305)</b>										
CG2104299-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.502 mg/L	0.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 300309)</b>										
CG2104308-002	LC_CC2_WS_2021-09-MIS S_N	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 301439)</b>										
CG2104288-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.63 mg/L	2.5 mg/L	105	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 301869)</b>										
CG2104308-001	LC_PIZP1101_WG_Q3-202 1_N	carbon, dissolved organic [DOC]	----	E358-L	23.1 mg/L	23.9 mg/L	96.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 301875)</b>										
CG2104308-001	LC_PIZP1101_WG_Q3-202 1_N	carbon, total organic [TOC]	----	E355-L	ND mg/L	23.9 mg/L	ND	70.0	130	----
<b>Total Metals (QCLot: 302330)</b>										
CG2104198-002	Anonymous	aluminum, total	7429-90-5	E420	0.380 mg/L	0.4 mg/L	95.0	70.0	130	----
		antimony, total	7440-36-0	E420	0.0464 mg/L	0.04 mg/L	116	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 302330) - continued</b>										
CG2104198-002	Anonymous	arsenic, total	7440-38-2	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0865 mg/L	0.08 mg/L	108	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		boron, total	7440-42-8	E420	0.229 mg/L	0.2 mg/L	114	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00782 mg/L	0.008 mg/L	97.7	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, total	7440-50-8	E420	0.0360 mg/L	0.04 mg/L	90.1	70.0	130	----
		iron, total	7439-89-6	E420	3.87 mg/L	4 mg/L	96.8	70.0	130	----
		lead, total	7439-92-1	E420	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0474 mg/L	0.04 mg/L	118	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0872 mg/L	0.08 mg/L	109	70.0	130	----
		silicon, total	7440-21-3	E420	19.0 mg/L	20 mg/L	94.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00854 mg/L	0.008 mg/L	107	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00863 mg/L	0.008 mg/L	108	70.0	130	----
		tin, total	7440-31-5	E420	0.0397 mg/L	0.04 mg/L	99.4	70.0	130	----
		titanium, total	7440-32-6	E420	0.0778 mg/L	0.08 mg/L	97.2	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.714 mg/L	0.8 mg/L	89.3	70.0	130	----
<b>Total Metals (QCLot: 302331)</b>										
CG2104198-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0753 mg/L	0.08 mg/L	94.2	70.0	130	----
<b>Total Metals (QCLot: 302345)</b>										
CG2104308-002	LC_CC2_WS_2021-09-MIS S_N	mercury, total	7439-97-6	E508	ND mg/L	0.0001 mg/L	ND	70.0	130	----
<b>Dissolved Metals (QCLot: 302343)</b>										
CG2104198-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000956 mg/L	0.0001 mg/L	95.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 302400)</b>										
CG2104308-002	LC_CC2_WS_2021-09-MIS S_N	aluminum, dissolved	7429-90-5	E421	0.195 mg/L	0.2 mg/L	97.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0436 mg/L	0.04 mg/L	109	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00870 mg/L	0.01 mg/L	87.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00389 mg/L	0.004 mg/L	97.2	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0187 mg/L	0.02 mg/L	93.5	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	96.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.89 mg/L	4 mg/L	97.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.20 mg/L	10 mg/L	92.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----		
sulfur, dissolved	7704-34-9	E421	20.5 mg/L	20 mg/L	103	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00390 mg/L	0.004 mg/L	97.4	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0376 mg/L	0.04 mg/L	93.9	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00388 mg/L	0.004 mg/L	96.9	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.0997 mg/L	0.1 mg/L	99.7	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.377 mg/L	0.4 mg/L	94.3	70.0	130	----		
<b>Dissolved Metals (QCLot: 302401)</b>										
CG2104308-002	LC_CC2_WS_2021-09-MIS S_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----





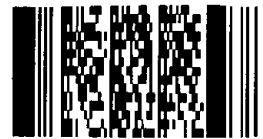
COC ID: <b>WG-Q3_20210921</b>		TURNAROUND TIME: 2-3 Days			RUSH: Priority						
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>				
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	*	*
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	*	*
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	*	*
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	*	*
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	tanva.eick@teck.com	*	*
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930		
Phone Number	250-425-8478			Phone Number	403 407 1794						

SAMPLE DETAILS							ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TH	Y	N	N	Y	N	Y	N	N				
								PRESENT	H2SO4	NABSO4	H2SO4	HCL	HCL	HNO3	HNO3	NONE				
								ANALYSIS	ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA				
LC_PIZP1101_WG_Q3-2021_N	LC_PIZP1101	WG		21-Sep	14:30	G	9		1	2	1	1	1	1	1	1				
<del>LC_C02WS_2021-A-MISS-N</del>	<del>LC_PIZP1101</del>	<del>WG</del>		<del>21-Sep</del>	<del>14:30</del>	<del>G</del>	<del>7</del>		<del>1</del>	<del>2</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>				

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b> PUR USE FORM AND MET ALS SAMPLES TO ALS BC LAB FOR ANALYSIS	<b>RELINQUISHED BY/AFFILIATION</b> D.Tymstra/S. Fossen	<b>DATE/TIME</b> 21-Sep	<b>ACCEPTED BY/AFFILIATION</b> <i>DF</i>	<b>DATE/TIME</b> 9/21/2021
----------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------	----------------------------	---------------------------------------------	-------------------------------

<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default)		Sampler's Name	S. Fossen/D. Tymstra	Mobile #
Priority (2-3 business days) - 50% surcharge	X	Sampler's Signature	<i>[Signature]</i>	Date/Time
Emergency (1 Business Day) - 100% surcharge				September 21, 2021
id - Contact ALS				

Environmental Division  
Calgary  
Work Order Reference  
**CG2104308**



*BC*



SNC-Lavalin  
ATTN: Kim Harrer  
4500 Mennie Road  
Cranbrook BC V1C 4J6

Date Received: 20-AUG-21  
Report Date: 07-DEC-21 15:34 (MT)  
Version: FINAL REV. 4

Client Phone: 250-421-9408

## Certificate of Analysis

Lab Work Order #: L2629493  
Project P.O. #: 683032  
Job Reference: 683032  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2629493-1 WG 19-AUG-21 11:40 RG_MW_LC4A_W G_2021_08_19_NP	L2629493-2 WG 19-AUG-21 11:45 RG_MW_LC4B_W G_2021_08_19_NP	L2629493-3 WG 19-AUG-21 14:50 LC_MW_SRDB_W G_2021_08_19_NP	L2629493-4 WG 19-AUG-21 14:50 RG_MW_MC11A_ WG_2021_08_19_ NP	L2629493-5 WG 19-AUG-21 17:00 RG_MW_MC11B_ WG_2021_08_19_ NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	577	671	628	628	<2.0
	Hardness (as CaCO3) (mg/L)	302	357	322	330	<0.50
	pH (pH)	7.67	7.77	7.78	7.78	4.29
	ORP (mV)	430	458	377	455	465
	Total Suspended Solids (mg/L)	4.4	7.8	60.9	62.2	<1.0
	Total Dissolved Solids (mg/L)	406	493	447	457	<10
	Turbidity (NTU)	4.93	12.2	29.3	29.3	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.2	<1.0	1.7	1.7	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	169	204	198	199	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	169	204	198	199	<1.0
	Ammonia as N (mg/L)	0.0058	<0.0050	<0.0050	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	206	249	241	242	<5.0
	Bromide (Br) (mg/L)	0.051	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	6.66	7.69	2.35	2.35	<0.10
	Fluoride (F) (mg/L)	0.358	0.200	0.145	0.141	<0.020
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	92.4	90.8	86.7	88.9	0.0
	Nitrate and Nitrite (as N) (mg/L)	2.10	5.23	8.04	8.00	<0.0051
	Nitrate (as N) (mg/L)	2.10	5.23	8.04	8.00	<0.0050
	Nitrite (as N) (mg/L)	0.0020	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.282	0.334 <sup>TKNI</sup>	0.372 <sup>TKNI</sup>	0.336 <sup>TKNI</sup>	0.089
	Total Nitrogen (mg/L)	2.38	5.56	8.41	8.33	0.089
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0093	0.0228	0.0313	0.0298	<0.0020
	Sulfate (SO4) (mg/L)	147	166	143	142	<0.30
	Anion Sum (meq/L)	6.79	8.14	7.58	7.58	<0.10
	Cation Sum (meq/L)	6.27	7.39	6.57	6.73	<0.10
	Cation - Anion Balance (%)	-4.0	-4.8	-7.1	-5.9	0.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.79	0.91	0.67	0.55	<0.50
	Total Organic Carbon (mg/L)	0.93	0.67 <sup>DTC</sup>	0.63	0.67	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0015	0.0022	0.0039	0.0044	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

07-DEC-21 15:34 (MT)

Version: FINAL REV. 4

Sample ID Description Sampled Date Sampled Time Client ID	L2629493-1 WG 19-AUG-21 11:40 RG_MW_LC4A_W G_2021_08_19_NP	L2629493-2 WG 19-AUG-21 11:45 RG_MW_LC4B_W G_2021_08_19_NP	L2629493-3 WG 19-AUG-21 14:50 LC_MW_SRDB_W G_2021_08_19_NP	L2629493-4 WG 19-AUG-21 14:50 RG_MW_MC11A_ WG_2021_08_19_ NP	L2629493-5 WG 19-AUG-21 17:00 RG_MW_MC11B_ WG_2021_08_19_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00018	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00029	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0550	0.0901	0.0686	<0.00010
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.012	0.013	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000140	0.0000220	0.0000113	0.0000131
	Calcium (Ca)-Dissolved (mg/L)	76.0	82.9	74.4	78.1
	Chromium (Cr)-Dissolved (mg/L)	0.00015	0.00013	0.00022	0.00019
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00030	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0215	0.0317	0.0140	0.0146
	Magnesium (Mg)-Dissolved (mg/L)	27.3	36.4	33.1	32.8
	Manganese (Mn)-Dissolved (mg/L)	0.00465	0.00451	0.00258	0.00261
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00166	0.00142	0.000721	0.000718
	Nickel (Ni)-Dissolved (mg/L)	0.00084	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.83	1.08	0.90	0.90
	Selenium (Se)-Dissolved (mg/L)	0.00982	0.0236	0.0322	0.0323
	Silicon (Si)-Dissolved (mg/L)	2.40	2.51	1.98	2.02
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	4.85	5.48	2.62	2.60
	Strontium (Sr)-Dissolved (mg/L)	0.347	0.178	0.131	0.136
	Sulfur (S)-Dissolved (mg/L)	51.1	56.7	47.5	47.2
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.00206	0.00219	0.00134	0.00139
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0012	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2629493-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2629493-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2629493-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2629493-1, -2, -3, -4, -5
Duplicate	Total Kjeldahl Nitrogen	TKND	L2629493-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**P04-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**S04-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-F-VA** Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 1 of 16

Client: SNC-Lavalin  
 4500 Mennie Road  
 Cranbrook BC V1C 4J6

Contact: Kim Harrer

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571198</b>							
<b>WG3606515-3</b>	<b>DUP</b>	<b>L2629493-1</b>						
Acidity (as CaCO3)		1.2	<1.0	RPD-NA	mg/L	N/A	20	26-AUG-21
<b>WG3606515-2</b>	<b>LCS</b>		104.3		%		85-115	26-AUG-21
Acidity (as CaCO3)								
<b>WG3606515-1</b>	<b>MB</b>		1.6		mg/L		2	26-AUG-21
Acidity (as CaCO3)								
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5570604</b>							
<b>WG3605703-3</b>	<b>LCS</b>		107.4		%		85-115	25-AUG-21
Alkalinity, Total (as CaCO3)								
<b>WG3605703-1</b>	<b>MB</b>		<1.0		mg/L		1	25-AUG-21
Alkalinity, Total (as CaCO3)								
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-12</b>	<b>DUP</b>	<b>L2629493-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	26-AUG-21
<b>WG3605286-4</b>	<b>LCS</b>		101.0		%		80-120	26-AUG-21
Beryllium (Be)-Dissolved								
<b>WG3605286-5</b>	<b>LCS</b>		106.3		%		80-120	26-AUG-21
Beryllium (Be)-Dissolved								
<b>WG3605286-6</b>	<b>LCS</b>		100.6		%		80-120	26-AUG-21
Beryllium (Be)-Dissolved								
<b>WG3605286-1</b>	<b>MB</b>		<0.000020		mg/L		0.00002	26-AUG-21
Beryllium (Be)-Dissolved								
<b>WG3605286-2</b>	<b>MB</b>		<0.000020		mg/L		0.00002	26-AUG-21
Beryllium (Be)-Dissolved								
<b>WG3605286-3</b>	<b>MB</b>		<0.000020		mg/L		0.00002	26-AUG-21
Beryllium (Be)-Dissolved								
<b>WG3605286-11</b>	<b>MS</b>	<b>L2629493-2</b>	105.7		%		70-130	26-AUG-21
Beryllium (Be)-Dissolved								
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5570604</b>							
<b>WG3605703-1</b>	<b>MB</b>		<5.0		mg/L		5	25-AUG-21
Bicarbonate (HCO3)								
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 2 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5571119</b>							
<b>WG3606375-3</b>	<b>DUP</b>	<b>L2629493-5</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	19-AUG-21
<b>WG3606375-2</b>	<b>LCS</b>							
Bromide (Br)			98.7		%		85-115	20-AUG-21
<b>WG3606375-6</b>	<b>LCS</b>							
Bromide (Br)			102.5		%		85-115	20-AUG-21
<b>WG3606375-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	20-AUG-21
<b>WG3606375-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	20-AUG-21
<b>WG3606375-4</b>	<b>MS</b>	<b>L2629493-5</b>						
Bromide (Br)			107.2		%		75-125	19-AUG-21
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5567896</b>							
<b>WG3603790-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			93.5		%		80-120	23-AUG-21
<b>WG3603790-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-AUG-21
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5567896</b>							
<b>WG3603790-2</b>	<b>LCS</b>							
Total Organic Carbon			94.8		%		80-120	23-AUG-21
<b>WG3603790-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	23-AUG-21
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5571119</b>							
<b>WG3606375-3</b>	<b>DUP</b>	<b>L2629493-5</b>						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	19-AUG-21
<b>WG3606375-2</b>	<b>LCS</b>							
Chloride (Cl)			99.3		%		85-115	20-AUG-21
<b>WG3606375-6</b>	<b>LCS</b>							
Chloride (Cl)			99.1		%		85-115	20-AUG-21
<b>WG3606375-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	20-AUG-21
<b>WG3606375-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	20-AUG-21
<b>WG3606375-4</b>	<b>MS</b>	<b>L2629493-5</b>						
Chloride (Cl)			103.7		%		75-125	19-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 3 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CO3-CL</b>								
<b>Water</b>								
Batch R5570604								
WG3605703-1 MB								
Carbonate (CO3)								
			<5.0		mg/L		5	25-AUG-21
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch R5570604								
WG3605703-3 LCS								
Conductivity (@ 25C)								
			100.1		%		90-110	25-AUG-21
WG3605703-1 MB								
Conductivity (@ 25C)								
			<2.0		uS/cm		2	25-AUG-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch R5571119								
WG3606375-3 DUP								
Fluoride (F)								
		L2629493-5	<0.020	RPD-NA	mg/L	N/A	20	19-AUG-21
WG3606375-2 LCS								
Fluoride (F)								
			96.2		%		90-110	20-AUG-21
WG3606375-6 LCS								
Fluoride (F)								
			95.3		%		90-110	20-AUG-21
WG3606375-1 MB								
Fluoride (F)								
			<0.020		mg/L		0.02	20-AUG-21
WG3606375-5 MB								
Fluoride (F)								
			<0.020		mg/L		0.02	20-AUG-21
WG3606375-4 MS								
Fluoride (F)								
		L2629493-5	100.8		%		75-125	19-AUG-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
Batch R5571289								
WG3606261-2 LCS								
Mercury (Hg)-Dissolved								
			89.9		%		80-120	28-AUG-21
WG3606261-1 MB								
Mercury (Hg)-Dissolved								
			<0.000005C		mg/L		0.000005	28-AUG-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
Batch R5571167								
WG3605286-12 DUP								
Aluminum (Al)-Dissolved								
		L2629493-1	0.0015		mg/L	16	20	26-AUG-21
Antimony (Sb)-Dissolved								
			<0.00010	RPD-NA	mg/L	N/A	20	26-AUG-21
Arsenic (As)-Dissolved								
			0.00029		mg/L	5.8	20	26-AUG-21
Barium (Ba)-Dissolved								
			0.0550		mg/L	3.7	20	26-AUG-21
Bismuth (Bi)-Dissolved								
			<0.000050	RPD-NA	mg/L	N/A	20	26-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 4 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-12</b>	<b>DUP</b>	<b>L2629493-1</b>						
Boron (B)-Dissolved		0.012	0.010		mg/L	12	20	26-AUG-21
Cadmium (Cd)-Dissolved		0.0000140	0.0000096	J	mg/L	0.000004	0.00001	26-AUG-21
Calcium (Ca)-Dissolved		76.0	66.7		mg/L	13	20	26-AUG-21
Chromium (Cr)-Dissolved		0.00015	0.00013		mg/L	17	20	26-AUG-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-AUG-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	26-AUG-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-AUG-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-AUG-21
Lithium (Li)-Dissolved		0.0215	0.0189		mg/L	13	20	26-AUG-21
Magnesium (Mg)-Dissolved		27.3	26.4		mg/L	3.5	20	26-AUG-21
Manganese (Mn)-Dissolved		0.00465	0.00433		mg/L	7.2	20	26-AUG-21
Molybdenum (Mo)-Dissolved		0.00166	0.00151		mg/L	9.3	20	26-AUG-21
Nickel (Ni)-Dissolved		0.00084	0.00082		mg/L	1.6	20	26-AUG-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	26-AUG-21
Potassium (K)-Dissolved		0.83	0.81		mg/L	3.0	20	26-AUG-21
Selenium (Se)-Dissolved		0.00982	0.00942		mg/L	4.1	20	26-AUG-21
Silicon (Si)-Dissolved		2.40	2.20		mg/L	8.7	20	26-AUG-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-AUG-21
Sodium (Na)-Dissolved		4.85	4.70		mg/L	3.2	20	26-AUG-21
Strontium (Sr)-Dissolved		0.347	0.305		mg/L	13	20	26-AUG-21
Sulfur (S)-Dissolved		51.1	46.6		mg/L	9.2	20	26-AUG-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-AUG-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-AUG-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	26-AUG-21
Uranium (U)-Dissolved		0.00206	0.00190		mg/L	8.0	20	26-AUG-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	26-AUG-21
Zinc (Zn)-Dissolved		0.0012	0.0011		mg/L	7.2	20	26-AUG-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	26-AUG-21
<b>WG3605286-4</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.0		%		80-120	26-AUG-21
Antimony (Sb)-Dissolved			101.7		%		80-120	26-AUG-21
Arsenic (As)-Dissolved			98.1		%		80-120	26-AUG-21
Barium (Ba)-Dissolved			100.4		%		80-120	26-AUG-21
Bismuth (Bi)-Dissolved			87.8		%		80-120	26-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 5 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-4</b>	<b>LCS</b>							
Boron (B)-Dissolved			91.3		%		80-120	26-AUG-21
Cadmium (Cd)-Dissolved			98.7		%		80-120	26-AUG-21
Calcium (Ca)-Dissolved			91.8		%		80-120	26-AUG-21
Chromium (Cr)-Dissolved			92.1		%		80-120	26-AUG-21
Cobalt (Co)-Dissolved			97.1		%		80-120	26-AUG-21
Copper (Cu)-Dissolved			95.1		%		80-120	26-AUG-21
Iron (Fe)-Dissolved			95.0		%		80-120	26-AUG-21
Lead (Pb)-Dissolved			91.9		%		80-120	26-AUG-21
Lithium (Li)-Dissolved			97.0		%		80-120	26-AUG-21
Magnesium (Mg)-Dissolved			101.0		%		80-120	26-AUG-21
Manganese (Mn)-Dissolved			91.3		%		80-120	26-AUG-21
Molybdenum (Mo)-Dissolved			93.6		%		80-120	26-AUG-21
Nickel (Ni)-Dissolved			95.2		%		80-120	26-AUG-21
Phosphorus (P)-Dissolved			95.5		%		70-130	26-AUG-21
Potassium (K)-Dissolved			98.7		%		80-120	26-AUG-21
Selenium (Se)-Dissolved			94.7		%		80-120	26-AUG-21
Silicon (Si)-Dissolved			96.0		%		60-140	26-AUG-21
Silver (Ag)-Dissolved			100.9		%		80-120	26-AUG-21
Sodium (Na)-Dissolved			99.3		%		80-120	26-AUG-21
Strontium (Sr)-Dissolved			91.6		%		80-120	26-AUG-21
Sulfur (S)-Dissolved			102.3		%		80-120	26-AUG-21
Thallium (Tl)-Dissolved			91.7		%		80-120	26-AUG-21
Tin (Sn)-Dissolved			97.8		%		80-120	26-AUG-21
Titanium (Ti)-Dissolved			94.3		%		80-120	26-AUG-21
Uranium (U)-Dissolved			94.8		%		80-120	26-AUG-21
Vanadium (V)-Dissolved			98.4		%		80-120	26-AUG-21
Zinc (Zn)-Dissolved			99.0		%		80-120	26-AUG-21
Zirconium (Zr)-Dissolved			95.3		%		80-120	26-AUG-21
<b>WG3605286-5</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.3		%		80-120	26-AUG-21
Antimony (Sb)-Dissolved			108.6		%		80-120	26-AUG-21
Arsenic (As)-Dissolved			99.7		%		80-120	26-AUG-21
Barium (Ba)-Dissolved			101.5		%		80-120	26-AUG-21
Bismuth (Bi)-Dissolved			100.9		%		80-120	26-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 6 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-5</b>	<b>LCS</b>							
Boron (B)-Dissolved			93.1		%		80-120	26-AUG-21
Cadmium (Cd)-Dissolved			98.6		%		80-120	26-AUG-21
Calcium (Ca)-Dissolved			100.7		%		80-120	26-AUG-21
Chromium (Cr)-Dissolved			95.7		%		80-120	26-AUG-21
Cobalt (Co)-Dissolved			99.5		%		80-120	26-AUG-21
Copper (Cu)-Dissolved			95.9		%		80-120	26-AUG-21
Iron (Fe)-Dissolved			99.7		%		80-120	26-AUG-21
Lead (Pb)-Dissolved			102.0		%		80-120	26-AUG-21
Lithium (Li)-Dissolved			106.3		%		80-120	26-AUG-21
Magnesium (Mg)-Dissolved			100.7		%		80-120	26-AUG-21
Manganese (Mn)-Dissolved			97.3		%		80-120	26-AUG-21
Molybdenum (Mo)-Dissolved			101.7		%		80-120	26-AUG-21
Nickel (Ni)-Dissolved			97.2		%		80-120	26-AUG-21
Phosphorus (P)-Dissolved			93.8		%		70-130	26-AUG-21
Potassium (K)-Dissolved			101.4		%		80-120	26-AUG-21
Selenium (Se)-Dissolved			98.6		%		80-120	26-AUG-21
Silicon (Si)-Dissolved			99.4		%		60-140	26-AUG-21
Silver (Ag)-Dissolved			105.5		%		80-120	26-AUG-21
Sodium (Na)-Dissolved			100.2		%		80-120	26-AUG-21
Strontium (Sr)-Dissolved			100.7		%		80-120	26-AUG-21
Sulfur (S)-Dissolved			103.2		%		80-120	26-AUG-21
Thallium (Tl)-Dissolved			100.7		%		80-120	26-AUG-21
Tin (Sn)-Dissolved			100.8		%		80-120	26-AUG-21
Titanium (Ti)-Dissolved			102.2		%		80-120	26-AUG-21
Uranium (U)-Dissolved			105.2		%		80-120	26-AUG-21
Vanadium (V)-Dissolved			100.5		%		80-120	26-AUG-21
Zinc (Zn)-Dissolved			94.7		%		80-120	26-AUG-21
Zirconium (Zr)-Dissolved			102.7		%		80-120	26-AUG-21
<b>WG3605286-6</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.7		%		80-120	26-AUG-21
Antimony (Sb)-Dissolved			103.7		%		80-120	26-AUG-21
Arsenic (As)-Dissolved			95.4		%		80-120	26-AUG-21
Barium (Ba)-Dissolved			97.7		%		80-120	26-AUG-21
Bismuth (Bi)-Dissolved			95.8		%		80-120	26-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 7 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-6</b>	<b>LCS</b>							
Boron (B)-Dissolved			89.6		%		80-120	26-AUG-21
Cadmium (Cd)-Dissolved			93.3		%		80-120	26-AUG-21
Calcium (Ca)-Dissolved			95.2		%		80-120	26-AUG-21
Chromium (Cr)-Dissolved			93.3		%		80-120	26-AUG-21
Cobalt (Co)-Dissolved			96.5		%		80-120	26-AUG-21
Copper (Cu)-Dissolved			93.6		%		80-120	26-AUG-21
Iron (Fe)-Dissolved			97.4		%		80-120	26-AUG-21
Lead (Pb)-Dissolved			94.6		%		80-120	26-AUG-21
Lithium (Li)-Dissolved			98.8		%		80-120	26-AUG-21
Magnesium (Mg)-Dissolved			95.1		%		80-120	26-AUG-21
Manganese (Mn)-Dissolved			96.1		%		80-120	26-AUG-21
Molybdenum (Mo)-Dissolved			98.2		%		80-120	26-AUG-21
Nickel (Ni)-Dissolved			94.9		%		80-120	26-AUG-21
Phosphorus (P)-Dissolved			99.6		%		70-130	26-AUG-21
Potassium (K)-Dissolved			97.5		%		80-120	26-AUG-21
Selenium (Se)-Dissolved			93.8		%		80-120	26-AUG-21
Silicon (Si)-Dissolved			97.4		%		60-140	26-AUG-21
Silver (Ag)-Dissolved			99.9		%		80-120	26-AUG-21
Sodium (Na)-Dissolved			96.4		%		80-120	26-AUG-21
Strontium (Sr)-Dissolved			95.3		%		80-120	26-AUG-21
Sulfur (S)-Dissolved			91.4		%		80-120	26-AUG-21
Thallium (Tl)-Dissolved			93.9		%		80-120	26-AUG-21
Tin (Sn)-Dissolved			95.0		%		80-120	26-AUG-21
Titanium (Ti)-Dissolved			93.3		%		80-120	26-AUG-21
Uranium (U)-Dissolved			99.0		%		80-120	26-AUG-21
Vanadium (V)-Dissolved			97.1		%		80-120	26-AUG-21
Zinc (Zn)-Dissolved			92.7		%		80-120	26-AUG-21
Zirconium (Zr)-Dissolved			97.7		%		80-120	26-AUG-21
<b>WG3605286-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 8 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-1 MB</b>								
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-AUG-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-AUG-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-AUG-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-AUG-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	26-AUG-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-AUG-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
<b>WG3605286-2 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 9 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-2 MB</b>								
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-AUG-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-AUG-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-AUG-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-AUG-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	26-AUG-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-AUG-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
<b>WG3605286-3 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21





## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 10 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-3</b>	<b>MB</b>							
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-AUG-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-AUG-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-AUG-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-AUG-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	26-AUG-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-AUG-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
<b>WG3605286-11</b>	<b>MS</b>	<b>L2629493-2</b>						
Aluminum (Al)-Dissolved			102.9		%		70-130	26-AUG-21
Antimony (Sb)-Dissolved			113.6		%		70-130	26-AUG-21
Arsenic (As)-Dissolved			105.7		%		70-130	26-AUG-21
Barium (Ba)-Dissolved			108.7		%		70-130	26-AUG-21
Bismuth (Bi)-Dissolved			83.7		%		70-130	26-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 11 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-11 MS</b>		<b>L2629493-2</b>						
Boron (B)-Dissolved			105.0		%		70-130	26-AUG-21
Cadmium (Cd)-Dissolved			109.3		%		70-130	26-AUG-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	26-AUG-21
Chromium (Cr)-Dissolved			98.0		%		70-130	26-AUG-21
Cobalt (Co)-Dissolved			104.6		%		70-130	26-AUG-21
Copper (Cu)-Dissolved			105.6		%		70-130	26-AUG-21
Iron (Fe)-Dissolved			102.5		%		70-130	26-AUG-21
Lead (Pb)-Dissolved			103.3		%		70-130	26-AUG-21
Lithium (Li)-Dissolved			105.7		%		70-130	26-AUG-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	26-AUG-21
Manganese (Mn)-Dissolved			101.0		%		70-130	26-AUG-21
Molybdenum (Mo)-Dissolved			105.5		%		70-130	26-AUG-21
Nickel (Ni)-Dissolved			103.7		%		70-130	26-AUG-21
Phosphorus (P)-Dissolved			101.5		%		70-130	26-AUG-21
Potassium (K)-Dissolved			105.2		%		70-130	26-AUG-21
Selenium (Se)-Dissolved			111.6		%		70-130	26-AUG-21
Silicon (Si)-Dissolved			99.6		%		70-130	26-AUG-21
Silver (Ag)-Dissolved			108.9		%		70-130	26-AUG-21
Sodium (Na)-Dissolved			104.4		%		70-130	26-AUG-21
Strontium (Sr)-Dissolved			110.0		%		70-130	26-AUG-21
Thallium (Tl)-Dissolved			104.8		%		70-130	26-AUG-21
Tin (Sn)-Dissolved			108.5		%		70-130	26-AUG-21
Titanium (Ti)-Dissolved			103.9		%		70-130	26-AUG-21
Uranium (U)-Dissolved			108.7		%		70-130	26-AUG-21
Vanadium (V)-Dissolved			103.1		%		70-130	26-AUG-21
Zinc (Zn)-Dissolved			107.3		%		70-130	26-AUG-21
Zirconium (Zr)-Dissolved			107.3		%		70-130	26-AUG-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5567958</b>							
<b>WG3602941-2 DUP</b>		<b>L2629493-5</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	23-AUG-21
<b>WG3602941-3 LCS</b>								
Ammonia as N			107.7		%		85-115	23-AUG-21
<b>WG3602941-1 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	23-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 12 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5567958</b>							
<b>WG3602941-4</b>	<b>MS</b>	<b>L2629493-5</b>						
Ammonia as N			110.3		%		75-125	23-AUG-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5571119</b>							
<b>WG3606375-3</b>	<b>DUP</b>	<b>L2629493-5</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	19-AUG-21
<b>WG3606375-2</b>	<b>LCS</b>							
Nitrite (as N)			99.6		%		90-110	20-AUG-21
<b>WG3606375-6</b>	<b>LCS</b>							
Nitrite (as N)			99.4		%		90-110	20-AUG-21
<b>WG3606375-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	20-AUG-21
<b>WG3606375-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	20-AUG-21
<b>WG3606375-4</b>	<b>MS</b>	<b>L2629493-5</b>						
Nitrite (as N)			104.6		%		75-125	19-AUG-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5571119</b>							
<b>WG3606375-3</b>	<b>DUP</b>	<b>L2629493-5</b>						
Nitrate (as N)		<0.0050	0.0052	RPD-NA	mg/L	N/A	20	19-AUG-21
<b>WG3606375-2</b>	<b>LCS</b>							
Nitrate (as N)			99.9		%		90-110	20-AUG-21
<b>WG3606375-6</b>	<b>LCS</b>							
Nitrate (as N)			100.1		%		90-110	20-AUG-21
<b>WG3606375-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	20-AUG-21
<b>WG3606375-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	20-AUG-21
<b>WG3606375-4</b>	<b>MS</b>	<b>L2629493-5</b>						
Nitrate (as N)			104.5		%		75-125	19-AUG-21
<b>OH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5570604</b>							
<b>WG3605703-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	25-AUG-21
<b>ORP-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 13 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5569631							
WG3604577-1	CRM	CL-ORP						
ORP			220		mV		210-230	25-AUG-21
WG3604577-2	DUP	L2629493-1						
ORP		430	436	J	mV	5.4	15	25-AUG-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5570460							
WG3605568-2	LCS							
Phosphorus (P)-Total			99.8		%		80-120	26-AUG-21
WG3605568-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	26-AUG-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5570604							
WG3605703-3	LCS							
pH			6.99		pH		6.9-7.1	25-AUG-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5562817							
WG3601572-3	LCS							
Orthophosphate-Dissolved (as P)			99.7		%		80-120	20-AUG-21
WG3601572-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-AUG-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5571119							
WG3606375-3	DUP	L2629493-5						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	19-AUG-21
WG3606375-2	LCS							
Sulfate (SO4)			101.5		%		90-110	20-AUG-21
WG3606375-6	LCS							
Sulfate (SO4)			101.2		%		90-110	20-AUG-21
WG3606375-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	20-AUG-21
WG3606375-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	20-AUG-21
WG3606375-4	MS	L2629493-5						
Sulfate (SO4)			105.4		%		75-125	19-AUG-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 14 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
Batch	R5570196							
<b>WG3603088-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.5		%		85-115	24-AUG-21
<b>WG3603088-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	24-AUG-21
<b>TKN-F-VA</b>								
	<b>Water</b>							
Batch	R5604859							
<b>WG3621729-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.7		%		75-125	29-SEP-21
<b>WG3621729-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-SEP-21
<b>WG3621729-4</b>	<b>MS</b>	<b>L2629493-1</b>						
Total Kjeldahl Nitrogen			101.1		%		70-130	29-SEP-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
Batch	R5570251							
<b>WG3604049-2</b>	<b>LCS</b>							
Total Suspended Solids			88.8		%		85-115	25-AUG-21
<b>WG3604049-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	25-AUG-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
Batch	R5563420							
<b>WG3601921-3</b>	<b>DUP</b>	<b>L2629493-1</b>						
Turbidity		4.93	4.90		NTU	0.5	15	21-AUG-21
<b>WG3601921-2</b>	<b>LCS</b>							
Turbidity			97.2		%		85-115	21-AUG-21
<b>WG3601921-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	21-AUG-21

# Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 15 of 16

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 16 of 16

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	19-AUG-21 11:40	25-AUG-21 13:11	0.25	145	hours	EHTR-FM
	2	19-AUG-21 11:45	25-AUG-21 13:11	0.25	145	hours	EHTR-FM
	3	19-AUG-21 14:50	25-AUG-21 13:11	0.25	142	hours	EHTR-FM
	4	19-AUG-21 14:50	25-AUG-21 13:11	0.25	142	hours	EHTR-FM
	5	19-AUG-21 17:00	25-AUG-21 13:11	0.25	140	hours	EHTR-FM
pH							
	1	19-AUG-21 11:40	25-AUG-21 13:00	0.25	145	hours	EHTR-FM
	2	19-AUG-21 11:45	25-AUG-21 13:00	0.25	145	hours	EHTR-FM
	3	19-AUG-21 14:50	25-AUG-21 13:00	0.25	142	hours	EHTR-FM
	4	19-AUG-21 14:50	25-AUG-21 13:00	0.25	142	hours	EHTR-FM
	5	19-AUG-21 17:00	25-AUG-21 13:00	0.25	140	hours	EHTR-FM
<b>Anions and Nutrients</b>							
TKN in Water by Fluorescence							
	1	19-AUG-21 11:40	28-SEP-21 19:54	28	40	days	EHT
	2	19-AUG-21 11:45	28-SEP-21 19:54	28	40	days	EHT
	3	19-AUG-21 14:50	28-SEP-21 19:54	28	40	days	EHT
	4	19-AUG-21 14:50	28-SEP-21 19:54	28	40	days	EHT
	5	19-AUG-21 17:00	28-SEP-21 19:54	28	40	days	EHT

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2629493 were received on 20-AUG-21 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2629493-COFC



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 21 -

Page 1 of 2

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																			
Company: SNC-Lavalin		Select Report Format: <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)		<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply						<b>4 Business day [E1 - 100%]</b> <input type="checkbox"/>													
Contact: Kim Harrer		Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		<b>4 day [P4-20%]</b> <input type="checkbox"/>						<b>3 day [P3-25%]</b> <input type="checkbox"/>													
Phone: 250-464-9108		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		<b>3 day [P3-25%]</b> <input type="checkbox"/>						<b>2 day [P2-50%]</b> <input type="checkbox"/>													
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		<b>2 day [P2-50%]</b> <input type="checkbox"/>						<b>Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]</b> <input type="checkbox"/>													
Street: 4500 Mennie Rd		Emails: SNC - 'Kim.Harrer' Erika.McCulloch'		Date and Time Required for all E&P TATs:																			
City/Province: Cranbrook, BC		Vicky.Lipinski@snc-lavalin.com		For tests that can not be performed according to the service level selected, you will be contacted.																			
Postal Code: V1C 4J6		Teck - "Bilal.Butt@teck.com"		<b>Analysis Request</b>																			
Invoice To: Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																			
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		F/P P F/P P																			
Company: SNC-Lavalin		Emails: Kim.Harrer@snc-lavalin.com		DOC (C-DIS-ORGL-LOW-CL)																			
Contact: payables@snc-lavalin.com		Project Information		TDC (C-TOT-ORGL-LOW-CL)																			
ALS Account # / Quote #: 683032		Oil and Gas Required Fields (client use)		BC MDG D-Met + Hg (MET-D-BOMDGG-CL)																			
Job #: 683032		AFE/Cost Center: PO#		Total N Calc. (MT-CALC-CL)																			
PO / AFE: 683032		Major/Minor Code: Routing Code:		Nitrate + Nitrite Calc. (N2H-CALC-CL)																			
LSD:		Requisitioner:		Teck Routine (TECKCOAL-ROUTINE-CL)																			
ALS Lab Work Order # (lab use only):		Location:		TKN (TKN-LF-CL)																			
ALS Contact: Opeyemi Adetola 403-407-1792		Sampler:		Bicarbonate (BC-CL)																			
ALS Sample # (lab use only)		Sample Identification &lor Coordinates (This description will appear on the report)		Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mm-yy)		Time (hh:mm)		Sample Type		Carbonate (CO3-CL)											
RG-MW-LCA-WG-2021-08-NP		RG-MW-LCA		RG-MW-LCA		19-08-21		1140		WG		Hydroxide (OH-CL)											
RG-MW-LCB-WG-2021-08-NP		RG-MW-LCB		RG-MW-LCB		19-08-21		1145		WG		Sulfide (S-CL)											
RG-MW-FAXB-WG-2021-08-NP		RG-MW-FAXB		RG-MW-FAXB		19-08-21		1450		WG		Sulfate (SO4-CL)											
RG-MW-MC10A-WG-2021-08-NP		RG-MW-MC10A		RG-MW-MC10A		19-08-21		1450		WG		Ammonia (NH3-CL)											
RG-MW-MC10B-WG-2021-08-NP		RG-MW-MC10B		RG-MW-MC10B		19-08-21		1700		WG		Cyanide (CN-CL)											
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)																			
Are samples taken from a Regulated DW System? <input type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																			
Are samples for human consumption/ use? <input type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																			
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		Cooling Initiated <input type="checkbox"/>																			
Released by: Joshua Gidem		Date: 2021/08/19		INITIAL COOLER TEMPERATURES °C																			
Time: 1630		Received by: [Signature]		FINAL COOLER TEMPERATURES °C																			
Date: 2021/08/19		Time: 1630		SHIPMENT RELEASE (lab use only)																			
Date: 2021/08/19		Time: 1630		INITIAL SHIPMENT RECEPTION (lab use only)																			
Date: 2021/08/19		Time: 1630		FINAL SHIPMENT RECEPTION (lab use only)																			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION. FAILURE TO COMPLETE ALL PORTIONS OF THIS FORM MAY DELAY ANALYSIS. PLEASE FILL IN THIS FORM LEGIBLY. BY THE USE OF THIS FORM THE USER ACKNOWLEDGES AND AGREES WITH THE TERMS AND CONDITIONS AS SPECIFIED ON THE BACK PAGE OF THE WHITE - REPORT COPY. 1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.





SNC-Lavalin  
ATTN: Kim Harrer  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 02-SEP-21  
Report Date: 06-DEC-21 12:49 (MT)  
Version: FINAL REV. 2

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2635121  
Project P.O. #: 683032  
Job Reference: LINE CREEK OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2635121-1 WG 01-SEP-21 10:10 LC_MW_CP1A_W G_2021_09_01_NP	L2635121-2 WG 01-SEP-21 09:45 LC_MW_CP1B_W G_2021_09_01_NP	L2635121-3 WG 01-SEP-21 10:10 LC_MW_MC10A_ WG_2021_09_01_ NP	L2635121-4 WG 01-SEP-21 12:00 LC_MW_MC10B_ WG_2021_09_01_ NP	L2635121-5 WG 01-SEP-21 12:00 LC_MW_MC10C_ WG_2021_09_01_ NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	600		608		
	Hardness (as CaCO3) (mg/L)	280	335	278	<0.50	<0.50
	pH (pH)	8.18		8.21		
	ORP (mV)	454	438	408	474	489
	Total Suspended Solids (mg/L)	10.4	<1.0	10.6	<1.0	<1.0
	Total Dissolved Solids (mg/L)	421	391	414	<10	<10
	Turbidity (NTU)	6.11	1.48	5.94	<0.10	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.5	<1.0	4.6	2.0	2.2
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	200		201		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0		<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0		<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	200		201		
	Ammonia as N (mg/L)	0.0401	<0.0050	0.0153	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	244		246		
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0		<5.0		
	Chloride (Cl) (mg/L)	3.65	10.8	3.49	<0.10	<0.10
	Fluoride (F) (mg/L)	0.287	0.254	0.315	<0.020	<0.020
	Hydroxide (OH) (mg/L)	<5.0		<5.0		
	Ion Balance (%)	98.1		97.3		
	Nitrate and Nitrite (as N) (mg/L)	2.74	1.75	2.72	<0.0051	<0.0051
	Nitrate (as N) (mg/L)	2.74	1.75	2.72	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.234 <sup>TKNI</sup>	0.204	0.210 <sup>TKNI</sup>	<0.050	<0.050
	Total Nitrogen (mg/L)	2.97	1.96	2.92	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0037	0.0027	0.0037	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0115	0.0025	0.0113	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	125	103	124	<0.30	<0.30
	Anion Sum (meq/L)	6.91		6.92		
	Cation Sum (meq/L)	6.78		6.73		
Cation - Anion Balance (%)	-1.0		-1.4			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.35	1.34	<0.50	2.24	1.91
	Total Organic Carbon (mg/L)	1.59	2.44	2.63	1.98	1.87
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0021	<0.0010	0.0024	<0.0010	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2635121-1 WG 01-SEP-21 10:10 LC_MW_CP1A_W G_2021_09_01_NP	L2635121-2 WG 01-SEP-21 09:45 LC_MW_CP1B_W G_2021_09_01_NP	L2635121-3 WG 01-SEP-21 10:10 LC_MW_MC10A_ WG_2021_09_01_ NP	L2635121-4 WG 01-SEP-21 12:00 LC_MW_MC10B_ WG_2021_09_01_ NP	L2635121-5 WG 01-SEP-21 12:00 LC_MW_MC10C_ WG_2021_09_01_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	0.00014	<0.00010	0.00013	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00018	<0.00010	0.00020	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0407	0.102	0.0393	<0.00010
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.041	0.036	0.040	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000116	0.0000291	0.0000077	<0.000050
	Calcium (Ca)-Dissolved (mg/L)	71.2	87.8	71.1	<0.050
	Chromium (Cr)-Dissolved (mg/L)	0.00020	0.00025	0.00017	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00028	0.00012	0.00027	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0208	0.0213	0.0205	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	24.9	28.2	24.3	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.0355	0.0234	0.0351	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	0.0000052 <sup>RRV</sup>	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00176	0.00160	0.00174	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00096	<0.00050	0.00092	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	1.63	1.04	1.60	<0.10
	Selenium (Se)-Dissolved (mg/L)	0.0538	0.0363	0.0528	<0.000050
	Silicon (Si)-Dissolved (mg/L)	3.91	3.78	3.79	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	26.2	5.05	26.2	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.454	0.434	0.445	<0.00020
	Sulfur (S)-Dissolved (mg/L)	49.5	41.3	49.0	<0.50
	Thallium (Tl)-Dissolved (mg/L)	0.000016	<0.000010	0.000012	<0.000010
	Tin (Sn)-Dissolved (mg/L)	0.00022	<0.00010	0.00023	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.00302	0.00148	0.00302	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0015	<0.0010	0.0017	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L2635121-2	LC_MW_CP1B_WG_2021_0	NDIS	No Data: Insufficient Sample - Not enough sample to run BIC, CO3, EC, OH, pH, and Ion Balance
L2635121-4	LC_MW_MC10B_WG_2021_	NDIS	No Data: Insufficient Sample - Not enough sample to run BIC, CO3, EC, OH, pH, and Ion Balance
L2635121-5	LC_MW_MC10C_WG_2021_	NDIS	No Data: Insufficient Sample - Not enough sample to run BIC, CO3, EC, OH, pH, and Ion Balance

### QC Samples with Qualifiers & Comments:

QC Type	Description	Parameter	Qualifier	Applies to Sample Number(s)
---------	-------------	-----------	-----------	-----------------------------

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-F-VA**      Water      TKN in Water by Fluorescence      APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**      Water      Total Suspended Solids      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

**Chain of Custody Numbers:**

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 1 of 10

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Kim Harrer

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R5582141							
<b>WG3614925-3</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.7		%		85-115	08-SEP-21
<b>WG3614925-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	08-SEP-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R5584113							
<b>WG3617159-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.5		%		85-115	11-SEP-21
<b>WG3617159-2</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-SEP-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
Batch	R5584121							
<b>WG3617214-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			99.7		%		80-120	14-SEP-21
<b>WG3617214-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-SEP-21
<b>WG3617214-4</b>	<b>MS</b>	<b>L2635121-5</b>						
Beryllium (Be)-Dissolved			97.2		%		70-130	14-SEP-21
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R5584113							
<b>WG3617159-2</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	11-SEP-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R5583266							
<b>WG3616149-2</b>	<b>LCS</b>							
Bromide (Br)			101.6		%		85-115	03-SEP-21
<b>WG3616149-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	03-SEP-21
<b>WG3616149-4</b>	<b>MS</b>	<b>L2635121-5</b>						
Bromide (Br)			104.4		%		75-125	03-SEP-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R5582766							
<b>WG3615601-11</b>	<b>DUP</b>	<b>L2635121-1</b>						
Dissolved Organic Carbon		1.35	1.38		mg/L	1.7	20	10-SEP-21
<b>WG3615601-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			108.2		%		80-120	10-SEP-21



## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5582766							
<b>WG3615601-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	10-SEP-21
<b>WG3615601-12</b>	<b>MS</b>	<b>L2635121-1</b>						
Dissolved Organic Carbon			96.1		%		70-130	10-SEP-21
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5582766							
<b>WG3615601-11</b>	<b>DUP</b>	<b>L2635121-1</b>						
Total Organic Carbon			2.00	J	mg/L	0.40	1	10-SEP-21
<b>WG3615601-10</b>	<b>LCS</b>							
Total Organic Carbon			111.9		%		80-120	10-SEP-21
<b>WG3615601-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	10-SEP-21
<b>WG3615601-12</b>	<b>MS</b>	<b>L2635121-1</b>						
Total Organic Carbon			108.2		%		70-130	10-SEP-21
<b>CL-L-IC-N-CL</b> <b>Water</b>								
Batch	R5583266							
<b>WG3616149-2</b>	<b>LCS</b>							
Chloride (Cl)			97.7		%		85-115	03-SEP-21
<b>WG3616149-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	03-SEP-21
<b>WG3616149-4</b>	<b>MS</b>	<b>L2635121-5</b>						
Chloride (Cl)			109.9		%		75-125	03-SEP-21
<b>CO3-CL</b> <b>Water</b>								
Batch	R5584113							
<b>WG3617159-2</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	11-SEP-21
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R5584113							
<b>WG3617159-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			96.0		%		90-110	11-SEP-21
<b>WG3617159-2</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-SEP-21
<b>F-IC-N-CL</b> <b>Water</b>								





## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5583266</b>							
<b>WG3616149-2</b>	<b>LCS</b>							
Fluoride (F)			98.9		%		90-110	03-SEP-21
<b>WG3616149-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	03-SEP-21
<b>WG3616149-4</b>	<b>MS</b>	<b>L2635121-5</b>						
Fluoride (F)			90.9		%		75-125	03-SEP-21
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582796</b>							
<b>WG3615619-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.4		%		80-120	11-SEP-21
<b>WG3615619-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	11-SEP-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584121</b>							
<b>WG3617214-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			103.8		%		80-120	14-SEP-21
Antimony (Sb)-Dissolved			102.0		%		80-120	14-SEP-21
Arsenic (As)-Dissolved			101.8		%		80-120	14-SEP-21
Barium (Ba)-Dissolved			101.8		%		80-120	14-SEP-21
Bismuth (Bi)-Dissolved			100.6		%		80-120	14-SEP-21
Boron (B)-Dissolved			90.5		%		80-120	14-SEP-21
Cadmium (Cd)-Dissolved			98.9		%		80-120	14-SEP-21
Calcium (Ca)-Dissolved			98.4		%		80-120	14-SEP-21
Chromium (Cr)-Dissolved			104.4		%		80-120	14-SEP-21
Cobalt (Co)-Dissolved			102.9		%		80-120	14-SEP-21
Copper (Cu)-Dissolved			100.4		%		80-120	14-SEP-21
Iron (Fe)-Dissolved			113.4		%		80-120	14-SEP-21
Lead (Pb)-Dissolved			101.9		%		80-120	14-SEP-21
Lithium (Li)-Dissolved			97.1		%		80-120	14-SEP-21
Magnesium (Mg)-Dissolved			106.6		%		80-120	14-SEP-21
Manganese (Mn)-Dissolved			101.1		%		80-120	14-SEP-21
Molybdenum (Mo)-Dissolved			101.7		%		80-120	14-SEP-21
Nickel (Ni)-Dissolved			102.3		%		80-120	14-SEP-21
Phosphorus (P)-Dissolved			108.8		%		70-130	14-SEP-21
Potassium (K)-Dissolved			101.5		%		80-120	14-SEP-21
Selenium (Se)-Dissolved			96.5		%		80-120	14-SEP-21



## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584121</b>							
<b>WG3617214-2</b>	<b>LCS</b>	<b>TMRM</b>						
Silicon (Si)-Dissolved			101.4		%		60-140	14-SEP-21
Silver (Ag)-Dissolved			98.0		%		80-120	14-SEP-21
Sodium (Na)-Dissolved			104.5		%		80-120	14-SEP-21
Strontium (Sr)-Dissolved			104.2		%		80-120	14-SEP-21
Sulfur (S)-Dissolved			96.2		%		80-120	14-SEP-21
Thallium (Tl)-Dissolved			100.9		%		80-120	14-SEP-21
Tin (Sn)-Dissolved			102.2		%		80-120	14-SEP-21
Titanium (Ti)-Dissolved			102.2		%		80-120	14-SEP-21
Uranium (U)-Dissolved			95.1		%		80-120	14-SEP-21
Vanadium (V)-Dissolved			104.0		%		80-120	14-SEP-21
Zinc (Zn)-Dissolved			94.3		%		80-120	14-SEP-21
Zirconium (Zr)-Dissolved			100.1		%		80-120	14-SEP-21
<b>WG3617214-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	14-SEP-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-SEP-21



## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584121</b>							
<b>WG3617214-1</b>	<b>MB</b>							
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	14-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-SEP-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-SEP-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-SEP-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-SEP-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-SEP-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	14-SEP-21
<b>WG3617214-4</b>	<b>MS</b>	<b>L2635121-5</b>						
Aluminum (Al)-Dissolved			95.7		%		70-130	14-SEP-21
Antimony (Sb)-Dissolved			93.3		%		70-130	14-SEP-21
Arsenic (As)-Dissolved			98.0		%		70-130	14-SEP-21
Barium (Ba)-Dissolved			98.9		%		70-130	14-SEP-21
Bismuth (Bi)-Dissolved			97.5		%		70-130	14-SEP-21
Boron (B)-Dissolved			96.5		%		70-130	14-SEP-21
Cadmium (Cd)-Dissolved			96.1		%		70-130	14-SEP-21
Calcium (Ca)-Dissolved			96.0		%		70-130	14-SEP-21
Chromium (Cr)-Dissolved			96.7		%		70-130	14-SEP-21
Cobalt (Co)-Dissolved			98.4		%		70-130	14-SEP-21
Copper (Cu)-Dissolved			97.5		%		70-130	14-SEP-21
Iron (Fe)-Dissolved			96.8		%		70-130	14-SEP-21
Lead (Pb)-Dissolved			94.1		%		70-130	14-SEP-21
Lithium (Li)-Dissolved			92.3		%		70-130	14-SEP-21
Magnesium (Mg)-Dissolved			95.3		%		70-130	14-SEP-21
Manganese (Mn)-Dissolved			98.2		%		70-130	14-SEP-21
Molybdenum (Mo)-Dissolved			98.9		%		70-130	14-SEP-21
Nickel (Ni)-Dissolved			96.8		%		70-130	14-SEP-21
Phosphorus (P)-Dissolved			95.2		%		70-130	14-SEP-21
Potassium (K)-Dissolved			95.8		%		70-130	14-SEP-21
Selenium (Se)-Dissolved			94.4		%		70-130	14-SEP-21



## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584121</b>							
<b>WG3617214-4</b>	<b>MS</b>	<b>L2635121-5</b>						
Silicon (Si)-Dissolved			93.3		%		70-130	14-SEP-21
Silver (Ag)-Dissolved			97.3		%		70-130	14-SEP-21
Sodium (Na)-Dissolved			94.0		%		70-130	14-SEP-21
Strontium (Sr)-Dissolved			94.2		%		70-130	14-SEP-21
Thallium (Tl)-Dissolved			93.4		%		70-130	14-SEP-21
Tin (Sn)-Dissolved			98.4		%		70-130	14-SEP-21
Titanium (Ti)-Dissolved			91.7		%		70-130	14-SEP-21
Uranium (U)-Dissolved			104.4		%		70-130	14-SEP-21
Vanadium (V)-Dissolved			95.1		%		70-130	14-SEP-21
Zinc (Zn)-Dissolved			96.5		%		70-130	14-SEP-21
Zirconium (Zr)-Dissolved			100.3		%		70-130	14-SEP-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584589</b>							
<b>WG3617062-7</b>	<b>DUP</b>	<b>L2635121-1</b>						
Ammonia as N		0.0401	0.0334		mg/L	18	20	14-SEP-21
<b>WG3617062-6</b>	<b>LCS</b>							
Ammonia as N			98.0		%		85-115	14-SEP-21
<b>WG3617062-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	14-SEP-21
<b>WG3617062-8</b>	<b>MS</b>	<b>L2635121-1</b>						
Ammonia as N			85.4		%		75-125	14-SEP-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5583266</b>							
<b>WG3616149-2</b>	<b>LCS</b>							
Nitrite (as N)			98.0		%		90-110	03-SEP-21
<b>WG3616149-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	03-SEP-21
<b>WG3616149-4</b>	<b>MS</b>	<b>L2635121-5</b>						
Nitrite (as N)			106.7		%		75-125	03-SEP-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5583266</b>							
<b>WG3616149-2</b>	<b>LCS</b>							
Nitrate (as N)			100.3		%		90-110	03-SEP-21
<b>WG3616149-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	03-SEP-21
<b>WG3616149-4</b>	<b>MS</b>	<b>L2635121-5</b>						



## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5583266							
<b>WG3616149-4 MS</b>		<b>L2635121-5</b>						
Nitrate (as N)			110.5		%		75-125	03-SEP-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5584113							
<b>WG3617159-2 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	11-SEP-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5580670							
<b>WG3613197-1 CRM</b>		<b>CL-ORP</b>						
ORP			217		mV		210-230	08-SEP-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5578238							
<b>WG3610664-41 LCS</b>								
Phosphorus (P)-Total			99.0		%		80-120	07-SEP-21
<b>WG3610664-40 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	07-SEP-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5584113							
<b>WG3617159-5 LCS</b>								
pH			7.00		pH		6.9-7.1	11-SEP-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5576899							
<b>WG3610671-2 LCS</b>								
Orthophosphate-Dissolved (as P)			98.0		%		80-120	02-SEP-21
<b>WG3610671-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	02-SEP-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5583266							
<b>WG3616149-2 LCS</b>								
Sulfate (SO4)			100.9		%		90-110	03-SEP-21
<b>WG3616149-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	03-SEP-21
<b>WG3616149-4 MS</b>		<b>L2635121-5</b>						



## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5583266							
<b>WG3616149-4 MS</b>		<b>L2635121-5</b>						
Sulfate (SO4)			109.3		%		75-125	03-SEP-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5581548							
<b>WG3612726-2 LCS</b>								
Total Dissolved Solids			97.4		%		85-115	08-SEP-21
<b>WG3612726-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	08-SEP-21
<b>TKN-F-VA</b>	<b>Water</b>							
Batch	R5582708							
<b>WG3613098-3 DUP</b>		<b>L2635121-1</b>						
Total Kjeldahl Nitrogen		0.234	0.184	J	mg/L	0.050	0.1	10-SEP-21
<b>WG3613098-2 LCS</b>								
Total Kjeldahl Nitrogen			96.8		%		75-125	10-SEP-21
<b>WG3613098-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-SEP-21
<b>WG3613098-4 MS</b>		<b>L2635121-2</b>						
Total Kjeldahl Nitrogen			96.6		%		70-130	10-SEP-21
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5579423							
<b>WG3611018-2 LCS</b>								
Total Suspended Solids			93.4		%		85-115	03-SEP-21
<b>WG3611018-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	03-SEP-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5579429							
<b>WG3611711-3 DUP</b>		<b>L2635121-1</b>						
Turbidity		6.11	5.73		NTU	6.3	15	04-SEP-21
<b>WG3611711-2 LCS</b>								
Turbidity			99.8		%		85-115	04-SEP-21
<b>WG3611711-1 MB</b>								
Turbidity			<0.10		NTU		0.1	04-SEP-21

# Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 9 of 10

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

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# Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	01-SEP-21 10:10	08-SEP-21 11:10	0.25	169	hours	EHTR-FM
	2	01-SEP-21 09:45	08-SEP-21 11:10	0.25	169	hours	EHTR-FM
	3	01-SEP-21 10:10	08-SEP-21 11:10	0.25	169	hours	EHTR-FM
	4	01-SEP-21 12:00	08-SEP-21 11:10	0.25	167	hours	EHTR-FM
	5	01-SEP-21 12:00	08-SEP-21 11:10	0.25	167	hours	EHTR-FM
pH	1	01-SEP-21 10:10	11-SEP-21 00:00	0.25	230	hours	EHTR-FM
	3	01-SEP-21 10:10	11-SEP-21 00:00	0.25	230	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2635121 were received on 02-SEP-21 09:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.





L2635121-COFC

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>														
Company:	SNC-Lavalin ~Nelson	Select Report Format: <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply														
Contact:	Kim Harrer	Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		PRIORITY (Business Days)		EMERGENCY												
Phone:	Tel.: 250-464-9108	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>												
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>												
Street:		Emails: SNC - 'Kim.Harrer'		2 day [P2-50%] <input type="checkbox"/>		Date and Time Required for all E&P TATs:												
City/Province:	Nelson, BC	Vicky.Lipinski@snc-lavalin.com		For tests that can not be performed according to the service level selected, you will be contacted.														
Postal Code:	V1L 4C6	Teck: <i>Drake.Tymstra@teck.com</i>		<b>Analysis Request</b>														
Invoice To Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below														
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: Kim.Harrer@snc-lavalin.com		F/P	P	F/P												
Company:		payables@snc-lavalin.com		DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met. + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)					
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>								<b>SAMPLES ON HOLD</b>	<b>NUMBER OF CONTAINERS</b>							
ALS Account # / Quote #: MOR125 / Q78198		AFE/Cost Center: PO#																
Job #: <i>Greenhills Operation Line Creek Operations</i>		Major/Minor Code: Routing Code:																
PO / AFE: 683032		Requisitioner: Location:																
ALS Lab Work Order # (lab use only):		ALS Contact: Sampler: <i>Chuck Stafford</i>																
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC	TOC	BC MDG	Total N	Nitrate + Nitrite	Teck Routine	TKN	Bicarbonate	Carbonate	Hydroxide			
	LC-MW-WLCA-WG-2021-09-01-NP	LC-MW-WLCA	01-SEP-21	10:10	WG	R	R	R	R	R	R	R	R	R	R			
	LC-MW-WLCB-WG-2021-09-01-NP	LC-MW-WLCB	01-SEP-21	09:45	WG	R	R	R	R	R	R	R	R	R	R			
	LC-MW-MC10A-WG-2021-09-01-NP	LC-MW-MC10A	01-SEP-21	10:10	WG	R	R	R	R	R	R	R	R	R	R			
	LC-MW-MC10B-WG-2021-09-01-NP	LC-MW-MC10B	01-SEP-21	12:00	WG	R	R	R	R	R	R	R	R	R	R			
	LC-MW-MC10C-WG-2021-09-01-NP	LC-MW-MC10C	01-SEP-21	12:00	WG	R	R	R	R	R	R	R	R	R	R			
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>				<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>												
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		<i>LCO-LINE CREEK OPERATIONS</i>				Frozen <input checked="" type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>												
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)				Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact: Yes <input type="checkbox"/> No <input type="checkbox"/>												
GHO-GREENHILLS OPERATION		FRO-FORDING RIVER OPERATION				Cooling Initiated <input checked="" type="checkbox"/>												
EVO-ELKVIEW OPERATIONS						INITIAL COOLER TEMPERATURES °C												
FINAL COOLER TEMPERATURES °C																		
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>												
Released by: <i>Chuck Stafford</i>	Date: <i>01/09/2021</i>	Time: <i>16:00</i>	Received by: <i>GR</i>	Date: <i>09/01/2021</i>	Time: <i>09:00</i>	Received by: <i>GR</i>	Date: <i>09/01/2021</i>	Time: <i>09:00</i>										



SNC-Lavalin  
ATTN: KIM HARRER  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 04-SEP-21  
Report Date: 12-OCT-21 17:14 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2635829  
Project P.O. #: 683032  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers:  
Legal Site Desc:

**Note (2022-Mar-15) SNC Lavalin: This version (0) has the wrong sample ID. The correct ID is LC\_MW\_SRD1A\_WG\_2021\_09\_03\_NP. Waiting on updated version (1) to be provided by ALS.**

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2635829-1 WG 03-SEP-21 09:30 RG_MW_ERXA_W B_2021_09_03_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Hardness (as CaCO3) (mg/L)	345			
	ORP (mV)	463			
	Total Suspended Solids (mg/L)	130			
	Total Dissolved Solids (mg/L)	439			
	Turbidity (NTU)	78.9			
<b>Anions and Nutrients</b>	Ammonia as N (mg/L)	0.0566			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	5.59			
	Fluoride (F) (mg/L)	0.249			
	Nitrate and Nitrite (as N) (mg/L)	7.82			
	Nitrate (as N) (mg/L)	7.82			
	Nitrite (as N) (mg/L)	0.0040			
	Total Kjeldahl Nitrogen (mg/L)	0.833			
	Total Nitrogen (mg/L)	8.66			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0136			
	Phosphorus (P)-Total (mg/L)	0.154 <sup>DLHC</sup>			
	Sulfate (SO4) (mg/L)	134			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.55			
	Total Organic Carbon (mg/L)	7.8			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0027			
	Antimony (Sb)-Dissolved (mg/L)	0.00123			
	Arsenic (As)-Dissolved (mg/L)	0.00053			
	Barium (Ba)-Dissolved (mg/L)	0.177			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.026			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000287			
	Calcium (Ca)-Dissolved (mg/L)	79.8			
	Chromium (Cr)-Dissolved (mg/L)	0.00010			
	Cobalt (Co)-Dissolved (mg/L)	0.00017			
	Copper (Cu)-Dissolved (mg/L)	0.00133			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0410			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	Description	Sampled Date	Sampled Time	Client ID
		L2635829-1	WG	03-SEP-21	09:30	RG_MW_ERXA_W B_2021_09_03_NP
<b>WATER</b>						
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)				35.3	
	Manganese (Mn)-Dissolved (mg/L)				0.0288	
	Mercury (Hg)-Dissolved (mg/L)				<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)				0.0232	
	Nickel (Ni)-Dissolved (mg/L)				0.00144	
	Phosphorus (P)-Dissolved (mg/L)				<0.050	
	Potassium (K)-Dissolved (mg/L)				1.10	
	Selenium (Se)-Dissolved (mg/L)				0.0345	
	Silicon (Si)-Dissolved (mg/L)				2.33	
	Silver (Ag)-Dissolved (mg/L)				<0.000010	
	Sodium (Na)-Dissolved (mg/L)				13.5	
	Strontium (Sr)-Dissolved (mg/L)				0.217	
	Sulfur (S)-Dissolved (mg/L)				50.4	
	Thallium (Tl)-Dissolved (mg/L)				0.000013	
	Tin (Sn)-Dissolved (mg/L)				0.00185	
	Titanium (Ti)-Dissolved (mg/L)				<0.00030	
	Uranium (U)-Dissolved (mg/L)				0.00140	
	Vanadium (V)-Dissolved (mg/L)				<0.00050	
	Zinc (Zn)-Dissolved (mg/L)				0.0088	
	Zirconium (Zr)-Dissolved (mg/L)				<0.00030	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2635829-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2635829-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2635829-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2635829-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			
TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			
TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated

## Reference Information

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TKN-F-VA** Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 1 of 9

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: KIM HARRER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5585586</b>							
<b>WG3619374-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	16-SEP-21
<b>WG3619374-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			108.5		%		80-120	16-SEP-21
<b>WG3619374-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-SEP-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582004</b>							
<b>WG3614803-2</b>	<b>LCS</b>							
Bromide (Br)			99.4		%		85-115	05-SEP-21
<b>WG3614803-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	05-SEP-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584044</b>							
<b>WG3617087-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.2		%		80-120	13-SEP-21
<b>WG3617087-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-SEP-21
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584044</b>							
<b>WG3617087-6</b>	<b>LCS</b>							
Total Organic Carbon			100.9		%		80-120	13-SEP-21
<b>WG3617087-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	13-SEP-21
<b>CL-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582004</b>							
<b>WG3614803-2</b>	<b>LCS</b>							
Chloride (Cl)			95.8		%		85-115	05-SEP-21
<b>WG3614803-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	05-SEP-21
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582004</b>							
<b>WG3614803-2</b>	<b>LCS</b>							
Fluoride (F)			95.6		%		90-110	05-SEP-21
<b>WG3614803-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	05-SEP-21
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5584768</b>							
<b>WG3616711-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.5		%		80-120	15-SEP-21
<b>WG3616711-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000050		mg/L		0.000005	15-SEP-21
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5585586</b>							
<b>WG3619374-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
Aluminum (Al)-Dissolved		0.0027	0.0025		mg/L	4.6	20	16-SEP-21
Antimony (Sb)-Dissolved		0.00123	0.00120		mg/L	2.8	20	16-SEP-21
Arsenic (As)-Dissolved		0.00053	0.00054		mg/L	1.3	20	16-SEP-21
Barium (Ba)-Dissolved		0.177	0.179		mg/L	1.2	20	16-SEP-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-SEP-21
Boron (B)-Dissolved		0.026	0.026		mg/L	0.6	20	16-SEP-21
Cadmium (Cd)-Dissolved		0.0000287	0.0000293		mg/L	2.2	20	16-SEP-21
Calcium (Ca)-Dissolved		79.8	80.3		mg/L	0.5	20	16-SEP-21
Chromium (Cr)-Dissolved		0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-SEP-21
Cobalt (Co)-Dissolved		0.00017	0.00018		mg/L	5.2	20	16-SEP-21
Copper (Cu)-Dissolved		0.00133	0.00133		mg/L	0.3	20	16-SEP-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-SEP-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-SEP-21
Lithium (Li)-Dissolved		0.0410	0.0407		mg/L	0.9	20	16-SEP-21
Magnesium (Mg)-Dissolved		35.3	35.3		mg/L	0.0	20	16-SEP-21
Manganese (Mn)-Dissolved		0.0288	0.0285		mg/L	1.1	20	16-SEP-21
Molybdenum (Mo)-Dissolved		0.0232	0.0228		mg/L	1.8	20	16-SEP-21
Nickel (Ni)-Dissolved		0.00144	0.00116	J	mg/L	0.00028	0.001	16-SEP-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-SEP-21
Potassium (K)-Dissolved		1.10	1.10		mg/L	0.2	20	16-SEP-21
Selenium (Se)-Dissolved		0.0345	0.0353		mg/L	2.3	20	16-SEP-21
Silicon (Si)-Dissolved		2.33	2.31		mg/L	1.0	20	16-SEP-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-SEP-21
Sodium (Na)-Dissolved		13.5	13.7		mg/L	1.3	20	16-SEP-21
Strontium (Sr)-Dissolved		0.217	0.211		mg/L	2.8	20	16-SEP-21
Sulfur (S)-Dissolved		50.4	51.1		mg/L	1.3	20	16-SEP-21
Thallium (Tl)-Dissolved		0.000013	0.000012		mg/L	9.0	20	16-SEP-21
Tin (Sn)-Dissolved		0.00185	0.00184		mg/L	0.8	20	16-SEP-21



## Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5585586</b>							
<b>WG3619374-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	16-SEP-21
Uranium (U)-Dissolved		0.00140	0.00137		mg/L	2.3	20	16-SEP-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	16-SEP-21
Zinc (Zn)-Dissolved		0.0088	0.0090		mg/L	2.1	20	16-SEP-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	16-SEP-21
<b>WG3619374-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			108.2		%		80-120	16-SEP-21
Antimony (Sb)-Dissolved			101.0		%		80-120	16-SEP-21
Arsenic (As)-Dissolved			103.6		%		80-120	16-SEP-21
Barium (Ba)-Dissolved			106.8		%		80-120	16-SEP-21
Bismuth (Bi)-Dissolved			104.7		%		80-120	16-SEP-21
Boron (B)-Dissolved			99.9		%		80-120	16-SEP-21
Cadmium (Cd)-Dissolved			106.9		%		80-120	16-SEP-21
Calcium (Ca)-Dissolved			103.6		%		80-120	16-SEP-21
Chromium (Cr)-Dissolved			106.8		%		80-120	16-SEP-21
Cobalt (Co)-Dissolved			106.0		%		80-120	16-SEP-21
Copper (Cu)-Dissolved			104.3		%		80-120	16-SEP-21
Iron (Fe)-Dissolved			114.5		%		80-120	16-SEP-21
Lead (Pb)-Dissolved			108.1		%		80-120	16-SEP-21
Lithium (Li)-Dissolved			99.6		%		80-120	16-SEP-21
Magnesium (Mg)-Dissolved			110.8		%		80-120	16-SEP-21
Manganese (Mn)-Dissolved			105.9		%		80-120	16-SEP-21
Molybdenum (Mo)-Dissolved			110.1		%		80-120	16-SEP-21
Nickel (Ni)-Dissolved			104.0		%		80-120	16-SEP-21
Phosphorus (P)-Dissolved			101.0		%		70-130	16-SEP-21
Potassium (K)-Dissolved			104.9		%		80-120	16-SEP-21
Selenium (Se)-Dissolved			102.3		%		80-120	16-SEP-21
Silicon (Si)-Dissolved			103.2		%		60-140	16-SEP-21
Silver (Ag)-Dissolved			108.7		%		80-120	16-SEP-21
Sodium (Na)-Dissolved			102.7		%		80-120	16-SEP-21
Strontium (Sr)-Dissolved			100.4		%		80-120	16-SEP-21
Sulfur (S)-Dissolved			113.5		%		80-120	16-SEP-21
Thallium (Tl)-Dissolved			104.3		%		80-120	16-SEP-21
Tin (Sn)-Dissolved			106.6		%		80-120	16-SEP-21



## Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5585586</b>							
<b>WG3619374-2</b>	<b>LCS</b>	<b>TMRM</b>						
Titanium (Ti)-Dissolved			105.6		%		80-120	16-SEP-21
Uranium (U)-Dissolved			97.3		%		80-120	16-SEP-21
Vanadium (V)-Dissolved			106.5		%		80-120	16-SEP-21
Zinc (Zn)-Dissolved			104.1		%		80-120	16-SEP-21
Zirconium (Zr)-Dissolved			110.4		%		80-120	16-SEP-21
<b>WG3619374-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	16-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21



## Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch R5585586</b>								
<b>WG3619374-1 MB</b>								
			Titanium (Ti)-Dissolved		<0.00030		mg/L	0.0003 16-SEP-21
			Uranium (U)-Dissolved		<0.000010		mg/L	0.00001 16-SEP-21
			Vanadium (V)-Dissolved		<0.00050		mg/L	0.0005 16-SEP-21
			Zinc (Zn)-Dissolved		<0.0010		mg/L	0.001 16-SEP-21
			Zirconium (Zr)-Dissolved		<0.00020		mg/L	0.0002 16-SEP-21
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch R5589036</b>								
<b>WG3621234-2 LCS</b>								
			Ammonia as N		100.8		%	85-115 19-SEP-21
<b>WG3621234-1 MB</b>								
			Ammonia as N		<0.0050		mg/L	0.005 19-SEP-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R5582004</b>								
<b>WG3614803-2 LCS</b>								
			Nitrite (as N)		98.5		%	90-110 05-SEP-21
<b>WG3614803-1 MB</b>								
			Nitrite (as N)		<0.0010		mg/L	0.001 05-SEP-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R5582004</b>								
<b>WG3614803-2 LCS</b>								
			Nitrate (as N)		97.1		%	90-110 05-SEP-21
<b>WG3614803-1 MB</b>								
			Nitrate (as N)		<0.0050		mg/L	0.005 05-SEP-21
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch R5582732</b>								
			<b>WG3615587-1 CRM</b>	<b>CL-ORP</b>				
			ORP		216		mV	210-230 11-SEP-21
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch R5580775</b>								
<b>WG3613266-2 LCS</b>								
			Phosphorus (P)-Total		86.9		%	80-120 08-SEP-21
<b>WG3613266-1 MB</b>								
			Phosphorus (P)-Total		<0.0020		mg/L	0.002 08-SEP-21
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5579678</b>							
<b>WG3611946-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
	Orthophosphate-Dissolved (as P)	0.0136	0.0139		mg/L	2.2	20	05-SEP-21
<b>WG3611946-2</b>	<b>LCS</b>							
	Orthophosphate-Dissolved (as P)		98.0		%		80-120	05-SEP-21
<b>WG3611946-1</b>	<b>MB</b>							
	Orthophosphate-Dissolved (as P)		<0.0010		mg/L		0.001	05-SEP-21
<b>WG3611946-4</b>	<b>MS</b>	<b>L2635829-1</b>						
	Orthophosphate-Dissolved (as P)		114.8		%		70-130	05-SEP-21
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582004</b>							
<b>WG3614803-2</b>	<b>LCS</b>							
	Sulfate (SO4)		95.8		%		90-110	05-SEP-21
<b>WG3614803-1</b>	<b>MB</b>							
	Sulfate (SO4)		<0.30		mg/L		0.3	05-SEP-21
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5581548</b>							
<b>WG3612726-2</b>	<b>LCS</b>							
	Total Dissolved Solids		97.4		%		85-115	08-SEP-21
<b>WG3612726-1</b>	<b>MB</b>							
	Total Dissolved Solids		<10		mg/L		10	08-SEP-21
<b>TKN-F-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5585295</b>							
<b>WG3616073-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
	Total Kjeldahl Nitrogen	0.833	0.732		mg/L	13	20	15-SEP-21
<b>WG3616073-2</b>	<b>LCS</b>							
	Total Kjeldahl Nitrogen		106.0		%		75-125	15-SEP-21
<b>WG3616073-1</b>	<b>MB</b>							
	Total Kjeldahl Nitrogen		<0.050		mg/L		0.05	15-SEP-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582038</b>							
<b>WG3613771-2</b>	<b>LCS</b>							
	Total Suspended Solids		91.3		%		85-115	09-SEP-21
<b>WG3613771-1</b>	<b>MB</b>							
	Total Suspended Solids		<1.0		mg/L		1	09-SEP-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5579682</b>							
<b>WG3611953-6</b>	<b>DUP</b>	<b>L2635829-1</b>						
Turbidity		78.9	80.8		NTU	2.4	15	05-SEP-21
<b>WG3611953-5</b>	<b>LCS</b>							
Turbidity			96.9		%		85-115	05-SEP-21
<b>WG3611953-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	05-SEP-21

# Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 9 of 9

## Hold Time Exceedances:

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ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	03-SEP-21 09:30	11-SEP-21 13:34	0.25	196	hours	EHTR-FM

## Legend & Qualifier Definitions:

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EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

Notes\*:  
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2635829 were received on 04-SEP-21 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

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The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.





<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																	
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																	
Contact: Kim Harrer		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Priority (Business Days)					Emergency												
Phone: Tel.: 250-464-9108		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			4 day [P4-20%] <input type="checkbox"/>		3 day [P3-25%] <input type="checkbox"/>			2 day [P2-50%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>										
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>																	
Street: 520 Lake Street		Emails: SNC - 'Kim.Harrer'			Date and Time Required for all E&P TATs:																	
City/Province: Nelson, BC		Vicky.Lipinski@sncclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																	
Postal Code: V1L 4C6		Teck: Drake.Tymstra@Teck.com			<b>Analysis Request</b>																	
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																	
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P	P	F/P															
Company:		Emails: Kim.Harrer@sncclavalin.com																				
Contact:		payables@sncclavalin.com																				
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																				
ALS Account # / Quote #: MOR125 / Q78198		AFE/Cost Center: PO#																				
Job #: Greenhills Operation Regional Effects Program		Major/Minor Code: Routing Code:																				
PO / AFE: 683032		Requisitioner:																				
LSD:		Location:																				
ALS Lab Work Order # (lab use only):		ALS Contact:			Sampler: Chuck Stafford																	
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met. + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)							
	RG_MW_ERXA_WB_20_09_09_NP	RG_MW_ERXA	03-SEP-21	8:15	WG	R	R	R	R	R	R	R	R	R	R							5
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																	
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		REP - Regional Effects Program Teck Facility Name: (please select the applicable Facility) FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																	
Are samples for human consumption/ use? <input type="checkbox"/> NO					Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																	
					Cooling Initiated <input type="checkbox"/>																	
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C												
					70					70												
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																	
Released by: Chuck Stafford		Date: Sept 3/21		Time: 9:30		Received by:		Date:		Time:		Received by:		Date:		Time:						



SNC-Lavalin  
ATTN: KIM HARRER  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 04-SEP-21  
Report Date: 18-MAR-22 08:49 (MT)  
Version: FINAL REV. 2

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2635829  
Project P.O. #: 683032  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers:  
Legal Site Desc:

Comments: Sample ID correction

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2635829-1 WG 03-SEP-21 09:30 RG_MW_ERXA_W G_2021_09_03_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Hardness (as CaCO3) (mg/L)	345			
	ORP (mV)	463			
	Total Suspended Solids (mg/L)	130			
	Total Dissolved Solids (mg/L)	439			
	Turbidity (NTU)	78.9			
<b>Anions and Nutrients</b>	Ammonia as N (mg/L)	0.0566			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	5.59			
	Fluoride (F) (mg/L)	0.249			
	Nitrate and Nitrite (as N) (mg/L)	7.82			
	Nitrate (as N) (mg/L)	7.82			
	Nitrite (as N) (mg/L)	0.0040			
	Total Kjeldahl Nitrogen (mg/L)	0.833			
	Total Nitrogen (mg/L)	8.66			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0136			
	Phosphorus (P)-Total (mg/L)	0.154 <sup>DLHC</sup>			
	Sulfate (SO4) (mg/L)	134			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.55			
	Total Organic Carbon (mg/L)	7.8			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0027			
	Antimony (Sb)-Dissolved (mg/L)	0.00123			
	Arsenic (As)-Dissolved (mg/L)	0.00053			
	Barium (Ba)-Dissolved (mg/L)	0.177			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.026			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000287			
	Calcium (Ca)-Dissolved (mg/L)	79.8			
	Chromium (Cr)-Dissolved (mg/L)	0.00010			
	Cobalt (Co)-Dissolved (mg/L)	0.00017			
	Copper (Cu)-Dissolved (mg/L)	0.00133			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0410			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2635829-1 WG 03-SEP-21 09:30 RG_MW_ERXA_W G_2021_09_03_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)	35.3			
	Manganese (Mn)-Dissolved (mg/L)	0.0288			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.0232			
	Nickel (Ni)-Dissolved (mg/L)	0.00144			
	Phosphorus (P)-Dissolved (mg/L)	<0.050			
	Potassium (K)-Dissolved (mg/L)	1.10			
	Selenium (Se)-Dissolved (mg/L)	0.0345			
	Silicon (Si)-Dissolved (mg/L)	2.33			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	13.5			
	Strontium (Sr)-Dissolved (mg/L)	0.217			
	Sulfur (S)-Dissolved (mg/L)	50.4			
	Thallium (Tl)-Dissolved (mg/L)	0.000013			
	Tin (Sn)-Dissolved (mg/L)	0.00185			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.00140			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0088			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2635829-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2635829-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2635829-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2635829-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			
TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			
TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated

## Reference Information

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TKN-F-VA** Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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**Chain of Custody Numbers:**

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## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2635829

Report Date: 18-MAR-22

Page 1 of 9

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: KIM HARRER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5585586</b>							
<b>WG3619374-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	16-SEP-21
<b>WG3619374-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			108.5		%		80-120	16-SEP-21
<b>WG3619374-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-SEP-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582004</b>							
<b>WG3614803-2</b>	<b>LCS</b>							
Bromide (Br)			99.4		%		85-115	05-SEP-21
<b>WG3614803-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	05-SEP-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584044</b>							
<b>WG3617087-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.2		%		80-120	13-SEP-21
<b>WG3617087-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-SEP-21
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584044</b>							
<b>WG3617087-6</b>	<b>LCS</b>							
Total Organic Carbon			100.9		%		80-120	13-SEP-21
<b>WG3617087-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	13-SEP-21
<b>CL-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582004</b>							
<b>WG3614803-2</b>	<b>LCS</b>							
Chloride (Cl)			95.8		%		85-115	05-SEP-21
<b>WG3614803-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	05-SEP-21
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582004</b>							
<b>WG3614803-2</b>	<b>LCS</b>							
Fluoride (F)			95.6		%		90-110	05-SEP-21
<b>WG3614803-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	05-SEP-21
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2635829

Report Date: 18-MAR-22

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5584768</b>							
<b>WG3616711-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.5		%		80-120	15-SEP-21
<b>WG3616711-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000050		mg/L		0.000005	15-SEP-21
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5585586</b>							
<b>WG3619374-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
Aluminum (Al)-Dissolved		0.0027	0.0025		mg/L	4.6	20	16-SEP-21
Antimony (Sb)-Dissolved		0.00123	0.00120		mg/L	2.8	20	16-SEP-21
Arsenic (As)-Dissolved		0.00053	0.00054		mg/L	1.3	20	16-SEP-21
Barium (Ba)-Dissolved		0.177	0.179		mg/L	1.2	20	16-SEP-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-SEP-21
Boron (B)-Dissolved		0.026	0.026		mg/L	0.6	20	16-SEP-21
Cadmium (Cd)-Dissolved		0.0000287	0.0000293		mg/L	2.2	20	16-SEP-21
Calcium (Ca)-Dissolved		79.8	80.3		mg/L	0.5	20	16-SEP-21
Chromium (Cr)-Dissolved		0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-SEP-21
Cobalt (Co)-Dissolved		0.00017	0.00018		mg/L	5.2	20	16-SEP-21
Copper (Cu)-Dissolved		0.00133	0.00133		mg/L	0.3	20	16-SEP-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-SEP-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-SEP-21
Lithium (Li)-Dissolved		0.0410	0.0407		mg/L	0.9	20	16-SEP-21
Magnesium (Mg)-Dissolved		35.3	35.3		mg/L	0.0	20	16-SEP-21
Manganese (Mn)-Dissolved		0.0288	0.0285		mg/L	1.1	20	16-SEP-21
Molybdenum (Mo)-Dissolved		0.0232	0.0228		mg/L	1.8	20	16-SEP-21
Nickel (Ni)-Dissolved		0.00144	0.00116	J	mg/L	0.00028	0.001	16-SEP-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-SEP-21
Potassium (K)-Dissolved		1.10	1.10		mg/L	0.2	20	16-SEP-21
Selenium (Se)-Dissolved		0.0345	0.0353		mg/L	2.3	20	16-SEP-21
Silicon (Si)-Dissolved		2.33	2.31		mg/L	1.0	20	16-SEP-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-SEP-21
Sodium (Na)-Dissolved		13.5	13.7		mg/L	1.3	20	16-SEP-21
Strontium (Sr)-Dissolved		0.217	0.211		mg/L	2.8	20	16-SEP-21
Sulfur (S)-Dissolved		50.4	51.1		mg/L	1.3	20	16-SEP-21
Thallium (Tl)-Dissolved		0.000013	0.000012		mg/L	9.0	20	16-SEP-21
Tin (Sn)-Dissolved		0.00185	0.00184		mg/L	0.8	20	16-SEP-21



## Quality Control Report

Workorder: L2635829

Report Date: 18-MAR-22

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5585586</b>							
<b>WG3619374-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	16-SEP-21
Uranium (U)-Dissolved		0.00140	0.00137		mg/L	2.3	20	16-SEP-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	16-SEP-21
Zinc (Zn)-Dissolved		0.0088	0.0090		mg/L	2.1	20	16-SEP-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	16-SEP-21
<b>WG3619374-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			108.2		%		80-120	16-SEP-21
Antimony (Sb)-Dissolved			101.0		%		80-120	16-SEP-21
Arsenic (As)-Dissolved			103.6		%		80-120	16-SEP-21
Barium (Ba)-Dissolved			106.8		%		80-120	16-SEP-21
Bismuth (Bi)-Dissolved			104.7		%		80-120	16-SEP-21
Boron (B)-Dissolved			99.9		%		80-120	16-SEP-21
Cadmium (Cd)-Dissolved			106.9		%		80-120	16-SEP-21
Calcium (Ca)-Dissolved			103.6		%		80-120	16-SEP-21
Chromium (Cr)-Dissolved			106.8		%		80-120	16-SEP-21
Cobalt (Co)-Dissolved			106.0		%		80-120	16-SEP-21
Copper (Cu)-Dissolved			104.3		%		80-120	16-SEP-21
Iron (Fe)-Dissolved			114.5		%		80-120	16-SEP-21
Lead (Pb)-Dissolved			108.1		%		80-120	16-SEP-21
Lithium (Li)-Dissolved			99.6		%		80-120	16-SEP-21
Magnesium (Mg)-Dissolved			110.8		%		80-120	16-SEP-21
Manganese (Mn)-Dissolved			105.9		%		80-120	16-SEP-21
Molybdenum (Mo)-Dissolved			110.1		%		80-120	16-SEP-21
Nickel (Ni)-Dissolved			104.0		%		80-120	16-SEP-21
Phosphorus (P)-Dissolved			101.0		%		70-130	16-SEP-21
Potassium (K)-Dissolved			104.9		%		80-120	16-SEP-21
Selenium (Se)-Dissolved			102.3		%		80-120	16-SEP-21
Silicon (Si)-Dissolved			103.2		%		60-140	16-SEP-21
Silver (Ag)-Dissolved			108.7		%		80-120	16-SEP-21
Sodium (Na)-Dissolved			102.7		%		80-120	16-SEP-21
Strontium (Sr)-Dissolved			100.4		%		80-120	16-SEP-21
Sulfur (S)-Dissolved			113.5		%		80-120	16-SEP-21
Thallium (Tl)-Dissolved			104.3		%		80-120	16-SEP-21
Tin (Sn)-Dissolved			106.6		%		80-120	16-SEP-21



## Quality Control Report

Workorder: L2635829

Report Date: 18-MAR-22

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5585586</b>							
<b>WG3619374-2</b>	<b>LCS</b>	<b>TMRM</b>						
Titanium (Ti)-Dissolved			105.6		%		80-120	16-SEP-21
Uranium (U)-Dissolved			97.3		%		80-120	16-SEP-21
Vanadium (V)-Dissolved			106.5		%		80-120	16-SEP-21
Zinc (Zn)-Dissolved			104.1		%		80-120	16-SEP-21
Zirconium (Zr)-Dissolved			110.4		%		80-120	16-SEP-21
<b>WG3619374-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	16-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21



## Quality Control Report

Workorder: L2635829

Report Date: 18-MAR-22

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch R5585586</b>								
<b>WG3619374-1 MB</b>								
			Titanium (Ti)-Dissolved		<0.00030		mg/L	0.0003 16-SEP-21
			Uranium (U)-Dissolved		<0.000010		mg/L	0.00001 16-SEP-21
			Vanadium (V)-Dissolved		<0.00050		mg/L	0.0005 16-SEP-21
			Zinc (Zn)-Dissolved		<0.0010		mg/L	0.001 16-SEP-21
			Zirconium (Zr)-Dissolved		<0.00020		mg/L	0.0002 16-SEP-21
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch R5589036</b>								
<b>WG3621234-2 LCS</b>								
			Ammonia as N		100.8		%	85-115 19-SEP-21
<b>WG3621234-1 MB</b>								
			Ammonia as N		<0.0050		mg/L	0.005 19-SEP-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R5582004</b>								
<b>WG3614803-2 LCS</b>								
			Nitrite (as N)		98.5		%	90-110 05-SEP-21
<b>WG3614803-1 MB</b>								
			Nitrite (as N)		<0.0010		mg/L	0.001 05-SEP-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R5582004</b>								
<b>WG3614803-2 LCS</b>								
			Nitrate (as N)		97.1		%	90-110 05-SEP-21
<b>WG3614803-1 MB</b>								
			Nitrate (as N)		<0.0050		mg/L	0.005 05-SEP-21
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch R5582732</b>								
			<b>WG3615587-1 CRM</b>	<b>CL-ORP</b>				
			ORP		216		mV	210-230 11-SEP-21
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch R5580775</b>								
<b>WG3613266-2 LCS</b>								
			Phosphorus (P)-Total		86.9		%	80-120 08-SEP-21
<b>WG3613266-1 MB</b>								
			Phosphorus (P)-Total		<0.0020		mg/L	0.002 08-SEP-21
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2635829

Report Date: 18-MAR-22

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5579678</b>							
<b>WG3611946-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
	Orthophosphate-Dissolved (as P)	0.0136	0.0139		mg/L	2.2	20	05-SEP-21
<b>WG3611946-2</b>	<b>LCS</b>							
	Orthophosphate-Dissolved (as P)		98.0		%		80-120	05-SEP-21
<b>WG3611946-1</b>	<b>MB</b>							
	Orthophosphate-Dissolved (as P)		<0.0010		mg/L		0.001	05-SEP-21
<b>WG3611946-4</b>	<b>MS</b>	<b>L2635829-1</b>						
	Orthophosphate-Dissolved (as P)		114.8		%		70-130	05-SEP-21
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582004</b>							
<b>WG3614803-2</b>	<b>LCS</b>							
	Sulfate (SO4)		95.8		%		90-110	05-SEP-21
<b>WG3614803-1</b>	<b>MB</b>							
	Sulfate (SO4)		<0.30		mg/L		0.3	05-SEP-21
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5581548</b>							
<b>WG3612726-2</b>	<b>LCS</b>							
	Total Dissolved Solids		97.4		%		85-115	08-SEP-21
<b>WG3612726-1</b>	<b>MB</b>							
	Total Dissolved Solids		<10		mg/L		10	08-SEP-21
<b>TKN-F-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5585295</b>							
<b>WG3616073-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
	Total Kjeldahl Nitrogen	0.833	0.732		mg/L	13	20	15-SEP-21
<b>WG3616073-2</b>	<b>LCS</b>							
	Total Kjeldahl Nitrogen		106.0		%		75-125	15-SEP-21
<b>WG3616073-1</b>	<b>MB</b>							
	Total Kjeldahl Nitrogen		<0.050		mg/L		0.05	15-SEP-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582038</b>							
<b>WG3613771-2</b>	<b>LCS</b>							
	Total Suspended Solids		91.3		%		85-115	09-SEP-21
<b>WG3613771-1</b>	<b>MB</b>							
	Total Suspended Solids		<1.0		mg/L		1	09-SEP-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2635829

Report Date: 18-MAR-22

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5579682</b>							
<b>WG3611953-6</b>	<b>DUP</b>	<b>L2635829-1</b>						
Turbidity		78.9	80.8		NTU	2.4	15	05-SEP-21
<b>WG3611953-5</b>	<b>LCS</b>							
Turbidity			96.9		%		85-115	05-SEP-21
<b>WG3611953-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	05-SEP-21

# Quality Control Report

Workorder: L2635829

Report Date: 18-MAR-22

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2635829

Report Date: 18-MAR-22

Page 9 of 9

## Hold Time Exceedances:

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ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	03-SEP-21 09:30	11-SEP-21 13:34	0.25	196	hours	EHTR-FM

## Legend & Qualifier Definitions:

- 
- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
  - EHTR: Exceeded ALS recommended hold time prior to sample receipt.
  - EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
  - EHT: Exceeded ALS recommended hold time prior to analysis.
  - Rec. HT: ALS recommended hold time (see units).

Notes\*:  
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2635829 were received on 04-SEP-21 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

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The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.





Report To		Report Format / Distribution			Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																							
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																							
Contact: Kim Harrer		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Priority (Business Days): 4 day [P4-20%] <input type="checkbox"/>		Emergency: 1 Business day [E1 - 100%] <input type="checkbox"/>																					
Phone: Tel.:250-464-9108		Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200%] <input type="checkbox"/>																					
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			2 day [P2-50%] <input type="checkbox"/>		(Laboratory opening fees may apply) <input type="checkbox"/>																					
Street: 520 Lake Street		Emails: SNC - 'Kim.Harrer'			Date and Time Required for all E&P TATs:																							
City/Province: Nelson, BC		Vicky.Lipinski@snclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																							
Postal Code: V1L 4C6		Teck: Drake.Tymstra@Teck.com			Analysis Request																							
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																							
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F	P	F	P																				
Company:		Emails: Kim.Harrer@snclavalin.com																										
Contact:		payables@snclavalin.com																										
Project Information		Oil and Gas Required Fields (client use)																										
ALS Account # / Quote #: MOR125 / Q78198		AFE/Cost Center:	PO#																									
Job #: Greenhills Operation Regional Effects Program		Major/Minor Code:	Routing Code:																									
PO / AFE: 683032		Requisitioner:	Location:																									
LSD:		ALS Lab Work Order # (lab use only):	ALS Contact:	Sampler: Chuck Stafford																								
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met. + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)													
	RG_MW_ERXA_WB_2009_09_05_NP	RG_MW_ERXA	03-Sep-21	8:15	WG	R	R	R	R	R	R	R	R	R	R													5
Drinking Water (DW) Samples <sup>1</sup> (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			SAMPLE CONDITION AS RECEIVED (lab use only)																							
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		REP - Regional Effects Program			Frozen <input type="checkbox"/>		SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																					
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)			Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/>		Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																					
		FRO-FORDING RIVER OPERATION			Cooling Initiated <input type="checkbox"/>		INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C																
		EVO-ELKVIEW OPERATIONS										70																
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (lab use only)				FINAL SHIPMENT RECEPTION (lab use only)																				
Released by: Chuck Stafford		Date: Sep 3/21	Time: 9:30	Received by: [Signature]		Date: [Signature]	Time: [Signature]	Received by: [Signature]		Date: 08/21	Time: 8:45																	



SNC-Lavalin  
ATTN: KIM HARRER  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 30-SEP-21  
Report Date: 18-OCT-21 16:04 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2645881  
Project P.O. #: 683032  
Job Reference: RGMP  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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## ALS ENVIRONMENTAL ANALYTICAL REPORT

18-OCT-21 16:04 (MT)

Version: FINAL

Sample ID Description Sampled Date Sampled Time Client ID	L2645881-1 GW 29-SEP-21 12:40 RG_MW_DC1A_W G_2021_09_29_NP	L2645881-2 GW 29-SEP-21 11:30 RG_MW_DC1B_W G_2021_09_29_NP	L2645881-3 GW 29-SEP-21 14:00 RG_MW_FR11A_ WG_2021_09_29_ NP	L2645881-4 GW 29-SEP-21 14:25 RG_MW_FR11B_ WG_2021_09_29_ NP	L2645881-5 GW 29-SEP-21 12:00 RG_MW_MC10A_ WG_2021_09_29_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)				
	Hardness (as CaCO3) (mg/L)				
	pH (pH)				
<b>Anions and Nutrients</b>	Ammonia as N (mg/L)				
	Total Kjeldahl Nitrogen (mg/L)				
	Phosphorus (P)-Total (mg/L)				
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)				
	Total Organic Carbon (mg/L)				
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location				
	Dissolved Metals Filtration Location				
	Aluminum (Al)-Dissolved (mg/L)				
	Antimony (Sb)-Dissolved (mg/L)				
	Arsenic (As)-Dissolved (mg/L)				
	Barium (Ba)-Dissolved (mg/L)				
	Beryllium (Be)-Dissolved (mg/L)				
	Bismuth (Bi)-Dissolved (mg/L)				
	Boron (B)-Dissolved (mg/L)				
	Cadmium (Cd)-Dissolved (mg/L)				
	Calcium (Ca)-Dissolved (mg/L)				
	Chromium (Cr)-Dissolved (mg/L)				
	Cobalt (Co)-Dissolved (mg/L)				
	Copper (Cu)-Dissolved (mg/L)				
	Iron (Fe)-Dissolved (mg/L)				
	Lead (Pb)-Dissolved (mg/L)				
	Lithium (Li)-Dissolved (mg/L)				
	Magnesium (Mg)-Dissolved (mg/L)				
	Manganese (Mn)-Dissolved (mg/L)				
	Mercury (Hg)-Dissolved (mg/L)				
	Molybdenum (Mo)-Dissolved (mg/L)				
	Nickel (Ni)-Dissolved (mg/L)				
	Phosphorus (P)-Dissolved (mg/L)				
Potassium (K)-Dissolved (mg/L)					
Selenium (Se)-Dissolved (mg/L)					
Silicon (Si)-Dissolved (mg/L)					
Silver (Ag)-Dissolved (mg/L)					
Sodium (Na)-Dissolved (mg/L)					

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2645881-1	L2645881-2	L2645881-3	L2645881-4	L2645881-5
		Description	GW	GW	GW	GW	GW
		Sampled Date	29-SEP-21	29-SEP-21	29-SEP-21	29-SEP-21	29-SEP-21
		Sampled Time	12:40	11:30	14:00	14:25	12:00
		Client ID	RG_MW_DC1A_W G_2021_09_29_NP	RG_MW_DC1B_W G_2021_09_29_NP	RG_MW_FR11A_ WG_2021_09_29_ NP	RG_MW_FR11B_ WG_2021_09_29_ NP	RG_MW_MC10A_ WG_2021_09_29_ NP
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Strontium (Sr)-Dissolved (mg/L)		0.153	0.126	0.479	0.363	0.153
	Sulfur (S)-Dissolved (mg/L)		0.67	0.70	11.9	10.5	0.91
	Thallium (Tl)-Dissolved (mg/L)		0.000017	0.000017	0.000021	0.000022	0.000015
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	0.00111	0.00071	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		0.00042	<0.00030	<0.00030	<0.00030	0.00044
	Uranium (U)-Dissolved (mg/L)		0.000226	0.000120	0.00118	0.000864	0.000225
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0027	0.0015	0.0081	0.0119	0.0011
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
NDIS	No Data: Insufficient Sample - Samples -1 to -5 were received with Routine bottles almost empty; Only pH and EC could be run for -3 and -4, rest of codes had to be deleted

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2645881-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2645881-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2645881-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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**BE-D-L-CCMS-CL** Water Diss. Be (low) in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**C-DIS-ORG-LOW-CL** Water Dissolved Organic Carbon APHA 5310 B-Instrumental

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**C-TOT-ORG-LOW-CL** Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL**                      Water      pH                                              APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**TKN-F-VA**                      Water      TKN in Water by Fluorescence                                              APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 1 of 8

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: KIM HARRER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BE-D-L-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-7</b>	<b>DUP</b>	<b>L2645881-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	08-OCT-21
<b>WG3635014-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			100.8		%		80-120	08-OCT-21
<b>WG3635014-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-OCT-21
<b>WG3635014-8</b>	<b>MS</b>	<b>L2645881-1</b>						
Beryllium (Be)-Dissolved			103.0		%		70-130	08-OCT-21
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5615044</b>							
<b>WG3635006-3</b>	<b>DUP</b>	<b>L2645881-5</b>						
Dissolved Organic Carbon		1.23	1.08		mg/L	13	20	08-OCT-21
<b>WG3635006-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			94.9		%		80-120	08-OCT-21
<b>WG3635006-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-OCT-21
<b>WG3635006-4</b>	<b>MS</b>	<b>L2645881-5</b>						
Dissolved Organic Carbon			87.2		%		70-130	08-OCT-21
<b>C-TOT-ORG-LOW-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5615044</b>							
<b>WG3635006-3</b>	<b>DUP</b>	<b>L2645881-5</b>						
Total Organic Carbon		1.41	1.47		mg/L	4.6	20	08-OCT-21
<b>WG3635006-2</b>	<b>LCS</b>							
Total Organic Carbon			97.9		%		80-120	08-OCT-21
<b>WG3635006-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	08-OCT-21
<b>WG3635006-4</b>	<b>MS</b>	<b>L2645881-5</b>						
Total Organic Carbon			91.8		%		70-130	08-OCT-21
<b>EC-L-PCT-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5615374</b>							
<b>WG3635299-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.0		%		90-110	11-OCT-21
<b>WG3635299-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-OCT-21
<b>HG-D-CVAA-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5609738</b>							
<b>WG3631495-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.3		%		80-120	05-OCT-21
<b>WG3631495-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000050		mg/L		0.000005	05-OCT-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-7</b>	<b>DUP</b>	<b>L2645881-1</b>						
Aluminum (Al)-Dissolved		0.0200	0.0199		mg/L	0.5	20	08-OCT-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-OCT-21
Arsenic (As)-Dissolved		0.00230	0.00227		mg/L	1.3	20	08-OCT-21
Barium (Ba)-Dissolved		0.449	0.437		mg/L	2.7	20	08-OCT-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-OCT-21
Boron (B)-Dissolved		0.022	0.023		mg/L	1.8	20	08-OCT-21
Cadmium (Cd)-Dissolved		0.0000197	0.0000207		mg/L	5.2	20	08-OCT-21
Calcium (Ca)-Dissolved		56.1	55.3		mg/L	1.4	20	08-OCT-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-OCT-21
Cobalt (Co)-Dissolved		0.00091	0.00090		mg/L	1.3	20	08-OCT-21
Copper (Cu)-Dissolved		0.00043	0.00042		mg/L	3.0	20	08-OCT-21
Iron (Fe)-Dissolved		1.38	1.36		mg/L	1.2	20	08-OCT-21
Lead (Pb)-Dissolved		0.000085	0.000085		mg/L	0.6	20	08-OCT-21
Lithium (Li)-Dissolved		0.0116	0.0120		mg/L	3.4	20	08-OCT-21
Magnesium (Mg)-Dissolved		25.8	25.7		mg/L	0.5	20	08-OCT-21
Manganese (Mn)-Dissolved		0.0833	0.0825		mg/L	1.0	20	08-OCT-21
Molybdenum (Mo)-Dissolved		0.00657	0.00652		mg/L	0.9	20	08-OCT-21
Nickel (Ni)-Dissolved		0.00150	0.00147		mg/L	2.5	20	08-OCT-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-OCT-21
Potassium (K)-Dissolved		2.48	2.52		mg/L	1.7	20	08-OCT-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-OCT-21
Silicon (Si)-Dissolved		5.16	5.18		mg/L	0.3	20	08-OCT-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	08-OCT-21
Sodium (Na)-Dissolved		3.62	3.62		mg/L	0.1	20	08-OCT-21
Strontium (Sr)-Dissolved		0.153	0.155		mg/L	1.4	20	08-OCT-21
Sulfur (S)-Dissolved		0.67	0.71		mg/L	5.8	20	08-OCT-21
Thallium (Tl)-Dissolved		0.000017	0.000017		mg/L	1.1	20	08-OCT-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-OCT-21





## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-7</b>	<b>DUP</b>	<b>L2645881-1</b>						
Titanium (Ti)-Dissolved		0.00042	<0.00030	RPD-NA	mg/L	N/A	20	08-OCT-21
Uranium (U)-Dissolved		0.000226	0.000235		mg/L	4.0	20	08-OCT-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-OCT-21
Zinc (Zn)-Dissolved		0.0027	0.0027		mg/L	0.9	20	08-OCT-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	08-OCT-21
<b>WG3635014-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			106.7		%		80-120	08-OCT-21
Antimony (Sb)-Dissolved			109.2		%		80-120	08-OCT-21
Arsenic (As)-Dissolved			107.8		%		80-120	08-OCT-21
Barium (Ba)-Dissolved			113.1		%		80-120	08-OCT-21
Bismuth (Bi)-Dissolved			106.3		%		80-120	08-OCT-21
Boron (B)-Dissolved			99.0		%		80-120	08-OCT-21
Cadmium (Cd)-Dissolved			107.8		%		80-120	08-OCT-21
Calcium (Ca)-Dissolved			101.4		%		80-120	08-OCT-21
Chromium (Cr)-Dissolved			110.8		%		80-120	08-OCT-21
Cobalt (Co)-Dissolved			107.2		%		80-120	08-OCT-21
Copper (Cu)-Dissolved			107.9		%		80-120	08-OCT-21
Iron (Fe)-Dissolved			112.0		%		80-120	08-OCT-21
Lead (Pb)-Dissolved			105.8		%		80-120	08-OCT-21
Lithium (Li)-Dissolved			99.7		%		80-120	08-OCT-21
Magnesium (Mg)-Dissolved			116.0		%		80-120	08-OCT-21
Manganese (Mn)-Dissolved			110.2		%		80-120	08-OCT-21
Molybdenum (Mo)-Dissolved			105.1		%		80-120	08-OCT-21
Nickel (Ni)-Dissolved			108.6		%		80-120	08-OCT-21
Phosphorus (P)-Dissolved			114.0		%		70-130	08-OCT-21
Potassium (K)-Dissolved			112.7		%		80-120	08-OCT-21
Selenium (Se)-Dissolved			103.5		%		80-120	08-OCT-21
Silicon (Si)-Dissolved			107.0		%		60-140	08-OCT-21
Silver (Ag)-Dissolved			104.4		%		80-120	08-OCT-21
Sodium (Na)-Dissolved			107.1		%		80-120	08-OCT-21
Strontium (Sr)-Dissolved			108.6		%		80-120	08-OCT-21
Sulfur (S)-Dissolved			106.6		%		80-120	08-OCT-21
Thallium (Tl)-Dissolved			107.1		%		80-120	08-OCT-21
Tin (Sn)-Dissolved			111.2		%		80-120	08-OCT-21



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-6</b>	<b>LCS</b>	<b>TMRM</b>						
Titanium (Ti)-Dissolved			111.4		%		80-120	08-OCT-21
Uranium (U)-Dissolved			99.4		%		80-120	08-OCT-21
Vanadium (V)-Dissolved			109.6		%		80-120	08-OCT-21
Zinc (Zn)-Dissolved			112.2		%		80-120	08-OCT-21
Zirconium (Zr)-Dissolved			107.0		%		80-120	08-OCT-21
<b>WG3635014-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-OCT-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-OCT-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-OCT-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-OCT-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-OCT-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-OCT-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-5 MB</b>								
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-OCT-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-OCT-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-21
<b>WG3635014-8 MS</b>		<b>L2645881-1</b>						
Aluminum (Al)-Dissolved			106.4		%		70-130	08-OCT-21
Antimony (Sb)-Dissolved			108.3		%		70-130	08-OCT-21
Arsenic (As)-Dissolved			106.0		%		70-130	08-OCT-21
Barium (Ba)-Dissolved			N/A	MS-B	%		-	08-OCT-21
Bismuth (Bi)-Dissolved			111.5		%		70-130	08-OCT-21
Boron (B)-Dissolved			102.6		%		70-130	08-OCT-21
Cadmium (Cd)-Dissolved			110.7		%		70-130	08-OCT-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	08-OCT-21
Chromium (Cr)-Dissolved			108.7		%		70-130	08-OCT-21
Cobalt (Co)-Dissolved			106.2		%		70-130	08-OCT-21
Copper (Cu)-Dissolved			109.0		%		70-130	08-OCT-21
Iron (Fe)-Dissolved			109.1		%		70-130	08-OCT-21
Lead (Pb)-Dissolved			105.1		%		70-130	08-OCT-21
Lithium (Li)-Dissolved			101.5		%		70-130	08-OCT-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	08-OCT-21
Manganese (Mn)-Dissolved			108.5		%		70-130	08-OCT-21
Molybdenum (Mo)-Dissolved			96.1		%		70-130	08-OCT-21
Nickel (Ni)-Dissolved			109.0		%		70-130	08-OCT-21
Phosphorus (P)-Dissolved			109.0		%		70-130	08-OCT-21
Potassium (K)-Dissolved			109.8		%		70-130	08-OCT-21
Selenium (Se)-Dissolved			105.1		%		70-130	08-OCT-21
Silicon (Si)-Dissolved			95.1		%		70-130	08-OCT-21
Silver (Ag)-Dissolved			102.7		%		70-130	08-OCT-21
Sodium (Na)-Dissolved			106.8		%		70-130	08-OCT-21
Strontium (Sr)-Dissolved			102.7		%		70-130	08-OCT-21
Thallium (Tl)-Dissolved			101.0		%		70-130	08-OCT-21
Tin (Sn)-Dissolved			98.7		%		70-130	08-OCT-21
Titanium (Ti)-Dissolved			107.7		%		70-130	08-OCT-21



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-8</b>	<b>MS</b>	<b>L2645881-1</b>						
Uranium (U)-Dissolved			98.5		%		70-130	08-OCT-21
Vanadium (V)-Dissolved			107.9		%		70-130	08-OCT-21
Zinc (Zn)-Dissolved			109.0		%		70-130	08-OCT-21
Zirconium (Zr)-Dissolved			103.7		%		70-130	08-OCT-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5620920</b>							
<b>WG3638515-2</b>	<b>LCS</b>							
Ammonia as N			98.6		%		85-115	14-OCT-21
<b>WG3638515-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	14-OCT-21
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5609367</b>							
<b>WG3631783-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			107.9		%		80-120	05-OCT-21
<b>WG3631783-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.7		%		80-120	05-OCT-21
<b>WG3631783-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-OCT-21
<b>WG3631783-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-OCT-21
<b>PH-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5615374</b>							
<b>WG3635299-2</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	11-OCT-21
<b>TKN-F-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5612563</b>							
<b>WG3631537-3</b>	<b>DUP</b>	<b>L2645881-1</b>						
Total Kjeldahl Nitrogen		0.128	0.134		mg/L	4.7	20	06-OCT-21
<b>WG3631537-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.8		%		75-125	06-OCT-21
<b>WG3631537-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-OCT-21
<b>WG3631537-4</b>	<b>MS</b>	<b>L2645881-2</b>						
Total Kjeldahl Nitrogen			104.5		%		70-130	06-OCT-21

# Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 7 of 8

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 8 of 8

## Hold Time Exceedances:

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ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
pH	3	29-SEP-21 14:00	13-OCT-21 00:00	0.25	322	hours	EHTR-FM
	4	29-SEP-21 14:25	13-OCT-21 00:00	0.25	322	hours	EHTR-FM

## Legend & Qualifier Definitions:

---

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

Notes\*:  
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2645881 were received on 30-SEP-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

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The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2645881-COFC

ber: 19 -

Page 1 of 1

Report To Contact and company name below will appear on the final report			Report Format / Distribution			Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																		
Company: SNC-Lavalin ~Nelson			Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																		
Contact: Kim Harrer			Quality Control (QC) Report with Report <input checked="" type="checkbox"/> <input type="checkbox"/> NO			4 day [P4-20%] <input type="checkbox"/>			1 Business day [E1 - 100%] <input type="checkbox"/>															
Phone: Tel.:250-464-9108			<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%] <input type="checkbox"/>			Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>															
Company address below will appear on the final report			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			2 day [P2-50%] <input type="checkbox"/>																		
Street: 520 Lake Street			Emails: SNC - 'Kim.Harrer', 'Alex.Heathcott'			Date and Time Required for all E&P TATs:																		
City/Province: Nelson, BC			Vicky.Lipinski@sncclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																		
Postal Code: V1L 4C6			Teck: Cam.Jaeger@teck.com, teck.lab.results@teck.com			Analysis Request																		
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																		
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P																		
Company:			Emails: Kim.Harrer@sncclavalin.com			DOC (C-DIS-ORG-LOW-CL)																		
Contact:			payables@sncclavalin.com			TOC (C-TOT-ORG-LOW-CL)																		
Project Information			Oil and Gas Required Fields (client use)			BC MDG D-Met. + Hg (MET-D-BCMDG-CL)																		
ALS Account # / Quote #: MOR125 / Q78198			AFE/Cost Center: PO#			Total N Calc. (N-T-CALC-CL)																		
Job #: RGMP			Major/Minor Code: Routing Code:			Nitrate + Nitrite Calc. (N2N3-CALC-CL)																		
PO / AFE: 683032			Requisitioner:			Teck Routine (TECKCOAL-ROUTINE-CL)																		
LSD:			Location:			TKN (TKN-L-F-CL)																		
ALS Lab Work Order # (lab use only):			ALS Contact:			Bicarbonate (BIC-CL)																		
			Sampler: ENDS			Carbonate (CO3-CL)																		
						Hydroxide (OH-CL)																		
ALS Sample # (lab use only)			Sample Identification &/or Coordinates (This description will appear on the report)		Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type		SAMPLES ON HOLD											
			Rb.MW.DC1A.W-2020-09-21.WP		Rb.MW.DC1A		29-Sep-21		12:40		GW		Sample is hazardous (please provide further details)											
			Rb.MW.DC1B.W-2020-09-21.WP		Rb.MW.DC1B		↓		1:30		GW		NUMBER OF CONTAINERS											
			Rb.MW.FR11A.W-2020-09-21.WP		Rb.MW.FR11A		↓		1:40		GW													
			Rb.MW.FR11B.W-2020-09-21.WP		Rb.MW.FR11B		↓		1:45		GW													
			Rb.MW.MC10A.W-2020-09-21.WP		Rb.MW.MC10A		↓		1:00		GW													
Drinking Water (DW) Samples <sup>1</sup> (client use)			Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			SAMPLE CONDITION AS RECEIVED (lab use only)																		
Are samples taken from a Regulated DW System? <input type="checkbox"/> NO			PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																		
Are samples for human consumption/ use? <input type="checkbox"/> NO			Teck Facility Name: (please select the applicable Facility)			Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																		
			Note: No Preservative Used in amber bottles!			Cooling Initiated <input type="checkbox"/>																		
			REP-Regional Effects Program FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			INITIAL COOLER TEMPERATURES °C																		
						FINAL COOLER TEMPERATURES °C																		
SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)																		
Released by: Shawn Endicott			Date: 29-Sep-2021			Time: 1600			Received by: [Signature]			Date: 9/30/21			Time: [Signature]									

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEP1 2017 FROM

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103457**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : PIZDC0901 20210819  
**Sampler** : T.Dick/D.Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Aug-2021 08:30  
**Date Analysis Commenced** : 20-Aug-2021  
**Issue Date** : 03-Sep-2021 14:37

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruby Pham	Lab Assistant	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_PIZDC0901	---	---	---	---
(Matrix: Water)						_WG_Q3-2021_				
					Client sampling date / time	19-Aug-2021	---	---	---	---
						12:50				
Analyte	CAS Number	Method	LOR	Unit	CG2103457-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	5.2	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	366	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	366	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	600	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	361	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	440	---	---	---	---	---
pH	---	E108	0.10	pH units	7.95	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	405	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	6.6	---	---	---	---	---
turbidity	---	E121	0.10	NTU	27.0	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	447	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.74	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.062	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.123	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.275	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0116	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0287	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	12.2	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	2.55	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	3.07	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC0901 _WG_Q3-2021_ NP	----	----	----	----
Client sampling date / time					19-Aug-2021 12:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103457-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	7.61	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	7.35	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.6	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.74	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.180	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00023	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00037	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.225	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.157	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	98.5	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00042	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.34	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00127	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.300	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000220	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0032	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	27.9	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0223	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000614	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00218	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.41	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	0.522	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	6.97	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000011	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	2.46	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.161	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC0901 _WG_Q3-2021_ NP	----	----	----	----
Client sampling date / time					19-Aug-2021 12:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103457-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	4.96	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000023	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00323	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00230	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00138	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0058	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0017	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00020	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00020	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.224	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0806	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	100	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0120 <sup>DTC</sup>	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000084	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0029	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	27.1	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00038	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000602	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00134	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.28	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.544	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC0901 _WG_Q3-2021_ NP	----	----	----	----
Client sampling date / time					19-Aug-2021 12:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103457-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.79	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.36	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.152	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.29	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00219	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0044	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103457</b>	Page	: 1 of 11
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 20-Aug-2021 08:30
PO	: VPO00739930	Issue Date	: 03-Sep-2021 14:37
C-O-C number	: PIZDC0901 20210819		
Sampler	: T.Dick/D.Tymstra		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E298	19-Aug-2021	24-Aug-2021	----	----		24-Aug-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E235.Br-L	19-Aug-2021	----	----	----		20-Aug-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E235.Cl-L	19-Aug-2021	----	----	----		20-Aug-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E378-U	19-Aug-2021	----	----	----		20-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E235.F	19-Aug-2021	----	----	----		20-Aug-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E235.NO3-L	19-Aug-2021	----	----	----		20-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E235.NO2-L	19-Aug-2021	----	----	----		20-Aug-2021	3 days	1 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Container / Client Sample ID(s)				Rec	Actual						Rec
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E235.SO4	19-Aug-2021	----	----	----		20-Aug-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E318	19-Aug-2021	25-Aug-2021	----	----		30-Aug-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E372-U	19-Aug-2021	25-Aug-2021	----	----		25-Aug-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E421.Cr-L	19-Aug-2021	25-Aug-2021	----	----		26-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E509	19-Aug-2021	25-Aug-2021	----	----		25-Aug-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E421	19-Aug-2021	25-Aug-2021	----	----		26-Aug-2021	180 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E358-L	19-Aug-2021	22-Aug-2021	----	----		24-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q3-2021_NP	E355-L	19-Aug-2021	22-Aug-2021	----	----		24-Aug-2021	28 days	5 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q3-2021_NP	E283	19-Aug-2021	----	----	----		26-Aug-2021	14 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_PIZDC0901_WG_Q3-2021_NP	E290	19-Aug-2021	----	----	----		27-Aug-2021	14 days	8 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZDC0901_WG_Q3-2021_NP	E100	19-Aug-2021	----	----	----		27-Aug-2021	28 days	8 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC0901_WG_Q3-2021_NP	E125	19-Aug-2021	----	----	----		27-Aug-2021	0.34 hrs	187 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC0901_WG_Q3-2021_NP	E108	19-Aug-2021	----	----	----		27-Aug-2021	0.25 hrs	190 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZDC0901_WG_Q3-2021_NP	E162	19-Aug-2021	----	----	----		25-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE LC_PIZDC0901_WG_Q3-2021_NP	E160-L	19-Aug-2021	----	----	----		25-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE LC_PIZDC0901_WG_Q3-2021_NP	E121	19-Aug-2021	----	----	----		21-Aug-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) LC_PIZDC0901_WG_Q3-2021_NP	E420.Cr-L	19-Aug-2021	----	----	----		25-Aug-2021	180 days	6 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
HDPE total (nitric acid) LC_PIZDC0901_WG_Q3-2021_NP	E420	19-Aug-2021	----	----	----		25-Aug-2021	180 days	6 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 5 of 11  
Work Order : CG2103457  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	276847	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	277849	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	274628	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	272468	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	272469	1	20	5.0	5.0	✓
Conductivity in Water	E100	277850	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	275070	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	275399	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	275071	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	273617	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	272197	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	272466	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	272470	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	272471	1	20	5.0	5.0	✓
ORP by Electrode	E125	276970	1	18	5.5	5.0	✓
pH by Meter	E108	277851	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	272467	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	275384	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	275090	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	276238	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	275089	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	273618	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	274442	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	273071	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	276847	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	277849	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	274628	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	272468	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	272469	1	20	5.0	5.0	✓
Conductivity in Water	E100	277850	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	275070	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	275399	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	275071	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	273617	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	272197	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	272466	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	272470	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	272471	1	20	5.0	5.0	✓
ORP by Electrode	E125	276970	1	18	5.5	5.0	✓
pH by Meter	E108	277851	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	272467	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	275384	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	275090	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	276238	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	275089	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	273618	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	274442	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	275378	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	273071	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	276847	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	277849	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	274628	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	272468	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	272469	1	20	5.0	5.0	✓
Conductivity in Water	E100	277850	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	275070	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	275399	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	275071	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	273617	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	272197	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	272466	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	272470	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	272471	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	272467	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	275384	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	275090	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	276238	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	275089	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	273618	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	274442	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	275378	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	273071	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	274628	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	272468	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	272469	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	275070	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	275399	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	275071	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	273617	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	272197	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	272466	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	272470	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	272471	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	272467	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	275090	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	276238	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	275089	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	273618	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	274442	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2103457**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : PIZDC0901 20210819  
**Sampler** : T.Dick/D.Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Aug-2021 08:30  
**Date Analysis Commenced** : 20-Aug-2021  
**Issue Date** : 03-Sep-2021 14:37

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
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Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
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Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2103457  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 273071)</b>											
CG2103448-001	Anonymous	turbidity	----	E121	0.10	NTU	2.50	2.24	10.9%	15%	----
<b>Physical Tests (QC Lot: 275384)</b>											
CG2103455-005	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	346	355	2.57%	20%	----
<b>Physical Tests (QC Lot: 276847)</b>											
CG2103455-003	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	5.5	4.3	1.2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 276970)</b>											
CG2103455-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	256	256	0.196%	15%	----
<b>Physical Tests (QC Lot: 277849)</b>											
CG2103455-003	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	402	398	1.00%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	402	398	1.00%	20%	----
<b>Physical Tests (QC Lot: 277850)</b>											
CG2103455-003	Anonymous	conductivity	----	E100	2.0	µS/cm	1240	1240	0.0804%	10%	----
<b>Physical Tests (QC Lot: 277851)</b>											
CG2103455-003	Anonymous	pH	----	E108	0.10	pH units	7.98	8.02	0.500%	4%	----
<b>Anions and Nutrients (QC Lot: 272197)</b>											
CG2103455-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 272466)</b>											
CG2103455-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.170	0.170	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 272467)</b>											
CG2103455-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	155	155	0.0118%	20%	----
<b>Anions and Nutrients (QC Lot: 272468)</b>											
CG2103455-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 272469)</b>											
CG2103455-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.59	0.58	0.01	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 272470)</b>											
CG2103455-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	7.53	7.53	0.0650%	20%	----
<b>Anions and Nutrients (QC Lot: 272471)</b>											
CG2103455-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0065	0.0063	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 274442)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 274442) - continued</b>											
CG2103455-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0045	0.0047	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 274628)</b>											
CG2103448-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0118	0.0101	0.0017	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 276238)</b>											
CG2103455-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.272	0.247	0.025	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 273617)</b>											
CG2103448-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.57	2.66	0.09	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 273618)</b>											
CG2103448-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.56	2.55	0.01	Diff <2x LOR	----
<b>Total Metals (QC Lot: 275089)</b>											
CG2103418-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0101	0.0100	0.0002	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00025	0.00024	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0879	0.0892	1.52%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0290 µg/L	0.0000288	0.0000002	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	110	107	3.08%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.011	<0.010	0.001	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0083	0.0082	0.00006	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	84.2	81.7	3.05%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00096	0.00092	0.00004	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00290	0.00301	3.80%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00137	0.00139	0.00002	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.21	1.19	1.43%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	66.1 µg/L	0.0651	1.52%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.58	2.64	1.99%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	1.07	1.05	1.37%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.145	0.147	1.48%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	146	143	2.14%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 275089) - continued</b>											
CG2103418-001	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	0.000013	0.000012	0.0000004	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00507	0.00508	0.102%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0071	0.0066	0.0004	Diff <2x LOR	----
<b>Total Metals (QC Lot: 275090)</b>											
CG2103418-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00023	0.00023	0.000005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 275070)</b>											
CG2103419-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	0.00013	0.000006	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 275071)</b>											
CG2103419-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0117	0.0132	11.9%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00050	0.00050	0.0000009	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00025	0.00025	0.0000007	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.158	0.155	2.46%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.029	0.028	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0979 µg/L	0.000109	10.8%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	134	131	1.88%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.26 µg/L	0.00029	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00054	0.00057	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	0.000054	0.000004	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0307	0.0283	8.05%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	59.9	57.8	3.49%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0273	0.0278	1.99%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00304	0.00304	0.206%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00125	0.00130	0.00005	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.80	4.83	0.572%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	65.5 µg/L	0.0675	3.05%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.00	1.98	1.17%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	11.1	10.8	2.76%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.06	1.08	1.92%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 275071) - continued</b>											
CG2103419-001	Anonymous	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	88.7	89.2	0.517%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000021	0.000020	0.0000005	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00272	0.00264	3.04%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0026	0.0038	0.0013	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 275399)</b>											
CG2103455-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 273071)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 275378)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 275384)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 276847)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 277849)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 277850)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 272197)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 272466)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 272467)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 272468)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 272469)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 272470)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 272471)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 274442)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 274628)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 276238)</b>						





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 276238) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 273617)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 273618)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 275089)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 275089) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 275090)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 275070)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 275071)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---

Page : 10 of 17  
Work Order : CG2103457  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 275071) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 275399)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 273071)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.0	85.0	115	---
<b>Physical Tests (QCLot: 275378)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.1	85.0	115	---
<b>Physical Tests (QCLot: 275384)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 276847)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 276970)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	104	95.4	104	---
<b>Physical Tests (QCLot: 277849)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 277850)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	96.4	90.0	110	---
<b>Physical Tests (QCLot: 277851)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Anions and Nutrients (QCLot: 272197)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 272466)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 272467)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 272468)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.7	85.0	115	---
<b>Anions and Nutrients (QCLot: 272469)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 272470)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 272471)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 274442)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	92.8	80.0	120	---
<b>Anions and Nutrients (QCLot: 274628)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 274628) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Anions and Nutrients (QCLot: 276238)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 273617)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 273618)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 275089)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.5	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.7	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 275089) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.5	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.5	80.0	120	----
<b>Total Metals (QCLot: 275090)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 275070)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
<b>Dissolved Metals (QCLot: 275071)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.5	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.3	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	107	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.7	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.7	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 275071) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.2	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.1	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 272197)</b>										
CG2103455-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0491 mg/L	0.05 mg/L	98.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 272466)</b>										
CG2103460-011	Anonymous	fluoride	16984-48-8	E235.F	0.922 mg/L	1 mg/L	92.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 272467)</b>										
CG2103460-011	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	97.0 mg/L	100 mg/L	97.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 272468)</b>										
CG2103460-011	Anonymous	bromide	24959-67-9	E235.Br-L	0.490 mg/L	0.5 mg/L	98.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 272469)</b>										
CG2103460-011	Anonymous	chloride	16887-00-6	E235.Cl-L	95.4 mg/L	100 mg/L	95.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 272470)</b>										
CG2103460-011	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.40 mg/L	2.5 mg/L	95.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 272471)</b>										
CG2103460-011	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.474 mg/L	0.5 mg/L	94.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 274442)</b>										
CG2103455-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0685 mg/L	0.0676 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 274628)</b>										
CG2103448-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 276238)</b>										
CG2103455-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.70 mg/L	2.5 mg/L	108	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 273617)</b>										
CG2103448-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.1 mg/L	23.9 mg/L	101	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 273618)</b>										
CG2103448-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.4 mg/L	23.9 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 275089)</b>										
CG2103418-002	Anonymous	aluminum, total	7429-90-5	E420	0.203 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, total	7440-36-0	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 275089) - continued</b>										
CG2103418-002	Anonymous	beryllium, total	7440-41-7	E420	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00943 mg/L	0.01 mg/L	94.3	70.0	130	----
		boron, total	7440-42-8	E420	0.100 mg/L	0.1 mg/L	99.9	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00385 mg/L	0.004 mg/L	96.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		copper, total	7440-50-8	E420	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		iron, total	7439-89-6	E420	1.90 mg/L	2 mg/L	94.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		lithium, total	7439-93-2	E420	0.0904 mg/L	0.1 mg/L	90.4	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0194 mg/L	0.02 mg/L	97.3	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		potassium, total	7440-09-7	E420	3.96 mg/L	4 mg/L	98.9	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.16 mg/L	10 mg/L	91.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00380 mg/L	0.004 mg/L	94.9	70.0	130	----
		tin, total	7440-31-5	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		titanium, total	7440-32-6	E420	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		uranium, total	7440-61-1	E420	0.00379 mg/L	0.004 mg/L	94.8	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.381 mg/L	0.4 mg/L	95.2	70.0	130	----
<b>Total Metals (QCLot: 275090)</b>										
CG2103418-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 275070)</b>										
CG2103419-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----
<b>Dissolved Metals (QCLot: 275071)</b>										
CG2103419-002	Anonymous	zinc, dissolved	7440-66-6	E421	0.380 mg/L	0.4 mg/L	95.0	70.0	130	----
CG2103419-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.190 mg/L	0.2 mg/L	95.1	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0216 mg/L	0.02 mg/L	108	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 275071) - continued</b>										
CG2103419-002	Anonymous	barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0389 mg/L	0.04 mg/L	97.4	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00907 mg/L	0.01 mg/L	90.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.099 mg/L	0.1 mg/L	99.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0181 mg/L	0.02 mg/L	90.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	96.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0979 mg/L	0.1 mg/L	97.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0355 mg/L	0.04 mg/L	88.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.54 mg/L	10 mg/L	85.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00374 mg/L	0.004 mg/L	93.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0977 mg/L	0.1 mg/L	97.7	70.0	130	----
<b>Dissolved Metals (QCLot: 275399)</b>										
CG2103455-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000998 mg/L	0.0001 mg/L	99.8	70.0	130	----

COC ID: **PIZDC0901 20210819**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	aric.blurton@teck.com		*	*	
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		*	*	
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com		*	*	
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com		*	*	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:			*	*	
	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930				
	5-8478			Phone Number	403 407 1794								

Environmental Division  
Calgary  
Work Order Reference  
**CG2103457**



Telephone : + 1 403 407 1800

SAMPLE DETAILS							ANALYSIS REQUESTED									
Sample ID	Sample Location (sys_loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-Sulfate-T	ALS_Package-TKN/TOC
LC_PIZDC0901_WG_Q3-2021_NP	LC_PIZDC0901	WG		19-Aug	12:50	G	6		1	1		1	1	1		1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
PLEASE RETURN TO THE LABORATORY FOR ANALYSIS	D.Tymstra/T.Dick	19-Aug	<i>[Signature]</i>	19-Aug

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/> Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	T.Dick/D.Tymstra		<i>[Signature]</i>	August 19, 2021

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103481**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : PIZP1103 20210819  
**Sampler** : T.Dick/D.Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Aug-2021 08:30  
**Date Analysis Commenced** : 22-Aug-2021  
**Issue Date** : 03-Sep-2021 14:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_PIZP1103_	---	---	---	---
(Matrix: Water)					WG_Q3-2021_N					
					P					
					Client sampling date / time	20-Aug-2021	---	---	---	---
					13:30					
Analyte	CAS Number	Method	LOR	Unit	CG2103481-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	2.0	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	433	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	433	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	741	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	137	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	536	---	---	---	---	---
pH	---	E108	0.10	pH units	8.05	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	444	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	16.4	---	---	---	---	---
turbidity	---	E121	0.10	NTU	17.5	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	528	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0491	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.99	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.347	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.086	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0999	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0109	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0483	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0786	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	28.1	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	2.56	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	1.70	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1103_	----	----	----	----
					WG_Q3-2021_N					
					P					
					Client sampling date / time	20-Aug-2021	----	----	----	----
					13:30					
Analyte	CAS Number	Method	LOR	Unit	CG2103481-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.35	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	8.98	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.0	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	2.02	----	----	----	----	----
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.447	----	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00036	----	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00118	----	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0724	----	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	0.023	----	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.524	----	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0488	----	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	27.0	----	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00118	----	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	0.96	----	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00720	----	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.601	----	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000762	----	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.109	----	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	15.1	----	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.476	----	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0273	----	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00186	----	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	1.76	----	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	----	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	5.26	----	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	0.000011	----	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	129	----	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.787	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1103_ WG_Q3-2021_N P	----	----	----	----
Client sampling date / time					20-Aug-2021 13:30	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103481-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	10.9	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000019	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00034	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0113	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00195	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00191	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0138	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0018	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00025	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00100	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0672	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.543	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0150 <sup>DLM</sup>	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	28.0	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00020	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.24	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00126	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.019	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.114	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	16.4	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.172	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0282	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00068	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.64	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	----	----	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1103_ WG_Q3-2021_N P	----	----	----	----
Client sampling date / time					20-Aug-2021 13:30	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103481-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.06	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	142	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.833	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	10.0	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000011	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00197	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00066	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0029	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2103481</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Tom Jeffery <b>Address</b> : PO BOX 2003 15km North Hwy 43 Sparwood BC Canada <b>Telephone</b> : 250-433-8467 <b>Project</b> : LINE CREEK OPERATION <b>PO</b> : VPO00739930 <b>C-O-C number</b> : PIZP1103 20210819 <b>Sampler</b> : T.Dick/D.Tymstra <b>Site</b> : ---- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 1 <b>No. of samples analysed</b> : 1	<b>Page</b> : 1 of 11 <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Lyudmyla Shvets <b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5 <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 21-Aug-2021 08:30 <b>Issue Date</b> : 03-Sep-2021 14:55
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### **Summary of Outliers**

#### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

#### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E298	20-Aug-2021	25-Aug-2021	----	----		25-Aug-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E235.Br-L	20-Aug-2021	----	----	----		22-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E235.Cl-L	20-Aug-2021	----	----	----		22-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E378-U	20-Aug-2021	----	----	----		22-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E235.F	20-Aug-2021	----	----	----		22-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E235.NO3-L	20-Aug-2021	----	----	----		22-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E235.NO2-L	20-Aug-2021	----	----	----		22-Aug-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E235.SO4	20-Aug-2021	----	----	----		22-Aug-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E318	20-Aug-2021	26-Aug-2021	----	----		31-Aug-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E372-U	20-Aug-2021	26-Aug-2021	----	----		26-Aug-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E421.Cr-L	20-Aug-2021	26-Aug-2021	----	----		27-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E509	20-Aug-2021	26-Aug-2021	----	----		26-Aug-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E421	20-Aug-2021	26-Aug-2021	----	----		27-Aug-2021	180 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E358-L	20-Aug-2021	25-Aug-2021	----	----		26-Aug-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E355-L	20-Aug-2021	25-Aug-2021	----	----		27-Aug-2021	28 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E283	20-Aug-2021	----	----	----		28-Aug-2021	14 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Container / Client Sample ID(s)				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E290	20-Aug-2021	----	----	----		27-Aug-2021	14 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E100	20-Aug-2021	----	----	----		27-Aug-2021	28 days	7 days	✓
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E125	20-Aug-2021	----	----	----		30-Aug-2021	0.34 hrs	242 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E108	20-Aug-2021	----	----	----		27-Aug-2021	0.25 hrs	167 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E162	20-Aug-2021	----	----	----		25-Aug-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_PIZP1103_WG_Q3-2021_NP	E160-L	20-Aug-2021	----	----	----		25-Aug-2021	7 days	5 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_PIZP1103_WG_Q3-2021_NP	E121	20-Aug-2021	----	----	----		22-Aug-2021	3 days	2 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E420.Cr-L	20-Aug-2021	----	----	----		27-Aug-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1103_WG_Q3-2021_NP	E420	20-Aug-2021	----	----	----		27-Aug-2021	180 days	7 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 5 of 11  
Work Order : CG2103481  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	278844	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	277975	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	275526	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	273440	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	273441	1	8	12.5	5.0	✓
Conductivity in Water	E100	277973	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	276335	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	276467	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	276336	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	276063	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	273330	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	273444	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	273442	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	273443	1	8	12.5	5.0	✓
ORP by Electrode	E125	279662	1	19	5.2	5.0	✓
pH by Meter	E108	277974	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	273439	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	275386	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	276450	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	277175	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	276451	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	276064	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	275500	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	273414	1	6	16.6	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	278844	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	277975	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	275526	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	273440	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	273441	1	8	12.5	5.0	✓
Conductivity in Water	E100	277973	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	276335	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	276467	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	276336	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	276063	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	273330	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	273444	1	8	12.5	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	273442	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	273443	1	8	12.5	5.0	✓
ORP by Electrode	E125	279662	1	19	5.2	5.0	✓
pH by Meter	E108	277974	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	273439	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	275386	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	276450	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	277175	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	276451	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	276064	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	275500	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	275379	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	273414	1	6	16.6	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	278844	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	277975	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	275526	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	273440	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	273441	1	8	12.5	5.0	✓
Conductivity in Water	E100	277973	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	276335	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	276467	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	276336	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	276063	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	273330	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	273444	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	273442	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	273443	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	273439	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	275386	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	276450	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	277175	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	276451	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	276064	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	275500	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	275379	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	273414	1	6	16.6	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	275526	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	273440	1	8	12.5	5.0	✓





Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	273441	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	276335	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	276467	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	276336	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	276063	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	273330	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	273444	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	273442	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	273443	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	273439	1	8	12.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	276450	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	277175	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	276451	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	276064	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	275500	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2103481**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : PIZP1103 20210819  
**Sampler** : T.Dick/D.Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Aug-2021 08:30  
**Date Analysis Commenced** : 22-Aug-2021  
**Issue Date** : 03-Sep-2021 14:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2103481  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 273414)</b>											
CG2103476-002	Anonymous	turbidity	----	E121	0.10	NTU	98.0	95.2	2.90%	15%	----
<b>Physical Tests (QC Lot: 275386)</b>											
CG2103474-016	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1500	1480	0.873%	20%	----
<b>Physical Tests (QC Lot: 277973)</b>											
CG2103476-002	Anonymous	conductivity	----	E100	2.0	µS/cm	679	673	0.888%	10%	----
<b>Physical Tests (QC Lot: 277974)</b>											
CG2103476-002	Anonymous	pH	----	E108	0.10	pH units	7.80	7.80	0.00%	4%	----
<b>Physical Tests (QC Lot: 277975)</b>											
CG2103476-002	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	260	261	0.308%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	260	261	0.307%	20%	----
<b>Physical Tests (QC Lot: 278844)</b>											
CG2103476-002	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	5.0	3.9	1.1	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 279662)</b>											
CG2103476-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	512	524	2.26%	15%	----
<b>Anions and Nutrients (QC Lot: 273330)</b>											
CG2103476-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0023	0.0022	0.00009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 273439)</b>											
CG2103480-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	445	448	0.680%	20%	----
<b>Anions and Nutrients (QC Lot: 273440)</b>											
CG2103480-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 273441)</b>											
CG2103480-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	6.44	6.47	0.497%	20%	----
<b>Anions and Nutrients (QC Lot: 273442)</b>											
CG2103480-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	61.0	61.4	0.599%	20%	----
<b>Anions and Nutrients (QC Lot: 273443)</b>											
CG2103480-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.128	0.127	0.860%	20%	----
<b>Anions and Nutrients (QC Lot: 273444)</b>											
CG2103480-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.114	0.115	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 275500)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 275500) - continued</b>											
CG2103476-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0358	0.0376	4.66%	20%	----
<b>Anions and Nutrients (QC Lot: 275526)</b>											
CG2103480-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0208	0.0163	0.0045	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 277175)</b>											
CG2103476-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.095	0.096	0.002	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 276063)</b>											
CG2103476-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.26	2.20	0.07	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 276064)</b>											
CG2103476-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.36	2.49	0.12	Diff <2x LOR	----
<b>Total Metals (QC Lot: 276450)</b>											
CG2103474-014	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 276451)</b>											
CG2103474-014	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00021	0.00020	0.00001	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00120	0.00127	5.22%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0132	0.0130	1.17%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.021	0.019	0.001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	230	226	2.15%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.11 µg/L	0.00012	0.000009	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.313	0.321	2.30%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0307	0.0289	5.85%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	146	146	0.0264%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0627	0.0625	0.314%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000861	0.000853	0.910%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00061	0.00069	0.00007	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	3.89	3.89	0.124%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	0.849 µg/L	0.000834	1.74%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.56	3.54	0.551%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	4.35	4.27	1.86%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 276451) - continued</b>											
CG2103474-014	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	0.285	0.292	2.28%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	273	275	0.867%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00880	0.00878	0.190%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00065	0.00066	0.00001	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 276335)</b>											
CG2103474-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 276336)</b>											
CG2103474-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0020	0.0025	0.0005	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00020	0.00022	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0120	0.0124	3.19%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.076	0.074	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.633 µg/L	0.000640	1.08%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	321	310	3.49%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	37.3 µg/L	0.0381	2.22%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00054	0.00062	0.00008	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	0.153	0.156	0.002	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.0936	0.0883	5.85%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	175	175	0.280%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.956	0.968	1.20%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00216	0.00211	1.95%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.122	0.123	0.801%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	5.00	5.03	0.695%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	1.96 µg/L	0.00181	7.48%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	3.13	3.09	1.15%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	8.99	8.98	0.0492%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.382	0.374	2.06%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 276336) - continued</b>											
CG2103474-001	Anonymous	sulfur, dissolved	7704-34-9	E421	1.00	mg/L	317	323	1.93%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000121	0.000127	0.000006	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0172	0.0172	0.0728%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0611	0.0620	1.48%	20%	----
<b>Dissolved Metals (QC Lot: 276467)</b>											
CG2103474-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 273414)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 275379)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 275386)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 277973)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 277975)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 278844)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 273330)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 273439)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 273440)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 273441)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 273442)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 273443)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 273444)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 275500)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 275526)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 277175)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 277175) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 276063)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 276064)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 276450)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 276451)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 276451) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 276335)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 276336)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----

Page : 10 of 17  
Work Order : CG2103481  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 276336) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 276467)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 273414)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.5	85.0	115	---
<b>Physical Tests (QCLot: 275379)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	95.0	85.0	115	---
<b>Physical Tests (QCLot: 275386)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.8	85.0	115	---
<b>Physical Tests (QCLot: 277973)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.2	90.0	110	---
<b>Physical Tests (QCLot: 277974)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 277975)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 278844)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 279662)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 273330)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	103	80.0	120	---
<b>Anions and Nutrients (QCLot: 273439)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 273440)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 273441)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	97.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 273442)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	97.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 273443)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 273444)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 275500)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	94.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 275526)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Anions and Nutrients (QCLot: 275526) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.8	85.0	115	----
<b>Anions and Nutrients (QCLot: 277175)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	97.0	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 276063)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	95.6	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 276064)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	97.1	80.0	120	----
<b>Total Metals (QCLot: 276450)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 276451)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	96.2	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	98.7	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	95.5	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	92.2	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	96.7	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.7	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	94.7	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	94.4	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	94.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	96.7	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	91.7	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	95.6	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.5	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	96.0	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	95.3	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	94.8	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	99.1	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	93.6	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	96.5	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	95.2	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	101	80.0	120	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 276451) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.4	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	91.0	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	93.0	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.1	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	97.3	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.9	80.0	120	----
<b>Dissolved Metals (QCLot: 276335)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 276336)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.1	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.0	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	91.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	105	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.6	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	91.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.6	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.7	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 276336) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.5	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 273330)</b>										
CG2103480-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0486 mg/L	0.05 mg/L	97.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 273439)</b>										
CG2103480-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 273440)</b>										
CG2103480-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.524 mg/L	0.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 273441)</b>										
CG2103480-002	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 273442)</b>										
CG2103480-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 273443)</b>										
CG2103480-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.510 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 273444)</b>										
CG2103480-002	Anonymous	fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 275500)</b>										
CG2103478-001	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 275526)</b>										
CG2103480-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.107 mg/L	0.1 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 277175)</b>										
CG2103476-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.43 mg/L	2.5 mg/L	97.2	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 276063)</b>										
CG2103476-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	19.3 mg/L	23.9 mg/L	80.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 276064)</b>										
CG2103476-001	Anonymous	carbon, total organic [TOC]	----	E355-L	19.5 mg/L	23.9 mg/L	81.4	70.0	130	----
<b>Total Metals (QCLot: 276450)</b>										
CG2103474-015	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0822 mg/L	0.08 mg/L	103	70.0	130	----
<b>Total Metals (QCLot: 276451)</b>										
CG2103474-015	Anonymous	aluminum, total	7429-90-5	E420	0.399 mg/L	0.4 mg/L	99.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 276451) - continued</b>										
CG2103474-015	Anonymous	arsenic, total	7440-38-2	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0741 mg/L	0.08 mg/L	92.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0178 mg/L	0.02 mg/L	89.0	70.0	130	----
		boron, total	7440-42-8	E420	0.196 mg/L	0.2 mg/L	98.1	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00812 mg/L	0.008 mg/L	102	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0382 mg/L	0.04 mg/L	95.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0364 mg/L	0.04 mg/L	91.1	70.0	130	----
		iron, total	7439-89-6	E420	3.96 mg/L	4 mg/L	99.1	70.0	130	----
		lead, total	7439-92-1	E420	0.0361 mg/L	0.04 mg/L	90.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.174 mg/L	0.2 mg/L	87.0	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	8.14 mg/L	8 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0849 mg/L	0.08 mg/L	106	70.0	130	----
		silicon, total	7440-21-3	E420	18.8 mg/L	20 mg/L	94.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00758 mg/L	0.008 mg/L	94.7	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00719 mg/L	0.008 mg/L	89.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.0814 mg/L	0.08 mg/L	102	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.203 mg/L	0.2 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.776 mg/L	0.8 mg/L	97.0	70.0	130	----
<b>Dissolved Metals (QCLot: 276335)</b>										
CG2103474-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
<b>Dissolved Metals (QCLot: 276336)</b>										
CG2103474-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.190 mg/L	0.2 mg/L	94.8	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0218 mg/L	0.02 mg/L	109	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 276336) - continued</b>										
CG2103474-002	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0363 mg/L	0.04 mg/L	90.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00893 mg/L	0.01 mg/L	89.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.090 mg/L	0.1 mg/L	90.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00395 mg/L	0.004 mg/L	98.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0184 mg/L	0.02 mg/L	92.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0183 mg/L	0.02 mg/L	91.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	94.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0825 mg/L	0.1 mg/L	82.5	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0213 mg/L	0.02 mg/L	107	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0358 mg/L	0.04 mg/L	89.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0449 mg/L	0.04 mg/L	112	70.0	130	----
		silicon, dissolved	7440-21-3	E421	10.0 mg/L	10 mg/L	100	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00365 mg/L	0.004 mg/L	91.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.393 mg/L	0.4 mg/L	98.4	70.0	130	----
<b>Dissolved Metals (QCLot: 276467)</b>										
CG2103474-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000973 mg/L	0.0001 mg/L	97.3	70.0	130	----

COC ID: **PIZP1103 20210819**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	shvets.lyudmyla@teck.com		
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		
Address	Box 2003 115km North Hwy 43			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com		
	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	shanise.fossen@teck.com		
	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	WPO00739930		
78				Phone Number	403 407 1794						

Environmental Division  
Calgary  
Work Order Reference  
**CG2103481**



Telephone: +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	N	Y	Y	N	Y	N	N	N	N	N	N
								PRESERV.	H2SO4	HCl	NONE	HNO3	HNO3	NONE	NaOH/Zn Ac	H2SO4			
								ANALYSIS	ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-Sulfide-T	ALS_Package-TKN/TOC		
LC_PIZP1103_WG_Q3-2021_NP	LC_PIZP1103	WG		20-Aug	13:30 PM	G	6												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/T.Dick	20-Aug	<i>[Signature]</i>	21/08 8:30

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/>	T.Dick/D.Tymstra		<i>[Signature]</i>	August 20, 2021
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2103638**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : Q3 GW PIZDC1404S-D 20210826  
**Sampler** : S.Fossen/D.Tymstra  
**Site** : ---  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-Aug-2021 09:00  
**Date Analysis Commenced** : 27-Aug-2021  
**Issue Date** : 03-Nov-2021 15:51

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

Sample	Client Id	Comment
CG2103638-002	LC_PIZDC1404S_WG-Q3-202 1-NP	Ultra Total Hg requested on COC but regular Total Hg vial was received.

## Qualifiers

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					LC_PIZDC1404 D_WG_Q3-2021 -NP	LC_PIZDC1404 S_WG-Q3-2021 -NP	---	---	---
Client sampling date / time					26-Aug-2021 12:50	26-Aug-2021 11:30	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2103638-001 Result	CG2103638-002 Result	----- ---	----- ---	----- ---
<b>Physical Tests</b>									
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	<2.0	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	354	179	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	7.4	<1.0	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	362	179	---	---	---
conductivity	---	E100	2.0	µS/cm	643	336	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	280	191	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	432	439	---	---	---
pH	---	E108	0.10	pH units	8.30	8.22	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	392	205	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	5.3	5.0	---	---	---
turbidity	---	E121	0.10	NTU	13.4	13.7	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	432	218	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	4.4	<1.0	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	2.46	0.0111	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.48	0.12	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.163	0.118	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	2.82	0.068	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0093	0.0163	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	4.74	---	---	---
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	5.14	5.02	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	4.44	4.42	---	---	---



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					LC_PIZDC1404 D_WG_Q3-2021 -NP	LC_PIZDC1404 S_WG-Q3-2021 -NP	---	---	---
Client sampling date / time					26-Aug-2021 12:50	26-Aug-2021 11:30	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2103638-001 Result	CG2103638-002 Result	-----	-----	-----
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	7.26	3.68	----	----	----
cation sum	----	EC101	0.10	meq/L	7.91	3.94	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	109	107	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	4.28	3.41	----	----	----
<b>Total Metals</b>									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0046	0.0264	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	<0.00010	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00174	0.00361	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	3.93	0.244	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.027	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0100 <sup>DLM</sup>	0.0089	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	56.9	51.6	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	1.06	0.38	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	2.24	1.96	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000053	0.000099	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.578	0.0053	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	34.2	18.5	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0318	0.0304	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L	----	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0208	0.00350	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00067	0.00144	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	24.3	1.56	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	<0.050	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	2.79	3.66	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	33.7	1.20	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1404 D_WG_Q3-2021 -NP	LC_PIZDC1404 S_WG-Q3-2021 -NP	---	---	---
Client sampling date / time					26-Aug-2021 12:50	26-Aug-2021 11:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103638-001 Result	CG2103638-002 Result	-----	-----	-----	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.248	0.0503	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	1.86	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	0.00035	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000137	0.000630	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0032	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0022	0.0012	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00182	0.00165	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	3.97	0.231	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	<0.010	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	54.9	47.8	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	1.02	0.31	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00046	<0.00020	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	2.00	0.800	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.548	0.0054	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	34.8	17.4	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0320	0.0266	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0190	0.00320	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00055	0.00121	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	24.4	1.50	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1404 D_WG_Q3-2021 -NP	LC_PIZDC1404 S_WG-Q3-2021 -NP	---	---	---
Client sampling date / time					26-Aug-2021 12:50	26-Aug-2021 11:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103638-001 Result	CG2103638-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.84	3.49	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	33.0	1.28	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.216	0.0445	---	---	---	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	1.63	---	---	---	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000113	0.000550	---	---	---	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0022	<0.0010	---	---	---	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	---	---	---	
dissolved metals filtration location	----	EP421	-	-	Field	Field	---	---	---	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>CG2103706</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Tom Jeffery <b>Address</b> : PO BOX 2003 15km North Hwy 43 Sparwood BC Canada <b>Telephone</b> : 250-433-8467 <b>Project</b> : LINE CREEK OPERATION <b>PO</b> : VPO00739930 <b>C-O-C number</b> : Q3 GW MW_ER4A&B 20210829 <b>Sampler</b> : T. Dick/D.Tymstra <b>Site</b> : ---- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 2 <b>No. of samples analysed</b> : 2	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Lyudmyla Shvets <b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5 <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 31-Aug-2021 08:50 <b>Date Analysis Commenced</b> : 31-Aug-2021 <b>Issue Date</b> : 30-Sep-2021 12:12
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

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This Certificate of Analysis contains the following information:

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- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

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<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jeanie Mark	Laboratory Analyst	Organics, Calgary, Alberta
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Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





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Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

Total Hg vials received instead of bottles

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.





## Analytical Results

Sub-Matrix: Water					Client sample ID		LC_MW_ER4A_	LC_MW_ER4B_	---	---	---
(Matrix: Water)					WG_Q3-2021_N	WG_Q3-2021_N					
Client sampling date / time					29-Aug-2021 13:35	29-Aug-2021 14:30	---	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2103706-001	CG2103706-002	-----	-----	-----	-----	-----
					Result	Result	---	---	---	---	---
<b>Physical Tests</b>											
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	2.3	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	156	186	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	156	186	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	459	466	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	278	284	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	451	397	---	---	---	---	---
pH	---	E108	0.10	pH units	8.02	8.02	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	314	313	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
turbidity	---	E121	0.10	NTU	1.34	<0.10	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	190	228	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0185	0.0088	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.27	1.60	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.134	0.175	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	<0.050	0.128	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0084	1.72	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0025	<0.0020	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	96.8	65.9	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	0.90 <small>DTC,RRV</small>	1.75 <small>DTC,RRV</small>	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	<0.50 <small>DTC,RRV</small>	<0.50 <small>DTC,RRV</small>	---	---	---	---	---
<b>Ion Balance</b>											



## Analytical Results

Sub-Matrix: Water					Client sample ID		LC_MW_ER4A_	LC_MW_ER4B_	---	---	---
(Matrix: Water)							WG_Q3-2021_N	WG_Q3-2021_N			
Client sampling date / time					29-Aug-2021	29-Aug-2021					
					13:35	14:30					
Analyte	CAS Number	Method	LOR	Unit	CG2103706-001	CG2103706-002	-----	-----	-----	-----	-----
					Result	Result	---	---	---	---	---
<b>Ion Balance</b>											
anion sum	---	EC101	0.10	meq/L	5.20	5.27	---	---	---	---	---
cation sum	---	EC101	0.10	meq/L	5.70	5.80	---	---	---	---	---
ion balance (cations/anions ratio)	---	EC101	0.010	%	110	110	---	---	---	---	---
ion balance (cation-anion difference)	---	EC101	0.010	%	4.59	4.79	---	---	---	---	---
<b>Total Metals</b>											
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0081	<0.0030	---	---	---	---	---
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	---	---
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	---	---
barium, total	7440-39-3	E420	0.00010	mg/L	0.0517	0.0896	---	---	---	---	---
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	---	---
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	---	---
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	---	---	---	---	---
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	0.0203	---	---	---	---	---
calcium, total	7440-70-2	E420	0.050	mg/L	73.9	74.2	---	---	---	---	---
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00011	---	---	---	---	---
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	---	---	---	---	---
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	---	---
iron, total	7439-89-6	E420	0.010	mg/L	0.160	<0.010	---	---	---	---	---
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	---	---
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0063	0.0106	---	---	---	---	---
magnesium, total	7439-95-4	E420	0.0050	mg/L	18.7	19.9	---	---	---	---	---
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0511	<0.00010	---	---	---	---	---
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	---	---
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00422	0.00144	---	---	---	---	---
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00092	---	---	---	---	---
potassium, total	7440-09-7	E420	0.050	mg/L	0.592	0.563	---	---	---	---	---
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	6.47	---	---	---	---	---
silicon, total	7440-21-3	E420	0.10	mg/L	2.46	2.67	---	---	---	---	---
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	---	---
sodium, total	17341-25-2	E420	0.050	mg/L	2.70	2.24	---	---	---	---	---
strontium, total	7440-24-6	E420	0.00020	mg/L	0.311	0.263	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_ER4A_WG_Q3-2021_N	LC_MW_ER4B_WG_Q3-2021_N	---	---	---
Client sampling date / time					29-Aug-2021 13:35	29-Aug-2021 14:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103706-001 Result	CG2103706-002 Result	----- ---	----- ---	----- ---	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	32.7	22.5	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000267	0.00108	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0015	<0.0010	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0535	0.0982	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0213	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	78.3	77.6	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00012	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00037	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.146	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0064	0.0104	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	20.0	22.0	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0548	<0.00010	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00477	0.00156	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.600	0.565	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	7.47	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.48	2.81	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_ER4A_ WG_Q3-2021_N	LC_MW_ER4B_ WG_Q3-2021_N	----	----	----
Client sampling date / time					29-Aug-2021 13:35	29-Aug-2021 14:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103706-001	CG2103706-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.88	2.34	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.344	0.279	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	32.9	23.7	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000288	0.00116	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	<0.25	----	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	<0.40	----	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	<0.25	----	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	<0.25	----	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	69.0	70.0	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103706</b>	Page	: 1 of 15
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 31-Aug-2021 08:50
PO	: VPO00739930	Issue Date	: 30-Sep-2021 12:12
C-O-C number	: Q3 GW MW_ER4A&B 20210829		
Sampler	: T. Dick/D.Tymstra		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E298	29-Aug-2021	09-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E298	29-Aug-2021	09-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q3-2021_N	E235.Br-L	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q3-2021_N	E235.Br-L	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q3-2021_N	E235.Cl-L	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q3-2021_N	E235.Cl-L	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q3-2021_N	E378-U	29-Aug-2021	----	----	----		31-Aug-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_MW_ER4B_WG_Q3-2021_N	E378-U	29-Aug-2021	----	----	----		31-Aug-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_MW_ER4A_WG_Q3-2021_N	E235.F	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_MW_ER4B_WG_Q3-2021_N	E235.F	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_MW_ER4A_WG_Q3-2021_N	E235.NO3-L	29-Aug-2021	----	----	----		17-Sep-2021	3 days	19 days	* EHT	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_MW_ER4B_WG_Q3-2021_N	E235.NO3-L	29-Aug-2021	----	----	----		17-Sep-2021	3 days	19 days	* EHT	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_MW_ER4A_WG_Q3-2021_N	E235.NO2-L	29-Aug-2021	----	----	----		17-Sep-2021	3 days	19 days	* EHT	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_MW_ER4B_WG_Q3-2021_N	E235.NO2-L	29-Aug-2021	----	----	----		17-Sep-2021	3 days	19 days	* EHT	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_MW_ER4A_WG_Q3-2021_N	E235.SO4	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_MW_ER4B_WG_Q3-2021_N	E235.SO4	29-Aug-2021	----	----	----		17-Sep-2021	28 days	19 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E318	29-Aug-2021	04-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E318	29-Aug-2021	04-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E372-U	29-Aug-2021	07-Sep-2021	----	----		07-Sep-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E372-U	29-Aug-2021	07-Sep-2021	----	----		07-Sep-2021	28 days	9 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E421.Cr-L	29-Aug-2021	05-Sep-2021	----	----		06-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E421.Cr-L	29-Aug-2021	05-Sep-2021	----	----		06-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E509	29-Aug-2021	03-Sep-2021	----	----		03-Sep-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E509	29-Aug-2021	03-Sep-2021	----	----		03-Sep-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E421	29-Aug-2021	05-Sep-2021	----	----		06-Sep-2021	180 days	8 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E421	29-Aug-2021	05-Sep-2021	----	----		06-Sep-2021	180 days	8 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_MW_ER4A_WG_Q3-2021_N	E601A	29-Aug-2021	31-Aug-2021	14 days	2 days	✓	01-Sep-2021	40 days	1 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_MW_ER4B_WG_Q3-2021_N	E601A	29-Aug-2021	31-Aug-2021	14 days	2 days	✓	01-Sep-2021	40 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E358-L	29-Aug-2021	05-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E358-L	29-Aug-2021	05-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E355-L	29-Aug-2021	05-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E355-L	29-Aug-2021	05-Sep-2021	----	----		09-Sep-2021	28 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q3-2021_N	E283	29-Aug-2021	----	----	----		07-Sep-2021	14 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q3-2021_N	E283	29-Aug-2021	----	----	----		07-Sep-2021	14 days	9 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE LC_MW_ER4A_WG_Q3-2021_N	E290	29-Aug-2021	----	----	----		07-Sep-2021	14 days	9 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE LC_MW_ER4B_WG_Q3-2021_N	E290	29-Aug-2021	----	----	----		07-Sep-2021	14 days	9 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_MW_ER4A_WG_Q3-2021_N	E100	29-Aug-2021	----	----	----		07-Sep-2021	28 days	9 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE LC_MW_ER4B_WG_Q3-2021_N	E100	29-Aug-2021	----	----	----		07-Sep-2021	28 days	9 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE LC_MW_ER4B_WG_Q3-2021_N	E125	29-Aug-2021	----	----	----		07-Sep-2021	0.34 hrs	212 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE LC_MW_ER4A_WG_Q3-2021_N	E125	29-Aug-2021	----	----	----		07-Sep-2021	0.34 hrs	213 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_MW_ER4B_WG_Q3-2021_N	E108	29-Aug-2021	----	----	----		07-Sep-2021	0.25 hrs	212 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_MW_ER4A_WG_Q3-2021_N	E108	29-Aug-2021	----	----	----		07-Sep-2021	0.25 hrs	213 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LC_MW_ER4A_WG_Q3-2021_N	E162	29-Aug-2021	----	----	----		02-Sep-2021	7 days	4 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q3-2021_N	E162	29-Aug-2021	----	----	----		02-Sep-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q3-2021_N	E160-L	29-Aug-2021	----	----	----		02-Sep-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q3-2021_N	E160-L	29-Aug-2021	----	----	----		02-Sep-2021	7 days	4 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_MW_ER4A_WG_Q3-2021_N	E121	29-Aug-2021	----	----	----		31-Aug-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_MW_ER4B_WG_Q3-2021_N	E121	29-Aug-2021	----	----	----		31-Aug-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E420.Cr-L	29-Aug-2021	----	----	----		04-Sep-2021	180 days	6 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E420.Cr-L	29-Aug-2021	----	----	----		04-Sep-2021	180 days	6 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E508	29-Aug-2021	----	----	----		04-Sep-2021	28 days	6 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E508	29-Aug-2021	----	----	----		04-Sep-2021	28 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_MW_ER4A_WG_Q3-2021_N	E420	29-Aug-2021	----	----	----		04-Sep-2021	180 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_MW_ER4B_WG_Q3-2021_N	E420	29-Aug-2021	----	----	----		04-Sep-2021	180 days	6 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 EHT: Exceeded ALS recommended hold time prior to analysis.  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	285564	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	285558	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	287548	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	294896	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	294897	1	15	6.6	5.0	✓
Conductivity in Water	E100	285557	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	284382	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	284207	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	284381	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	285007	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	280745	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	294900	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	294898	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	294899	1	15	6.6	5.0	✓
ORP by Electrode	E125	284551	1	20	5.0	5.0	✓
pH by Meter	E108	285556	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	294895	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	282455	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	284287	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	284599	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	284361	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	284286	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	285009	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	283870	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	280727	1	18	5.5	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	285564	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	285558	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	287548	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	281122	1	11	9.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	294896	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	294897	1	15	6.6	5.0	✓
Conductivity in Water	E100	285557	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	284382	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	284207	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	284381	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	285007	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	280745	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	294900	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	294898	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	294899	1	15	6.6	5.0	✓
ORP by Electrode	E125	284551	1	20	5.0	5.0	✓
pH by Meter	E108	285556	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	294895	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	282455	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	284287	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	284599	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	284361	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	284286	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	285009	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	283870	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	282449	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	280727	1	18	5.5	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	285564	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	285558	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	287548	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	281122	1	11	9.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	294896	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	294897	1	15	6.6	5.0	✓
Conductivity in Water	E100	285557	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	284382	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	284207	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	284381	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	285007	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	280745	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	294900	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	294898	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	294899	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	294895	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	282455	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	284287	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	284599	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	284361	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	284286	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	285009	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	283870	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	282449	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
Method Blanks (MB) - Continued							
Turbidity by Nephelometry	E121	280727	1	18	5.5	5.0	✓
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	287548	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	294896	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	294897	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	284382	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	284207	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	284381	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	285007	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	280745	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	294900	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	294898	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	294899	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	294895	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	284287	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	284599	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	284361	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	284286	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	285009	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	283870	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
	Vancouver - Environmental			
PHCs and PAHs Hexane Extraction	EP601	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
	Calgary - Environmental			

## QUALITY CONTROL REPORT

**Work Order** : **CG2103706**

**Page** : 1 of 19

**Amendment** : **1**

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : Q3 GW MW\_ER4A&B 20210829  
**Sampler** : T. Dick/D.Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 31-Aug-2021 08:50  
**Date Analysis Commenced** : 31-Aug-2021  
**Issue Date** : 30-Sep-2021 12:12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jeanie Mark	Laboratory Analyst	Organics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 280727)</b>											
CG2103673-001	Anonymous	turbidity	----	E121	0.10	NTU	3.06	3.03	0.986%	15%	----
<b>Physical Tests (QC Lot: 282455)</b>											
CG2103682-013	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 284551)</b>											
CG2103700-014	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	473	476	0.527%	15%	----
<b>Physical Tests (QC Lot: 285556)</b>											
CG2103699-001	Anonymous	pH	----	E108	0.10	pH units	7.84	7.87	0.382%	4%	----
<b>Physical Tests (QC Lot: 285557)</b>											
CG2103699-001	Anonymous	conductivity	----	E100	2.0	µS/cm	835	826	1.08%	10%	----
<b>Physical Tests (QC Lot: 285558)</b>											
CG2103700-013	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 285564)</b>											
CG2103700-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	10.0	mg/L	24.9	21.0	3.9	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 280745)</b>											
CG2103700-011	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0227	0.0228	0.538%	20%	----
<b>Anions and Nutrients (QC Lot: 283870)</b>											
CG2103700-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0027	<0.0020	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 284599)</b>											
CG2103700-009	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.316	0.363	0.047	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 287548)</b>											
CG2103700-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.208	0.187	10.4%	20%	----
<b>Anions and Nutrients (QC Lot: 294895)</b>											
CG2103404-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	185	199	6.83%	20%	----
<b>Anions and Nutrients (QC Lot: 294896)</b>											
CG2103404-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 294897)</b>											
CG2103404-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.18	1.03	0.14	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 294898)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 294898) - continued</b>											
CG2103404-001	Anonymous	nitrate (as N)	14797-55-8	E235.N03-L	0.0250	mg/L	17.6	18.9	7.29%	20%	----
<b>Anions and Nutrients (QC Lot: 294899)</b>											
CG2103404-001	Anonymous	nitrite (as N)	14797-65-0	E235.N02-L	0.0050	mg/L	0.222	0.236	6.03%	20%	----
<b>Anions and Nutrients (QC Lot: 294900)</b>											
CG2103404-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.214	0.217	0.004	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 285007)</b>											
CG2103697-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	8.50	8.98	5.51%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 285009)</b>											
CG2103697-003	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	8.96	9.23	2.99%	20%	----
<b>Total Metals (QC Lot: 284286)</b>											
VA21B8509-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.246	0.244	0.467%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00011	0.00011	0.000002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0416	0.0420	1.16%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00399	0.00396	0.521%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.050	0.050	0.0002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.000154	0.000153	0.672%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	3.77	3.82	1.21%	20%	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00027	0.00028	0.000003	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00379	0.00381	0.00002	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.385	0.380	1.34%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.00559	0.00573	2.42%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	0.457	0.448	2.02%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0116	0.0114	1.32%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000059	0.000060	0.000001	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00061	0.00060	0.00001	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.834	0.832	0.287%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000088	0.000062	0.000027	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.88	4.79	1.80%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000029	0.000028	0.0000010	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	1.32	1.35	2.54%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.00941	0.00931	1.01%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	1.82	1.85	0.02	Diff <2x LOR	----





Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 284286) - continued</b>											
VA21B8509-001	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00319	0.00339	6.12%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000012	0.000012	0.0000003	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00067	0.00063	0.00003	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0189	0.0190	0.00008	Diff <2x LOR	----
<b>Total Metals (QC Lot: 284287)</b>											
VA21B8509-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00028	0.00027	0.00001	Diff <2x LOR	----
<b>Total Metals (QC Lot: 284361)</b>											
CG2103706-001	LC_MW_ER4A_WG_Q3-2 021_N	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 284207)</b>											
CG2103698-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 284381)</b>											
CG2103706-001	LC_MW_ER4A_WG_Q3-2 021_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0015	0.0012	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0535	0.0546	2.05%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	78.3	73.8	6.00%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.146	0.144	1.02%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0064	0.0058	0.0005	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	20.0	20.3	1.54%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0548	0.0542	1.08%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00477	0.00472	0.986%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.600	0.589	1.95%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.48	2.47	0.360%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 284381) - continued</b>											
CG2103706-001	LC_MW_ER4A_WG_Q3-2 021_N	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.88	2.84	1.66%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.344	0.327	4.88%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	32.9	33.0	0.428%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000288	0.000272	5.87%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 284382)</b>											
CG2103706-001	LC_MW_ER4A_WG_Q3-2 021_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 280727)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 282449)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 282455)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 285557)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 285558)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 285564)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 280745)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 283870)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 284599)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 287548)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 294895)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 294896)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 294897)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 294898)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 294899)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 294900)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 294900) - continued</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Organic / Inorganic Carbon (QCLot: 285007)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 285009)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 284286)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 284286) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 284287)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 284361)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 284207)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 284381)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 284381) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 284382)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Hydrocarbons (QCLot: 281122)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 280727)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.6	85.0	115	---
<b>Physical Tests (QCLot: 282449)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.7	85.0	115	---
<b>Physical Tests (QCLot: 282455)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.1	85.0	115	---
<b>Physical Tests (QCLot: 284551)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.0	95.4	104	---
<b>Physical Tests (QCLot: 285556)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 285557)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.2	90.0	110	---
<b>Physical Tests (QCLot: 285558)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	92.8	85.0	115	---
<b>Physical Tests (QCLot: 285564)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 280745)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	96.8	80.0	120	---
<b>Anions and Nutrients (QCLot: 283870)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	99.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 284599)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	93.2	75.0	125	---
<b>Anions and Nutrients (QCLot: 287548)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.6	85.0	115	---
<b>Anions and Nutrients (QCLot: 294895)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 294896)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	107	85.0	115	---
<b>Anions and Nutrients (QCLot: 294897)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 294898)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 294899)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 294899) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 294900)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
<b>Organic / Inorganic Carbon (QCLot: 285007)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	99.3	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 285009)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 284286)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.0	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	97.6	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	94.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	92.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.0	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.2	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.2	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.6	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.1	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	99.0	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.7	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.0	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 284286) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	95.3	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 284287)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
<b>Total Metals (QCLot: 284361)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	99.3	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.0	80.0	120	----
<b>Dissolved Metals (QCLot: 284381)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	99.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.6	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 284381) - continued</b>									
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 284382)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
<b>Hydrocarbons (QCLot: 281122)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	79.0	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	78.8	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	79.0	70.0	130	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 280745)</b>										
CG2103700-012	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0562 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 283870)</b>										
CG2103700-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0636 mg/L	0.0676 mg/L	94.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 284599)</b>										
CG2103700-011	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.17 mg/L	2.5 mg/L	86.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 287548)</b>										
CG2103700-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0991 mg/L	0.1 mg/L	99.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 294895)</b>										
CG2103604-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	111 mg/L	100 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 294896)</b>										
CG2103604-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.539 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 294897)</b>										
CG2103604-005	Anonymous	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 294898)</b>										
CG2103604-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.70 mg/L	2.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 294899)</b>										
CG2103604-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.545 mg/L	0.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 294900)</b>										
CG2103604-005	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 285007)</b>										
CG2103697-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.0 mg/L	23.9 mg/L	96.3	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 285009)</b>										
CG2103697-003	Anonymous	carbon, total organic [TOC]	----	E355-L	24.0 mg/L	23.9 mg/L	101	70.0	130	----
<b>Total Metals (QCLot: 284286)</b>										
VA21B8510-001	Anonymous	aluminum, total	7429-90-5	E420	0.194 mg/L	0.2 mg/L	96.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		barium, total	7440-39-3	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 284286) - continued</b>										
VA21B8510-001	Anonymous	beryllium, total	7440-41-7	E420	0.0371 mg/L	0.04 mg/L	92.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00955 mg/L	0.01 mg/L	95.5	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	1.93 mg/L	2 mg/L	96.4	70.0	130	----
		lead, total	7439-92-1	E420	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0944 mg/L	0.1 mg/L	94.4	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		nickel, total	7440-02-0	E420	0.0377 mg/L	0.04 mg/L	94.2	70.0	130	----
		potassium, total	7440-09-7	E420	4.08 mg/L	4 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	----
		silicon, total	7440-21-3	E420	9.38 mg/L	10 mg/L	93.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00382 mg/L	0.004 mg/L	95.6	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		titanium, total	7440-32-6	E420	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		uranium, total	7440-61-1	E420	0.00406 mg/L	0.004 mg/L	102	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0994 mg/L	0.1 mg/L	99.4	70.0	130	----
		zinc, total	7440-66-6	E420	0.386 mg/L	0.4 mg/L	96.6	70.0	130	----
<b>Total Metals (QCLot: 284287)</b>										
VA21B8510-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
<b>Total Metals (QCLot: 284361)</b>										
CG2103706-002	LC_MW_ER4B_WG_Q3-20 21_N	mercury, total	7439-97-6	E508	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 284207)</b>										
CG2103698-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000978 mg/L	0.0001 mg/L	97.8	70.0	130	----
<b>Dissolved Metals (QCLot: 284381)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 284381) - continued</b>										
CG2103706-002	LC_MW_ER4B_WG_Q3-20 21_N	aluminum, dissolved	7429-90-5	E421	0.207 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0221 mg/L	0.02 mg/L	110	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0215 mg/L	0.02 mg/L	107	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00984 mg/L	0.01 mg/L	98.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00459 mg/L	0.004 mg/L	115	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.06 mg/L	2 mg/L	103	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0223 mg/L	0.02 mg/L	112	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.30 mg/L	4 mg/L	107	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0449 mg/L	0.04 mg/L	112	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.97 mg/L	10 mg/L	99.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00424 mg/L	0.004 mg/L	106	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00410 mg/L	0.004 mg/L	102	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0220 mg/L	0.02 mg/L	110	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0428 mg/L	0.04 mg/L	107	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.422 mg/L	0.4 mg/L	106	70.0	130	----
<b>Dissolved Metals (QCLot: 284382)</b>										
CG2103706-002	LC_MW_ER4B_WG_Q3-20 21_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0415 mg/L	0.04 mg/L	104	70.0	130	----



COC ID: **Q3 GW MW\_ER4A&B 20210829**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO								
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD				
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	ehns.bluffan@teck.com		x	x				
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			x				
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com		x	x				
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com		x	x				
City	Sparwood		Province	BC		City	Calgary		Province	AB		Email 4:	tanva.dick@teck.com		x	x
	V0B 2G0		Country	Canada		Postal Code	T1Y 7B5		Country	Canada		PO number	YPQ00739930			
	2S-8478					Phone Number	403 407 1794									

Environmental Division  
Calgary  
Work Order Reference  
**CG2103706**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	File	N	Y	Y	N	Y	N	N	N	N	N	N	N
								ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-Sulfide-T	ALS_Package-TKN/TOC	ALS_Package-EPH			
LC_MW_ER4A_WG_Q3-2021_N	LC_MW_ER4A	WG		29-Aug	13:35	G	8		1	1	1	1	1	1	1	1	1			
LC_MW_ER4B_WG_Q3-2021_N	LC_MW_ER4B	WG		29-Aug	14:30	G	8		1	1	1	1	1	1	1	1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
RECEIVED FOR ANALYSIS	D.Tymstra/T. Dick	30-Aug 8:50	GT	Aug 31

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	T. Dick/D.Tymstra	
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>[Signature]</i>	Date/Time
			August 30, 2021

90c



**Environmental**

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2104166**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : WG-Q3 20210916  
**Sampler** : T.Dick/D. Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 17-Sep-2021 10:00  
**Date Analysis Commenced** : 17-Sep-2021  
**Issue Date** : 15-Oct-2021 09:31

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

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## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jeanie Mark	Laboratory Analyst	Organics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Millicent Brentnall	Laboratory Analyst	Metals, Calgary, Alberta
Nicolina Zirpolo	Laboratory Analyst	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1104_ WG_Q3-2021_N P	LC_PIZP1105_ WG_Q3-2021_N P	WG_Q3-2021_0 07_CC3	WG_Q3-2021_0 08_MT3	WG_Q3-2021_0 09_RD2
Client sampling date / time					16-Sep-2021 13:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	
Analyte	CAS Number	Method	LOR	Unit	CG2104166-001 Result	CG2104166-002 Result	CG2104166-003 Result	CG2104166-004 Result	CG2104166-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	10.8	24.7	25.3	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	265	416	402	<1.0	<1.0	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	265	416	402	<1.0	<1.0	
conductivity	----	E100	2.0	µS/cm	1170	1340	1340	<2.0	<2.0	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	558	687	684	<0.50	<0.50	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	453	457	471	526	529	
pH	----	E108	0.10	pH units	7.68	7.37	7.36	5.01	4.91	
solids, total dissolved [TDS]	----	E162	10	mg/L	939	989	957	<10	<10	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1740	1740	1050	<1.0	<1.0	
turbidity	----	E121	0.10	NTU	884	1240	808	<0.10	<0.10	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	323	507	491	<1.0	<1.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0151	0.0376	<0.0050	0.240 <sup>RRV</sup>	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	2.92	2.36	2.44	<0.050	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	224	192	192	<0.10	<0.10	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.304	0.249	0.248	<0.020	<0.020	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.073	0.122	0.162	<0.050	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.472	0.0543	0.0410	<0.0050	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0063	0.0075	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	1.76 <sup>DLHC</sup>	2.06 <sup>DLHC</sup>	3.58 <sup>DLHC</sup>	<0.0020	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	63.6	105	105	<0.30	<0.30	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	10.4	1.92	1.96	<0.50	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	27.9	36.7	63.9	<0.50	<0.50	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1104_ WG_Q3-2021_N P	LC_PIZP1105_ WG_Q3-2021_N P	WG_Q3-2021_0 07_CC3	WG_Q3-2021_0 08_MT3	WG_Q3-2021_0 09_RD2
Client sampling date / time					16-Sep-2021 13:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	
Analyte	CAS Number	Method	LOR	Unit	CG2104166-001 Result	CG2104166-002 Result	CG2104166-003 Result	CG2104166-004 Result	CG2104166-005 Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	13.0	15.9	15.6	<0.10	<0.10	
cation sum	----	EC101	0.10	meq/L	11.9	14.5	14.4	<0.10	<0.10	
ion balance (cations/anions ratio)	----	EC101	0.010	%	91.5	91.2	92.3	100	100	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.42	4.60	4.00	<0.010	<0.010	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	8.63	12.5	9.65	<0.0030	<0.0030	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00174	0.00187	0.00182	<0.00010	<0.00010	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0115	0.00964	0.00808	<0.00010	<0.00010	
barium, total	7440-39-3	E420	0.00010	mg/L	0.532	0.795	0.606	<0.00010	<0.00010	
beryllium, total	7440-41-7	E420	0.020	µg/L	0.818	0.936	0.718	<0.020	<0.020	
bismuth, total	7440-69-9	E420	0.000050	mg/L	0.000225	0.000236	0.000187	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	0.030	0.031	0.028	<0.010	<0.010	
cadmium, total	7440-43-9	E420	0.0050	µg/L	2.04	2.27	1.75	<0.0050	<0.0050	
calcium, total	7440-70-2	E420	0.050	mg/L	235	302	270	<0.050	<0.050	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.0248	0.0237	0.0178	<0.00010	<0.00010	
cobalt, total	7440-48-4	E420	0.10	µg/L	9.70	13.3	9.60	<0.10	<0.10	
copper, total	7440-50-8	E420	0.00050	mg/L	0.0332	0.0315	0.0241	<0.00050	<0.00050	
iron, total	7439-89-6	E420	0.010	mg/L	27.6	29.3	24.1	<0.010	<0.010	
lead, total	7439-92-1	E420	0.000050	mg/L	0.0126	0.0130	0.00977	<0.000050	<0.000050	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0328	0.0390	0.0335	<0.0010	<0.0010	
magnesium, total	7439-95-4	E420	0.0050	mg/L	68.3	85.1	74.2	<0.0050	<0.0050	
manganese, total	7439-96-5	E420	0.00010	mg/L	1.64	2.29	1.81	<0.00010	<0.00010	
mercury, total	7439-97-6	E508	0.0000050	mg/L	----	0.000265	0.000123	<0.0000050	<0.0000050	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00284	0.00147	0.00157	<0.000050	<0.000050	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0310	0.0333	0.0256	<0.00050	<0.00050	
potassium, total	7440-09-7	E420	0.050	mg/L	5.08	4.85	4.44	<0.050	<0.050	
selenium, total	7782-49-2	E420	0.050	µg/L	1.06	0.702	0.583	<0.050	<0.050	
silicon, total	7440-21-3	E420	0.10	mg/L	16.6	20.7	17.7	<0.10	<0.10	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000748	0.000413	0.000306	<0.000010	<0.000010	
sodium, total	17341-25-2	E420	0.050	mg/L	13.8	14.2	14.1	<0.050	<0.050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1104_ WG_Q3-2021_N P	LC_PIZP1105_ WG_Q3-2021_N P	WG_Q3-2021_0 07_CC3	WG_Q3-2021_0 08_MT3	WG_Q3-2021_0 09_RD2
Client sampling date / time					16-Sep-2021 13:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	
Analyte	CAS Number	Method	LOR	Unit	CG2104166-001 Result	CG2104166-002 Result	CG2104166-003 Result	CG2104166-004 Result	CG2104166-005 Result	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.671	0.599	0.580	<0.00020	<0.00020	
sulfur, total	7704-34-9	E420	0.50	mg/L	22.0	34.5	36.3	<0.50	<0.50	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000489	0.000662	0.000524	<0.000010	<0.000010	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00239	0.00109	0.00071	<0.00010	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0293	0.0330	0.0272	<0.00030	<0.00030	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00499	0.00170	0.00129	<0.000010	<0.000010	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0328	0.0338	0.0269	<0.00050	<0.00050	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.144	0.194	0.151	<0.0030	<0.0030	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0024	0.0033	0.0028	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00091	0.00096	0.00098	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00024	<0.00010	<0.00010	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.300	0.115	0.112	<0.00010	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	0.020	0.020	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.100	0.105	0.142	<0.0050	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	145	183	182	<0.050	<0.050	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.11	<0.10	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00027	0.00024	0.00027	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0232	0.0209	0.0211	<0.0010	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	47.6	55.8	55.7	<0.0050	<0.0050	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0963	0.0389	0.0822	<0.00010	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00195	0.000378	0.000297	<0.000050	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00248	0.00141	0.00143	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.70	2.12	2.12	<0.050	<0.050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1104_ WG_Q3-2021_N P	LC_PIZP1105_ WG_Q3-2021_N P	WG_Q3-2021_0 07_CC3	WG_Q3-2021_0 08_MT3	WG_Q3-2021_0 09_RD2
Client sampling date / time					16-Sep-2021 13:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55	16-Sep-2021 14:55
Analyte	CAS Number	Method	LOR	Unit	CG2104166-001 Result	CG2104166-002 Result	CG2104166-003 Result	CG2104166-004 Result	CG2104166-005 Result	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.266	0.272	0.236	<0.050	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.53	4.95	5.03	<0.050	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	14.7	15.7	15.6	<0.050	<0.050	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.494	0.421	0.411	<0.00020	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	20.7	35.1	34.7	<0.50	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000075	0.000046	0.000043	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00044	0.00020	0.00020	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00327	0.000320	0.000311	<0.000010	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0016	0.0025	0.0033	<0.0010	----	
dissolved mercury filtration location	----	EP509	-	-	Laboratory	Laboratory	Laboratory	Field	----	
dissolved metals filtration location	----	EP421	-	-	Laboratory	Laboratory	Laboratory	Field	Laboratory	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	----	<0.25	<0.25	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	----	<0.40	0.47	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	----	0.38	0.47	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	----	0.43	0.52	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	----	82.0	85.0	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104166</b>	Page	: 1 of 23
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 17-Sep-2021 10:00
PO	: VPO00739930	Issue Date	: 15-Oct-2021 09:32
C-O-C number	: WG-Q3 20210916		
Sampler	: T.Dick/D. Tymstra		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E298	16-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E298	16-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_007_CC3	E298	16-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_008_MT3	E298	16-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_009_RD2	E298	16-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q3-2021_NP	E235.Br-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q3-2021_NP	E235.Br-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE WG_Q3-2021_007_CC3	E235.Br-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE WG_Q3-2021_008_MT3	E235.Br-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE WG_Q3-2021_009_RD2	E235.Br-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E235.Cl-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E235.Cl-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE WG_Q3-2021_007_CC3	E235.Cl-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE WG_Q3-2021_008_MT3	E235.Cl-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE WG_Q3-2021_009_RD2	E235.Cl-L	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E378-U	16-Sep-2021	----	----	----		17-Sep-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E378-U	16-Sep-2021	----	----	----		17-Sep-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE WG_Q3-2021_007_CC3	E378-U	16-Sep-2021	----	----	----		17-Sep-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE WG_Q3-2021_008_MT3	E378-U	16-Sep-2021	----	----	----		17-Sep-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE WG_Q3-2021_009_RD2	E378-U	16-Sep-2021	----	----	----		17-Sep-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E235.F	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E235.F	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE WG_Q3-2021_007_CC3	E235.F	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE WG_Q3-2021_008_MT3	E235.F	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE WG_Q3-2021_009_RD2	E235.F	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E235.NO3-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E235.NO3-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE WG_Q3-2021_007_CC3	E235.NO3-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE WG_Q3-2021_008_MT3	E235.NO3-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE WG_Q3-2021_009_RD2	E235.NO3-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E235.NO2-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E235.NO2-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE WG_Q3-2021_007_CC3	E235.NO2-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE WG_Q3-2021_008_MT3	E235.NO2-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> WG_Q3-2021_009_RD2	E235.NO2-L	16-Sep-2021	----	----	----		18-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q3-2021_NP	E235.SO4	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> LC_PIZP1105_WG_Q3-2021_NP	E235.SO4	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> WG_Q3-2021_007_CC3	E235.SO4	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> WG_Q3-2021_008_MT3	E235.SO4	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> WG_Q3-2021_009_RD2	E235.SO4	16-Sep-2021	----	----	----		18-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E318	16-Sep-2021	22-Sep-2021	----	----		27-Sep-2021	28 days	11 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E318	16-Sep-2021	22-Sep-2021	----	----		27-Sep-2021	28 days	11 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_007_CC3	E318	16-Sep-2021	22-Sep-2021	----	----		27-Sep-2021	28 days	11 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_008_MT3	E318	16-Sep-2021	22-Sep-2021	----	----		27-Sep-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_009_RD2	E318	16-Sep-2021	22-Sep-2021	----	----		27-Sep-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E372-U	16-Sep-2021	22-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E372-U	16-Sep-2021	22-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_007_CC3	E372-U	16-Sep-2021	22-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_008_MT3	E372-U	16-Sep-2021	22-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_009_RD2	E372-U	16-Sep-2021	22-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q3-2021_008_MT3	E421.Cr-L	16-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E421.Cr-L	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E421.Cr-L	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q3-2021_007_CC3	E421.Cr-L	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> WG_Q3-2021_007_CC3	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> WG_Q3-2021_008_MT3	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q3-2021_009_RD2	E421	16-Sep-2021	27-Sep-2021	----	----		27-Sep-2021	180 days	11 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q3-2021_008_MT3	E421	16-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E421	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓	





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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E421	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q3-2021_007_CC3	E421	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_PIZP1105_WG_Q3-2021_NP	E601A	16-Sep-2021	23-Sep-2021	14 days	7 days	✓	24-Sep-2021	40 days	1 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> WG_Q3-2021_007_CC3	E601A	16-Sep-2021	23-Sep-2021	14 days	7 days	✓	24-Sep-2021	40 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E358-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E358-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> WG_Q3-2021_007_CC3	E358-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> WG_Q3-2021_008_MT3	E358-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E355-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E355-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_007_CC3	E355-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_008_MT3	E355-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q3-2021_009_RD2	E355-L	16-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q3-2021_NP	E283	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q3-2021_NP	E283	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> WG_Q3-2021_007_CC3	E283	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> WG_Q3-2021_008_MT3	E283	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> WG_Q3-2021_009_RD2	E283	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE WG_Q3-2021_007_CC3	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE WG_Q3-2021_008_MT3	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE WG_Q3-2021_009_RD2	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE WG_Q3-2021_007_CC3	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE WG_Q3-2021_008_MT3	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE WG_Q3-2021_009_RD2	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E125	16-Sep-2021	----	----	----		25-Sep-2021	0.25 hrs	214 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE WG_Q3-2021_007_CC3	E125	16-Sep-2021	----	----	----		25-Sep-2021	0.25 hrs	214 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE WG_Q3-2021_008_MT3	E125	16-Sep-2021	----	----	----		25-Sep-2021	0.25 hrs	214 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E125	16-Sep-2021	----	----	----		25-Sep-2021	0.25 hrs	215 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE WG_Q3-2021_009_RD2	E125	16-Sep-2021	----	----	----		25-Sep-2021	0.25 hrs	215 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	285 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE WG_Q3-2021_007_CC3	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	285 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE WG_Q3-2021_008_MT3	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	285 hrs		* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE WG_Q3-2021_009_RD2	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	285 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	286 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZP1104_WG_Q3-2021_NP	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZP1105_WG_Q3-2021_NP	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE WG_Q3-2021_007_CC3	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE WG_Q3-2021_008_MT3	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE WG_Q3-2021_009_RD2	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] LC_PIZP1104_WG_Q3-2021_NP	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] LC_PIZP1105_WG_Q3-2021_NP	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> WG_Q3-2021_007_CC3	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> WG_Q3-2021_008_MT3	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> WG_Q3-2021_009_RD2	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q3-2021_NP	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q3-2021_NP	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> WG_Q3-2021_007_CC3	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> WG_Q3-2021_008_MT3	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> WG_Q3-2021_009_RD2	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> WG_Q3-2021_007_CC3	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> WG_Q3-2021_008_MT3	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> WG_Q3-2021_009_RD2	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E508	16-Sep-2021	----	----	----		24-Sep-2021	28 days	8 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> WG_Q3-2021_007_CC3	E508	16-Sep-2021	----	----	----		24-Sep-2021	28 days	8 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> WG_Q3-2021_008_MT3	E508	16-Sep-2021	----	----	----		24-Sep-2021	28 days	8 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> WG_Q3-2021_009_RD2	E508	16-Sep-2021	----	----	----		24-Sep-2021	28 days	8 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_PIZP1104_WG_Q3-2021_NP	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1105_WG_Q3-2021_NP	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> WG_Q3-2021_007_CC3	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> WG_Q3-2021_008_MT3	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> WG_Q3-2021_009_RD2	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	304853	2	31	6.4	5.0	✓
Alkalinity Species by Titration	E290	304800	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	304918	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	295886	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	295887	1	20	5.0	5.0	✓
Conductivity in Water	E100	304798	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300110	2	24	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301260	2	35	5.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300109	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303804	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	295349	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	295883	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	295885	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	295888	1	20	5.0	5.0	✓
ORP by Electrode	E125	302473	2	40	5.0	5.0	✓
pH by Meter	E108	304799	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	295884	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	300151	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300563	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	299955	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	301298	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300562	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303812	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	297807	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	296455	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	304853	2	31	6.4	5.0	✓
Alkalinity Species by Titration	E290	304800	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	304918	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	299782	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	295886	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	295887	1	20	5.0	5.0	✓
Conductivity in Water	E100	304798	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300110	2	24	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301260	2	35	5.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300109	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303804	1	17	5.8	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	295349	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	295883	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	295885	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	295888	1	20	5.0	5.0	✓
ORP by Electrode	E125	302473	2	40	5.0	5.0	✓
pH by Meter	E108	304799	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	295884	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	300151	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300563	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	299955	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	301298	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300562	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303812	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	297807	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	300144	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	296455	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	304853	2	31	6.4	5.0	✓
Alkalinity Species by Titration	E290	304800	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	304918	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	299782	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	295886	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	295887	1	20	5.0	5.0	✓
Conductivity in Water	E100	304798	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300110	2	24	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301260	2	35	5.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300109	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303804	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	295349	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	295883	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	295885	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	295888	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	295884	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	300151	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300563	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	299955	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	301298	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300562	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303812	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	297807	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	300144	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<i>Method Blanks (MB) - Continued</i>							
Turbidity by Nephelometry	E121	296455	1	20	5.0	5.0	✓
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	304918	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	295886	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	295887	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	300110	2	24	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301260	2	35	5.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	300109	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303804	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	295349	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	295883	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	295885	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	295888	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	295884	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300563	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	299955	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	301298	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300562	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303812	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	297807	2	40	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHC - EPH by GC-FID	E601A  Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
	Vancouver - Environmental			
PHCs and PAHs Hexane Extraction	EP601	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
	Calgary - Environmental			

## QUALITY CONTROL REPORT

**Work Order** : **CG2104166**

**Page** : 1 of 26

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : WG-Q3 20210916  
**Sampler** : T.Dick/D. Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 17-Sep-2021 10:00  
**Date Analysis Commenced** : 17-Sep-2021  
**Issue Date** : 15-Oct-2021 09:31

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
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Erin Sanchez		Inorganics, Calgary, Alberta
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Team Leader - Metals  
Analyst  
  
Analyst  
Supervisor - Water Quality Instrumentation  
Analyst

Metals, Burnaby, British Columbia  
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Metals, Burnaby, British Columbia  
Inorganics, Burnaby, British Columbia  
Inorganics, Calgary, Alberta

Page : 3 of 26  
Work Order : CG2104166  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 296455)</b>											
CG2104165-017	Anonymous	turbidity	----	E121	0.10	NTU	1.33	1.45	8.78%	15%	----
<b>Physical Tests (QC Lot: 300151)</b>											
CG2104165-002	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	179	187	8	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 300152)</b>											
CG2104166-005	WG_Q3-2021_009_RD2	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 302473)</b>											
CG2104165-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	477	474	0.526%	15%	----
<b>Physical Tests (QC Lot: 302474)</b>											
CG2104166-005	WG_Q3-2021_009_RD2	oxidation-reduction potential [ORP]	----	E125	0.10	mV	529	536	1.35%	15%	----
<b>Physical Tests (QC Lot: 304798)</b>											
CG2104165-015	Anonymous	conductivity	----	E100	2.0	µS/cm	230	229	0.436%	10%	----
<b>Physical Tests (QC Lot: 304799)</b>											
CG2104165-015	Anonymous	pH	----	E108	0.10	pH units	8.29	8.30	0.120%	4%	----
<b>Physical Tests (QC Lot: 304800)</b>											
CG2104165-015	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	102	104	2.24%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	102	104	2.24%	20%	----
<b>Physical Tests (QC Lot: 304853)</b>											
CG2104165-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 304854)</b>											
CG2104166-005	WG_Q3-2021_009_RD2	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 295349)</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-2021_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 295883)</b>											
CG2104165-007	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.084	0.084	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 295884)</b>											
CG2104165-007	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	24.1	24.1	0.158%	20%	----
<b>Anions and Nutrients (QC Lot: 295885)</b>											
CG2104165-009	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.193	0.192	0.312%	20%	----
<b>Anions and Nutrients (QC Lot: 295886)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 295886) - continued</b>											
CG2104165-010	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 295887)</b>											
CG2104165-010	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.15	2.17	0.763%	20%	----
<b>Anions and Nutrients (QC Lot: 295888)</b>											
CG2104165-010	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0036	0.0035	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 297807)</b>											
CG2104165-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0024	0.0032	0.0008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 297808)</b>											
CG2104166-004	WG_Q3-2021_008_MT3	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 299955)</b>											
CG2104155-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.250	mg/L	8.48	7.96	6.42%	20%	----
<b>Anions and Nutrients (QC Lot: 304918)</b>											
CG2104161-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.162	0.160	1.24%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 303804)</b>											
CG2104162-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.16	1.21	0.05	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 303812)</b>											
CG2104162-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.15	1.30	0.14	Diff <2x LOR	----
<b>Total Metals (QC Lot: 300562)</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-2021_NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	8.63	8.82	2.14%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00174	0.00176	1.23%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0115	0.0117	2.32%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.532	0.540	1.46%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	0.818 µg/L	0.000804	1.66%	20%	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	0.000225	0.000232	0.000008	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.030	0.030	0.0004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	2.04 µg/L	0.00206	0.785%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	235	234	0.574%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	9.70 µg/L	0.00985	1.52%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.0332	0.0330	0.376%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	27.6	28.5	3.39%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.0126	0.0127	0.888%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0328	0.0328	0.0523%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	68.3	67.8	0.792%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	1.64	1.62	1.06%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00284	0.00299	5.41%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 300562) - continued</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-20 21_NP	nickel, total	7440-02-0	E420	0.00050	mg/L	0.0310	0.0314	1.35%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	5.08	5.04	0.813%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	1.06 µg/L	0.00103	3.36%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	16.6	17.0	1.95%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000748	0.000769	2.77%	20%	----
		sodium, total	17341-25-2	E420	0.050	mg/L	13.8	13.5	2.02%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.671	0.683	1.76%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	22.0	21.6	2.04%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000489	0.000507	3.52%	20%	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00239	0.00241	0.732%	20%	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.0293	0.0304	3.67%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00499	0.00492	1.44%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0328	0.0335	1.89%	20%	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.144	0.143	0.604%	20%	----		
<b>Total Metals (QC Lot: 300563)</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-20 21_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.0248	0.0254	2.28%	20%	----
<b>Total Metals (QC Lot: 301298)</b>											
CG2104166-002	LC_PIZP1105_WG_Q3-20 21_NP	mercury, total	7439-97-6	E508	0.0000500	mg/L	0.000265	0.000256	0.0000088	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 300109)</b>											
CG2104166-004	WG_Q3-2021_008_MT3	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 300109) - continued</b>											
CG2104166-004	WG_Q3-2021_008_MT3	manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----		
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----		
<b>Dissolved Metals (QC Lot: 300110)</b>											
CG2104166-004	WG_Q3-2021_008_MT3	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 300136)</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-2021_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0024	0.0026	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00091	0.00091	0.000002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00024	0.00025	0.000009	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.300	0.291	3.06%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	0.022	0.0004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.100 µg/L	0.000101	1.30%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	145	144	0.612%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.11 µg/L	0.00012	0.000004	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00027	0.00029	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0232	0.0239	2.92%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	47.6	48.2	1.27%	20%	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0963	0.0938	2.61%	20%	----		



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 300136) - continued</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-20 21_NP	molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00195	0.00194	0.665%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00248	0.00250	0.00002	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.70	2.74	1.64%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.266 µg/L	0.000210	0.000056	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.53	4.50	0.478%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	14.7	14.9	1.44%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.494	0.494	0.0825%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	20.7	20.3	1.77%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000075	0.000080	0.000005	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00044	0.00043	0.00001	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00327	0.00336	2.91%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0016	0.0015	0.00007	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 300137)</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-20 21_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 301260)</b>											
CG2104161-008	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 301297)</b>											
CG2104166-001	LC_PIZP1104_WG_Q3-20 21_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 303331)</b>											
CG2104125-012	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00050	mg/L	0.00094	0.00100	0.00007	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00050	mg/L	0.00069	0.00070	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00050	mg/L	0.0130	0.0131	1.08%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000250	mg/L	0.0000636	0.0000650	0.0000014	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.250	mg/L	202	207	2.89%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00050	mg/L	0.00614	0.00632	2.78%	20%	----
		copper, dissolved	7440-50-8	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 303331) - continued</b>											
CG2104125-012	Anonymous	lead, dissolved	7439-92-1	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0050	mg/L	0.0284	0.0290	0.0006	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0250	mg/L	142	143	0.284%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00050	mg/L	0.0626	0.0618	1.22%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000250	mg/L	0.00506	0.00517	2.11%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00250	mg/L	0.0324	0.0338	4.00%	20%	----
		potassium, dissolved	7440-09-7	E421	0.250	mg/L	3.59	3.63	1.30%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000250	mg/L	0.0593	0.0628	5.86%	20%	----
		silicon, dissolved	7440-21-3	E421	0.250	mg/L	3.00	3.10	3.37%	20%	----
		silver, dissolved	7440-22-4	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.250	mg/L	3.94	3.99	1.05%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00100	mg/L	0.247	0.254	2.74%	20%	----
		sulfur, dissolved	7704-34-9	E421	2.50	mg/L	250	262	5.06%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000050	mg/L	0.000067	0.000071	0.000004	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00150	mg/L	<0.00150	<0.00150	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000050	mg/L	0.00876	0.00886	1.18%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0050	mg/L	0.0108	0.0120	0.0011	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 296455)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 300144)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 300151)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 300152)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 304798)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 304800)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 304853)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 304854)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 295349)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 295883)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 295884)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 295885)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 295886)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 295887)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 295888)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 297807)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 297807) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 297808)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 299955)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 304918)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 303804)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 303812)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 300562)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 300562) - continued</b>						
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 300563)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 301298)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 300109)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 300109) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 300110)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 300136)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 300136) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 300137)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 301260)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 301297)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 303331)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 303331) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Hydrocarbons (QCLot: 299782)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 296455)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	---
<b>Physical Tests (QCLot: 300144)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.2	85.0	115	---
<b>Physical Tests (QCLot: 300151)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	97.7	85.0	115	---
<b>Physical Tests (QCLot: 300152)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 302473)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Physical Tests (QCLot: 302474)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Physical Tests (QCLot: 304798)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	96.7	90.0	110	---
<b>Physical Tests (QCLot: 304799)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 304800)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 304853)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 304854)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 295349)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	103	80.0	120	---
<b>Anions and Nutrients (QCLot: 295883)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 295884)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 295885)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 295886)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	109	85.0	115	---
<b>Anions and Nutrients (QCLot: 295887)</b>									



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 295887) - continued</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 295888)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 297807)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	91.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 297808)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	91.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 299955)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 304918)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.4	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 303804)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	84.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 303812)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	88.6	80.0	120	----
<b>Total Metals (QCLot: 300562)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	108	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.3	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.5	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.7	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	96.9	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.6	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.3	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	100.0	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 300562) - continued</b>									
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	97.8	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	109	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 300563)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Total Metals (QCLot: 301298)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	94.6	80.0	120	----
<b>Dissolved Metals (QCLot: 300109)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	109	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	112	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	108	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.0	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	110	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	106	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	108	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 300109) - continued</b>									
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	111	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	111	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	106	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	112	80.0	120	----
<b>Dissolved Metals (QCLot: 300110)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
<b>Dissolved Metals (QCLot: 300136)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	110	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	114	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	110	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	109	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	107	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	109	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 300136) - continued</b>									
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	113	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	90.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	108	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	105	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	104	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 300137)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	92.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.0	80.0	120	----
<b>Dissolved Metals (QCLot: 303331)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	93.9	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	92.4	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	92.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.9	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	95.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	91.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.7	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	94.2	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	105	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	91.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	93.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.5	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	93.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	97.0	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	93.7	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.2	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	96.2	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 303331) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	93.0	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.1	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	92.4	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.5	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	92.7	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	86.3	80.0	120	----
<b>Hydrocarbons (QCLot: 299782)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	74.4	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	71.3	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	73.2	70.0	130	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 295349)</b>										
CG2104166-002	LC_PIZP1105_WG_Q3-2021_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0574 mg/L	0.05 mg/L	115	70.0	130	----
<b>Anions and Nutrients (QCLot: 295883)</b>										
CG2104165-008	Anonymous	fluoride	16984-48-8	E235.F	1.07 mg/L	1 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 295884)</b>										
CG2104165-008	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 295885)</b>										
CG2104165-010	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 295886)</b>										
CG2104165-011	Anonymous	bromide	24959-67-9	E235.Br-L	0.543 mg/L	0.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 295887)</b>										
CG2104165-011	Anonymous	chloride	16887-00-6	E235.Cl-L	100 mg/L	100 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 295888)</b>										
CG2104165-011	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.511 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 297807)</b>										
CG2104165-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0519 mg/L	0.0676 mg/L	76.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 297808)</b>										
CG2104166-005	WG_Q3-2021_009_RD2	phosphorus, total	7723-14-0	E372-U	0.0597 mg/L	0.0676 mg/L	88.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 299955)</b>										
CG2104162-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.52 mg/L	2.5 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 304918)</b>										
CG2104161-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0932 mg/L	0.1 mg/L	93.2	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 303804)</b>										
CG2104162-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.8 mg/L	23.9 mg/L	99.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 303812)</b>										
CG2104162-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.6 mg/L	23.9 mg/L	107	70.0	130	----
<b>Total Metals (QCLot: 300562)</b>										
CG2104166-002	LC_PIZP1105_WG_Q3-2021_NP	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 300562) - continued</b>										
CG2104166-002	LC_PIZP1105_WG_Q3-2021_NP	antimony, total	7440-36-0	E420	0.0425 mg/L	0.04 mg/L	106	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0729 mg/L	0.08 mg/L	91.1	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		boron, total	7440-42-8	E420	0.180 mg/L	0.2 mg/L	90.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00750 mg/L	0.008 mg/L	93.7	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0357 mg/L	0.04 mg/L	89.2	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.0363 mg/L	0.04 mg/L	90.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.187 mg/L	0.2 mg/L	93.4	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0434 mg/L	0.04 mg/L	108	70.0	130	----
		nickel, total	7440-02-0	E420	0.0694 mg/L	0.08 mg/L	86.8	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0778 mg/L	0.08 mg/L	97.2	70.0	130	----
		silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		silver, total	7440-22-4	E420	0.00836 mg/L	0.008 mg/L	104	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00711 mg/L	0.008 mg/L	88.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
		titanium, total	7440-32-6	E420	0.0794 mg/L	0.08 mg/L	99.3	70.0	130	----
		uranium, total	7440-61-1	E420	0.00756 mg/L	0.008 mg/L	94.6	70.0	130	----
		vanadium, total	7440-62-2	E420	0.197 mg/L	0.2 mg/L	98.5	70.0	130	----
		zinc, total	7440-66-6	E420	0.729 mg/L	0.8 mg/L	91.2	70.0	130	----
<b>Total Metals (QCLot: 300563)</b>										
CG2104166-002	LC_PIZP1105_WG_Q3-2021_NP	chromium, total	7440-47-3	E420.Cr-L	0.0743 mg/L	0.08 mg/L	92.9	70.0	130	----
<b>Total Metals (QCLot: 301298)</b>										
CG2104166-003	WG_Q3-2021_007_CC3	mercury, total	7439-97-6	E508	ND mg/L	0.0001 mg/L	ND	70.0	130	----
<b>Dissolved Metals (QCLot: 300109)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 300109) - continued</b>										
CG2104171-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.209 mg/L	0.2 mg/L	105	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0229 mg/L	0.02 mg/L	114	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00906 mg/L	0.01 mg/L	90.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.092 mg/L	0.1 mg/L	92.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00436 mg/L	0.004 mg/L	109	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0216 mg/L	0.02 mg/L	108	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.04 mg/L	2 mg/L	102	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0921 mg/L	0.1 mg/L	92.1	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0430 mg/L	0.04 mg/L	108	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.42 mg/L	4 mg/L	111	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0467 mg/L	0.04 mg/L	117	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.19 mg/L	10 mg/L	91.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00409 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	2.50 mg/L	2 mg/L	125	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.3 mg/L	20 mg/L	101	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00411 mg/L	0.004 mg/L	103	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.111 mg/L	0.1 mg/L	111	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.439 mg/L	0.4 mg/L	110	70.0	130	----
<b>Dissolved Metals (QCLot: 300110)</b>										
CG2104171-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0442 mg/L	0.04 mg/L	110	70.0	130	----
<b>Dissolved Metals (QCLot: 300136)</b>										
CG2104166-003	WG_Q3-2021_007_CC3	aluminum, dissolved	7429-90-5	E421	0.203 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0196 mg/L	0.02 mg/L	98.3	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 300136) - continued</b>										
CG2104166-003	WG_Q3-2021_007_CC3	arsenic, dissolved	7440-38-2	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00880 mg/L	0.01 mg/L	88.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.090 mg/L	0.1 mg/L	90.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0185 mg/L	0.02 mg/L	92.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0940 mg/L	0.1 mg/L	94.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.08 mg/L	4 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0431 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.60 mg/L	10 mg/L	86.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00376 mg/L	0.004 mg/L	94.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00375 mg/L	0.004 mg/L	93.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00397 mg/L	0.004 mg/L	99.3	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.373 mg/L	0.4 mg/L	93.3	70.0	130	----
<b>Dissolved Metals (QCLot: 300137)</b>										
CG2104166-003	WG_Q3-2021_007_CC3	chromium, dissolved	7440-47-3	E421.Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 301260)</b>										
CG2104161-009	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000943 mg/L	0.0001 mg/L	94.3	70.0	130	----
<b>Dissolved Metals (QCLot: 301297)</b>										
CG2104166-002	LC_PIZP1105_WG_Q3-2021_NP	mercury, dissolved	7439-97-6	E509	0.0000936 mg/L	0.0001 mg/L	93.6	70.0	130	----



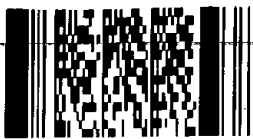
Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 303331)</b>										
CG2104125-013	Anonymous	aluminum, dissolved	7429-90-5	E421	1.72 mg/L	2 mg/L	86.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.184 mg/L	0.2 mg/L	92.0	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.166 mg/L	0.2 mg/L	83.1	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.178 mg/L	0.2 mg/L	89.3	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.327 mg/L	0.4 mg/L	81.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0857 mg/L	0.1 mg/L	85.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.835 mg/L	1 mg/L	83.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0346 mg/L	0.04 mg/L	86.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	33.9 mg/L	40 mg/L	84.8	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.172 mg/L	0.2 mg/L	86.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.172 mg/L	0.2 mg/L	86.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	17.0 mg/L	20 mg/L	85.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.174 mg/L	0.2 mg/L	87.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.878 mg/L	1 mg/L	87.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	8.32 mg/L	10 mg/L	83.2	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.170 mg/L	0.2 mg/L	84.8	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.170 mg/L	0.2 mg/L	85.0	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.343 mg/L	0.4 mg/L	85.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	36.7 mg/L	40 mg/L	91.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.356 mg/L	0.4 mg/L	89.1	70.0	130	----
		silicon, dissolved	7440-21-3	E421	86.5 mg/L	100 mg/L	86.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0368 mg/L	0.04 mg/L	91.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	17.5 mg/L	20 mg/L	87.5	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.172 mg/L	0.2 mg/L	85.9	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	170 mg/L	200 mg/L	84.9	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0351 mg/L	0.04 mg/L	87.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.176 mg/L	0.2 mg/L	87.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.361 mg/L	0.4 mg/L	90.2	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0356 mg/L	0.04 mg/L	89.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.845 mg/L	1 mg/L	84.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.37 mg/L	4 mg/L	84.3	70.0	130	----

COC ID: **WG-Q3 20210916**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	shvets.lyudmyla@teck.com	X	X
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		X
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	X	X
	th Hwy 43							Email 4:	Shanise.fossen@teck.com	X	X
	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	shanise.fossen@teck.com	X	X
	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number			
	478			Phone Number	403 407 1794						

Environmental Division  
Calgary  
Work Order Reference  
**CG2104166**



Telephone : +1 403 407 1800

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED									
								ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA		
LC_PIZP1104_WG_Q3-2021_NP	LC_PIZP1104	WG		16-Sep	13:55	G	6	1		1		1	1	1	1	1	
LC_PIZP1105_WG_Q3-2021_NP	LC_PIZP1105	WG		16-Sep	14:55	G	9	1	2	1	1	1	1	1	1	1	
WG_Q3-2021_007_CC3	LC_PIZP1105	WG		16-Sep	14:55	G	9	1	2	1	1	1	1	1	1	1	
WG_Q3-2021_008_MT3	LC_PIZP1105	WG		16-Sep	14:55	G	7	1		1	1	1	1	1	1	1	
WG_Q3-2021_009_RD2	LC_RD2	WG		16-Sep	14:55	G	4			1		1		1	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
PLEASE FORW. ADM. THIS SAMPLES TO ALS BERNABY FOR ANALYSIS Samples that required filtering did not get filtered or preserved.	D.Tymstra/T.Dick	16-Sep	<i>[Signature]</i>	17/09 10:00

SERVICE REQUEST (rush - subject to availability)	Regular (default)	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
	X			

Sampler's Name	Mobile #
T.Dick/D. Tymstra	
Sampler's Signature	Date/Time
<i>[Signature]</i>	September 16, 2021







## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2104185**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : WG-Q3 20210917  
**Sampler** : Drake Tymstra, Tanya Dick  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 18-Sep-2021 08:50  
**Date Analysis Commenced** : 18-Sep-2021  
**Issue Date** : 07-Oct-2021 12:07

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					LC_PIZDC1306 _WG_Q3-2021_ NP	LC_PIZDC1307 _WG_Q3-2021_ NP	LC_PIZDC1308 _WG_Q3-2021_ NP	----	----
Client sampling date / time					17-Sep-2021 12:00	17-Sep-2021 09:45	17-Sep-2021 10:40	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2104185-001 Result	CG2104185-002 Result	CG2104185-003 Result	----- ---	----- ---
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	4.3	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	268	233	399	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	6.0	<1.0	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	268	239	399	----	----
conductivity	----	E100	2.0	µS/cm	461	383	660	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	267	180	366	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	432	460	471	----	----
pH	----	E108	0.10	pH units	8.23	8.32	7.99	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	278	222	396	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	4.6	3.5	<1.0	----	----
turbidity	----	E121	0.10	NTU	3.96	12.0	0.58	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	327	284	487	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	3.6	<1.0	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.103	0.0071	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.12	0.16	1.46	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.137	0.500	0.137	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.063	0.179	0.089	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.132	0.0090	0.0656	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0.0028	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0031	0.0136	<0.0020	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	6.46	<0.30	5.64	----	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.36	2.01	3.17	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.19	2.04	2.90	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1306 _WG_Q3-2021_ NP	LC_PIZDC1307 _WG_Q3-2021_ NP	LC_PIZDC1308 _WG_Q3-2021_ NP	----	----
Client sampling date / time					17-Sep-2021 12:00	17-Sep-2021 09:45	17-Sep-2021 10:40	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104185-001 Result	CG2104185-002 Result	CG2104185-003 Result	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.51	4.81	8.14	----	----	
cation sum	----	EC101	0.10	meq/L	5.43	4.40	7.45	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	98.5	91.5	91.5	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.731	4.45	4.42	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0385	0.0132	0.0058	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00022	<0.00010	<0.00010	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	0.00164	<0.00010	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.174	1.51	0.338	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	0.024	0.012	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.116	<0.0200 <sup>DLM</sup>	0.174	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	61.0	36.7	92.0	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	0.65	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	0.00054	<0.00050	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.036	1.31	0.087	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000142	<0.000050	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0104	0.0692	0.0097	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	23.0	19.9	29.5	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00173	0.00944	0.0256	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00208	0.0336	0.00228	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00113	<0.00050	0.00130	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.02	4.96	2.10	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	3.02	<0.050	0.077	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.98	2.72	5.01	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	0.733	13.4	1.91	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0786	0.154	0.118	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1306 _WG_Q3-2021_ NP	LC_PIZDC1307 _WG_Q3-2021_ NP	LC_PIZDC1308 _WG_Q3-2021_ NP	----	----
Client sampling date / time					17-Sep-2021 12:00	17-Sep-2021 09:45	17-Sep-2021 10:40	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104185-001 Result	CG2104185-002 Result	CG2104185-003 Result	-----	-----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	2.45	<0.50	1.64	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0.000019	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00090 <sup>DLM</sup>	<0.00060 <sup>DLM</sup>	<0.00030	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000887	0.000031	0.00156	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00086	<0.00050	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0034	0.0065	<0.0030	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0016	0.0014	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00020	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00157	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.165	1.41	0.300	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.024	0.012	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.121	<0.0150 <sup>DLM</sup>	0.0854	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	67.0	40.0	99.3	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	0.65	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00049	<0.00020	0.00054	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	1.02	0.038	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0112	0.0774	0.0099	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	24.3	19.5	28.6	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.00800	0.0249	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00187	0.0319	0.00213	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00105	<0.00050	0.00125	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.20	5.12	2.14	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	3.67	<0.050	0.091	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1306 _WG_Q3-2021_ NP	LC_PIZDC1307 _WG_Q3-2021_ NP	LC_PIZDC1308 _WG_Q3-2021_ NP	----	----
Client sampling date / time					17-Sep-2021 12:00	17-Sep-2021 09:45	17-Sep-2021 10:40	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104185-001 Result	CG2104185-002 Result	CG2104185-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.84	2.76	4.87	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.795	14.5	1.97	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0682	0.135	0.104	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.48	<0.50	1.98	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0.000017	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000834	0.000020	0.00144	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00057	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0033	0.0016	0.0026	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104185</b>	Page	: 1 of 17
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 18-Sep-2021 08:50
PO	: VPO00739930	Issue Date	: 07-Oct-2021 12:07
C-O-C number	: WG-Q3 20210917		
Sampler	: Drake Tymstra, Tanya Dick		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.





**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Laboratory Control Sample (LCS) Recoveries</b>								
Total Metals	QC-MRG2-3007360 02	----	antimony, total	7440-36-0	E420	122 % <sup>MES</sup>	80.0-120%	Recovery greater than upper control limit
Total Metals	QC-MRG2-3007360 02	----	strontium, total	7440-24-6	E420	122 % <sup>MES</sup>	80.0-120%	Recovery greater than upper control limit

**Result Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E298	17-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E298	17-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E298	17-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E235.Br-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E235.Br-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E235.Br-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E235.Cl-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E235.Cl-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E235.Cl-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E378-U	17-Sep-2021	----	----	----		18-Sep-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E378-U	17-Sep-2021	----	----	----		18-Sep-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E378-U	17-Sep-2021	----	----	----		18-Sep-2021	3 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E235.F	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E235.F	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E235.F	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E235.NO3-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E235.NO3-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E235.NO3-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E235.NO2-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E235.NO2-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E235.NO2-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E235.SO4	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E235.SO4	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E235.SO4	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E318	17-Sep-2021	23-Sep-2021	----	----		27-Sep-2021	28 days	10 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E318	17-Sep-2021	23-Sep-2021	----	----		27-Sep-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E318	17-Sep-2021	23-Sep-2021	----	----		27-Sep-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E372-U	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E372-U	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E372-U	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E421.Cr-L	17-Sep-2021	25-Sep-2021	----	----		26-Sep-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E421.Cr-L	17-Sep-2021	25-Sep-2021	----	----		26-Sep-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E421.Cr-L	17-Sep-2021	25-Sep-2021	----	----		26-Sep-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E509	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E509	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E509	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E421	17-Sep-2021	25-Sep-2021	----	----		26-Sep-2021	180 days	9 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E421	17-Sep-2021	25-Sep-2021	----	----		26-Sep-2021	180 days	9 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E421	17-Sep-2021	25-Sep-2021	----	----		26-Sep-2021	180 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E358-L	17-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E358-L	17-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E358-L	17-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E355-L	17-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E355-L	17-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E355-L	17-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E283	17-Sep-2021	----	----	----		29-Sep-2021	14 days	12 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E283	17-Sep-2021	----	----	----		29-Sep-2021	14 days	12 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E283	17-Sep-2021	----	----	----		29-Sep-2021	14 days	12 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E290	17-Sep-2021	----	----	----		28-Sep-2021	14 days	11 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E290	17-Sep-2021	----	----	----		28-Sep-2021	14 days	11 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E290	17-Sep-2021	----	----	----		28-Sep-2021	14 days	11 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E100	17-Sep-2021	----	----	----		28-Sep-2021	28 days	11 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZDC1307_WG_Q3-2021_NP	E100	17-Sep-2021	----	----	----		28-Sep-2021	28 days	11 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZDC1308_WG_Q3-2021_NP	E100	17-Sep-2021	----	----	----		28-Sep-2021	28 days	11 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC1306_WG_Q3-2021_NP	E125	17-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	240 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC1308_WG_Q3-2021_NP	E125	17-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	241 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC1307_WG_Q3-2021_NP	E125	17-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	242 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC1306_WG_Q3-2021_NP	E108	17-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	264 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC1308_WG_Q3-2021_NP	E108	17-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	265 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC1307_WG_Q3-2021_NP	E108	17-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	266 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZDC1306_WG_Q3-2021_NP	E162	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E162	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E162	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZDC1306_WG_Q3-2021_NP	E160-L	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZDC1307_WG_Q3-2021_NP	E160-L	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZDC1308_WG_Q3-2021_NP	E160-L	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZDC1306_WG_Q3-2021_NP	E121	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZDC1307_WG_Q3-2021_NP	E121	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZDC1308_WG_Q3-2021_NP	E121	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E420.Cr-L	17-Sep-2021	----	----	----		24-Sep-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E420.Cr-L	17-Sep-2021	----	----	----		24-Sep-2021	180 days	7 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E420.Cr-L	17-Sep-2021	----	----	----		24-Sep-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1306_WG_Q3-2021_NP	E420	17-Sep-2021	----	----	----		24-Sep-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1307_WG_Q3-2021_NP	E420	17-Sep-2021	----	----	----		24-Sep-2021	180 days	7 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1308_WG_Q3-2021_NP	E420	17-Sep-2021	----	----	----		24-Sep-2021	180 days	7 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	306146	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304816	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	305706	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296485	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296486	1	20	5.0	5.0	✓
Conductivity in Water	E100	304815	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302378	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300937	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	302379	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303949	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	296207	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	296482	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296487	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296488	1	20	5.0	5.0	✓
ORP by Electrode	E125	303221	1	20	5.0	5.0	✓
pH by Meter	E108	304814	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	296481	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	301370	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300736	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	300307	1	11	9.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300737	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303956	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299079	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	296754	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	306146	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304816	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	305706	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296485	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296486	1	20	5.0	5.0	✓
Conductivity in Water	E100	304815	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302378	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300937	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	302379	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303949	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	296207	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	296482	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	296487	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296488	1	20	5.0	5.0	✓
ORP by Electrode	E125	303221	1	20	5.0	5.0	✓
pH by Meter	E108	304814	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	296481	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	301370	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300736	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	300307	1	11	9.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300737	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303956	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299079	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	301365	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	296754	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	306146	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304816	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	305706	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296485	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296486	1	20	5.0	5.0	✓
Conductivity in Water	E100	304815	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302378	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300937	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	302379	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303949	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	296207	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	296482	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296487	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296488	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	296481	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	301370	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300736	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	300307	1	11	9.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300737	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303956	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299079	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	301365	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	296754	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	305706	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296485	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	296486	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302378	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300937	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	302379	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303949	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	296207	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	296482	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296487	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296488	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	296481	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300736	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	300307	1	11	9.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300737	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303956	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299079	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2104185**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : WG-Q3 20210917  
**Sampler** : Drake Tymstra, Tanya Dick  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 18-Sep-2021 08:50  
**Date Analysis Commenced** : 18-Sep-2021  
**Issue Date** : 07-Oct-2021 12:07

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 18  
Work Order : CG2104185  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 296754)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	turbidity	----	E121	0.10	NTU	3.96	4.20	5.88%	15%	----
<b>Physical Tests (QC Lot: 301370)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	278	262	5.55%	20%	----
<b>Physical Tests (QC Lot: 303221)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	432	435	0.716%	15%	----
<b>Physical Tests (QC Lot: 304814)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	pH	----	E108	0.10	pH units	8.23	8.23	0.00%	4%	----
<b>Physical Tests (QC Lot: 304815)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	conductivity	----	E100	2.0	µS/cm	461	462	0.217%	10%	----
<b>Physical Tests (QC Lot: 304816)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	268	266	0.823%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	268	266	0.823%	20%	----
<b>Physical Tests (QC Lot: 306146)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296207)</b>											
CG2104181-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296481)</b>											
CG2104172-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	6.58	6.54	0.739%	20%	----
<b>Anions and Nutrients (QC Lot: 296482)</b>											
CG2104172-006	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296485)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296486)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.12	<0.10	0.02	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296487)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 296487) - continued</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.132	0.136	3.36%	20%	----
<b>Anions and Nutrients (QC Lot: 296488)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 299079)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0031	0.0030	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 300307)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.063	0.080	0.017	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 305706)</b>											
CG2104183-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0167	0.0149	0.0018	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 303949)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.36	2.44	0.08	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 303956)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.19	2.15	0.04	Diff <2x LOR	----
<b>Total Metals (QC Lot: 300736)</b>											
CG2104170-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00013	0.000006	Diff <2x LOR	----
<b>Total Metals (QC Lot: 300737)</b>											
CG2104170-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0034	0.0004	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00019	0.00020	0.000005	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0668	0.0664	0.596%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.014	0.013	0.0001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.113 µg/L	0.000110	2.19%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	89.2	87.2	2.34%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0335	0.0330	1.47%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	40.6	41.0	0.850%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00116	0.00127	9.74%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00219	0.00226	3.02%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 300737) - continued</b>											
CG2104170-001	Anonymous	nickel, total	7440-02-0	E420	0.00050	mg/L	0.00373	0.00366	0.00007	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.15	1.17	1.72%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	26.7 µg/L	0.0271	1.66%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.16	2.13	1.11%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	6.25	6.29	0.640%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.224	0.227	1.06%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	64.7	66.3	2.44%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00280	0.00278	0.974%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0054	0.0057	0.0003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 300937)</b>											
CG2104170-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 302378)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 302379)</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0016	<0.0010	0.0006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00020	0.00019	0.000004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.165	0.146	11.7%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.121 µg/L	0.000107	12.1%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	67.0	63.8	4.87%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00049	0.00040	0.00009	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0112	0.0106	5.58%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	24.3	21.9	10.3%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 302379) - continued</b>											
CG2104185-001	LC_PIZDC1306_WG_Q3-2 021_NP	manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00187	0.00187	0.130%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00105	0.00094	0.00011	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.20	1.98	10.5%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	3.67 µg/L	0.00357	2.92%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.84	2.75	3.36%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.795	0.719	10.0%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0682	0.0652	4.48%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.48	2.70	0.22	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000834	0.000826	1.01%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00057	<0.00050	0.00007	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0033	0.0029	0.0004	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 296754)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 301365)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 301370)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 304815)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 304816)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 306146)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 296207)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 296481)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 296482)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 296485)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 296486)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 296487)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 296488)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 299079)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 300307)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 305706)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 305706) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 303949)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 303956)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 300736)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 300737)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 300737) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 300937)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 302378)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 302379)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Page : 10 of 18  
Work Order : CG2104185  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 302379) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	---



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 296754)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	97.5	85.0	115	---
<b>Physical Tests (QCLot: 301365)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 301370)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.2	85.0	115	---
<b>Physical Tests (QCLot: 303221)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Physical Tests (QCLot: 304814)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 304815)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 304816)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 306146)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 296207)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	99.7	80.0	120	---
<b>Anions and Nutrients (QCLot: 296481)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 296482)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 296485)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	107	85.0	115	---
<b>Anions and Nutrients (QCLot: 296486)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 296487)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 296488)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 299079)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	93.0	80.0	120	---
<b>Anions and Nutrients (QCLot: 300307)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 300307) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 305706)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	108	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 303949)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 303956)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	107	80.0	120	----
<b>Total Metals (QCLot: 300736)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
<b>Total Metals (QCLot: 300737)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	110	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	# 122	80.0	120	MES
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	115	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.0	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	115	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	94.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	95.7	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	107	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	111	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.4	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	109	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	# 122	80.0	120	MES
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	101	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 300737) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	105	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	110	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	97.9	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.6	80.0	120	----
<b>Dissolved Metals (QCLot: 302378)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 302379)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.7	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.4	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	94.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.9	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.3	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	94.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.8	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.3	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 302379) - continued</b>									
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.7	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	106	80.0	120	----

### Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 296207)</b>										
CG2104181-006	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0518 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 296481)</b>										
CG2104172-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 296482)</b>										
CG2104172-007	Anonymous	fluoride	16984-48-8	E235.F	0.991 mg/L	1 mg/L	99.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 296485)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	bromide	24959-67-9	E235.Br-L	0.548 mg/L	0.5 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 296486)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	chloride	16887-00-6	E235.Cl-L	112 mg/L	100 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 296487)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.81 mg/L	2.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 296488)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.558 mg/L	0.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 299079)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	phosphorus, total	7723-14-0	E372-U	0.0578 mg/L	0.0676 mg/L	85.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 300307)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.65 mg/L	2.5 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 305706)</b>										
CG2104186-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 303949)</b>										
CG2104185-001	LC_PIZDC1306_WG_Q3-20 21_NP	carbon, dissolved organic [DOC]	----	E358-L	23.0 mg/L	23.9 mg/L	96.4	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 303956)</b>										
CG2104185-001	LC_PIZDC1306_WG_Q3-20 21_NP	carbon, total organic [TOC]	----	E355-L	24.0 mg/L	23.9 mg/L	100	70.0	130	----
<b>Total Metals (QCLot: 300736)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 300736) - continued</b>										
CG2104185-001	LC_PIZDC1306_WG_Q3-20 21_NP	chromium, total	7440-47-3	E420.Cr-L	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
<b>Total Metals (QCLot: 300737)</b>										
CG2104185-001	LC_PIZDC1306_WG_Q3-20 21_NP	aluminum, total	7429-90-5	E420	0.192 mg/L	0.2 mg/L	95.9	70.0	130	----
		antimony, total	7440-36-0	E420	0.0209 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0358 mg/L	0.04 mg/L	89.5	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00978 mg/L	0.01 mg/L	97.8	70.0	130	----
		boron, total	7440-42-8	E420	0.092 mg/L	0.1 mg/L	92.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0187 mg/L	0.02 mg/L	93.5	70.0	130	----
		iron, total	7439-89-6	E420	1.92 mg/L	2 mg/L	96.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0187 mg/L	0.02 mg/L	93.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0878 mg/L	0.1 mg/L	87.8	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0376 mg/L	0.04 mg/L	93.9	70.0	130	----
		potassium, total	7440-09-7	E420	3.83 mg/L	4 mg/L	95.8	70.0	130	----
		selenium, total	7782-49-2	E420	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		silicon, total	7440-21-3	E420	8.52 mg/L	10 mg/L	85.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00416 mg/L	0.004 mg/L	104	70.0	130	----
		sodium, total	17341-25-2	E420	1.92 mg/L	2 mg/L	95.9	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	18.2 mg/L	20 mg/L	91.3	70.0	130	----
		thallium, total	7440-28-0	E420	0.00363 mg/L	0.004 mg/L	90.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, total	7440-61-1	E420	0.00392 mg/L	0.004 mg/L	97.9	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.383 mg/L	0.4 mg/L	95.7	70.0	130	----
<b>Dissolved Metals (QCLot: 300937)</b>										
CG2104185-001	LC_PIZDC1306_WG_Q3-20 21_NP	mercury, dissolved	7439-97-6	E509	0.0000978 mg/L	0.0001 mg/L	97.8	70.0	130	----





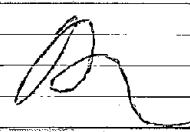
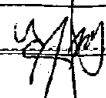
Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 302378)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 302379)</b>										
CG2104185-002	LC_PIZDC1307_WG_Q3-20 21_NP	aluminum, dissolved	7429-90-5	E421	0.201 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0194 mg/L	0.02 mg/L	97.3	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0217 mg/L	0.02 mg/L	108	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00884 mg/L	0.01 mg/L	88.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	99.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00386 mg/L	0.004 mg/L	96.5	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0973 mg/L	0.1 mg/L	97.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0451 mg/L	0.04 mg/L	113	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.92 mg/L	10 mg/L	89.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	21.3 mg/L	20 mg/L	106	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00368 mg/L	0.004 mg/L	92.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.3	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00381 mg/L	0.004 mg/L	95.3	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.438 mg/L	0.4 mg/L	110	70.0	130	----



<b>COC ID:</b>	<b>WG-Q3 20210917</b>			<b>TURNAROUND TIME:</b>		<b>RUSH:</b>					
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>					
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets		Email 1:	shris.blurpa@teck.com	X	X	
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	teckcoal@equisonline.com		X	
Address	Box 2003			Address	2559 29 Street NE		Email 3:	drake.tymstra@teck.com	X	X	
	15km North Hwy 43						Email 4:	Shanise.fossen@teck.com	X	X	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	sanja.priest@teck.com	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930		
Phone Number	250-425-8478			Phone Number	403 407 1794						

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FILE	Y	N	Y	Y	N	N	N	N	N	N	N	N
								PRESRV.	H2SO4	NAHSO4	H2SO4	HCL	HCL	HNO3	HNO3	NONE				
								ANALYSIS	ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA				
LC_PIZDC1306_WG_Q3-2021_NP	LC_PIZDC1306	WG	N	17-Sep	12:00	G	6		1		1	1		1	1	1				
LC_PIZDC1307_WG_Q3-2021_NP	LC_PIZDC1307	WG	N	17-Sep	9:45	G	6		1		1	1		1	1	1				
LC_PIZDC1308_WG_Q3-2021_NP	LC_PIZDC1308	WG	N	17-Sep	10:40	G	6		1		1	1		1	1	1				

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>			<b>RELINQUISHED BY/AFFILIATION</b>			<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>			<b>DATE/TIME</b>	
PLEASE FORWARD ALL SAMPLES TO ALS RETURNED FOR ANALYSIS			D.Tymstra/T.Dick			17-Sep					9/18/21	
<b>SERVICE REQUEST (rush - subject to availability)</b>												
Regular (default) X			Sampler's Name			T.Dick/D. Tymstra			Mobile #			
Priority (2-3 business days) - 50% surcharge			Sampler's Signature						Date/Time			
Emergency (1 Business Day) - 100% surcharge												
For Emergency <1 Day, ASAP or Weekend - Contact ALS												
									September 17, 2021			

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2104185**



Telephone : + 1 403 407 1800



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2104308**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : WG-Q3\_20210921  
**Sampler** : S. Fossen/D. Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Sep-2021 08:35  
**Date Analysis Commenced** : 22-Sep-2021  
**Issue Date** : 27-Sep-2021 16:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jeanie Mark	Laboratory Analyst	Organics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
TMV	Turbidity exceeded upper limit of the nephelometric method. Minimum value reported.



## Analytical Results

Sub-Matrix: Water					Client sample ID		LC_PIZP1101_	LC_CC2_WS_2	----	----	----
(Matrix: Water)					WG_Q3-2021_N	021-09-MISS_N					
Client sampling date / time					21-Sep-2021 14:30	21-Sep-2021 14:30	----	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2104308-001	CG2104308-002	-----	-----	-----	-----	-----
					Result	Result	----	----	----	----	----
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	2.2	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	175	178	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	175	178	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	306	304	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	125	122	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	299	277	----	----	----	----	----
pH	----	E108	0.10	pH units	8.15	8.03	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	397	424	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2010	2080	----	----	----	----	----
turbidity	----	E121	0.10	NTU	4000 <sup>TMV</sup>	4000 <sup>TMV</sup>	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	214	217	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	----	----
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0471	0.0415	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.90	0.90	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	1.89	1.87	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.116	0.111	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0010	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0045	0.0041	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	2.04 <sup>DLHC</sup>	2.03 <sup>DLHC</sup>	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	3.91	3.87	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.82	1.18	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	32.3	27.7	----	----	----	----	----
<b>Ion Balance</b>											



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1101_WG_Q3-2021_N	LC_CC2_WS_2 021-09-MISS_N	---	---	---
Client sampling date / time					21-Sep-2021 14:30	21-Sep-2021 14:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2104308-001	CG2104308-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	3.70	3.76	---	---	---	
cation sum	---	EC101	0.10	meq/L	3.45	3.40	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	93.2	90.4	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	3.50	5.03	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	18.0	18.3	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00034	0.00037	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00614	0.00644	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	1.06	1.06	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	1.45	1.41	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	0.000432	0.000440	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	0.043	0.043	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	4.01	3.98	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	187	187	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.0285	0.0295	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	13.7	14.1	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	0.110	0.111	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	28.9	30.0	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	0.0211	0.0217	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0442	0.0427	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	36.9	37.6	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	1.59	1.61	---	---	---	
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.000148	0.000153	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00387	0.00443	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0516	0.0527	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	4.80	4.97	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	4.99	5.05	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	29.6	30.6	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	0.00170	0.00173	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	21.2	21.6	---	---	---	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.403	0.418	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1101_WG_Q3-2021_N	LC_CC2_WS_2 021-09-MISS_N	---	---	---
Client sampling date / time					21-Sep-2021 14:30	21-Sep-2021 14:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2104308-001	CG2104308-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	1.40	1.44	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.00130	0.00134	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00047	0.00050	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0380	0.0403	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00451	0.00455	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0463	0.0488	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.221	0.229	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0482	0.0547	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00092	0.00092	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.460	0.473	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	0.022	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0150 <sup>DLM</sup>	<0.0200 <sup>DLM</sup>	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	28.6	27.5	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.17	0.17	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00181	0.00094	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.110	0.108	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000063	0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0093	0.0093	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	13.0	13.0	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.219	0.222	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0123 <sup>DTMF</sup>	0.0127 <sup>DTMF</sup>	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00053	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.798	0.820	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.79	3.73	---	---	---	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1101_ WG_Q3-2021_N	LC_CC2_WS_2 021-09-MISS_N	----	----	----
Client sampling date / time					21-Sep-2021 14:30	21-Sep-2021 14:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104308-001 Result	CG2104308-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	21.0	21.1	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.196	0.197	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.98	0.89	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00240 <sup>DLM</sup>	0.00183	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00169	0.00172	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00057	0.00066	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0012	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	----	----	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	83.0	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104308</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 22-Sep-2021 08:35
PO	: VPO00739930	Issue Date	: 27-Sep-2021 16:27
C-O-C number	: WG-Q3_20210921		
Sampler	: S. Fossen/D. Tymstra		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_CC2_WS_2021-09-MISS_N	E298	21-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E298	21-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_CC2_WS_2021-09-MISS_N	E235.Br-L	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1101_WG_Q3-2021_N	E235.Br-L	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_CC2_WS_2021-09-MISS_N	E235.Cl-L	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1101_WG_Q3-2021_N	E235.Cl-L	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_CC2_WS_2021-09-MISS_N	E378-U	21-Sep-2021	----	----	----		22-Sep-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E378-U	21-Sep-2021	----	----	----		22-Sep-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E235.F	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E235.F	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E235.NO3-L	21-Sep-2021	----	----	----		23-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E235.NO3-L	21-Sep-2021	----	----	----		23-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E235.NO2-L	21-Sep-2021	----	----	----		23-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E235.NO2-L	21-Sep-2021	----	----	----		23-Sep-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E235.SO4	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E235.SO4	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_CC2_WS_2021-09-MISS_N	E318	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E318	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_CC2_WS_2021-09-MISS_N	E372-U	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E372-U	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_CC2_WS_2021-09-MISS_N	E421.Cr-L	21-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E421.Cr-L	21-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_CC2_WS_2021-09-MISS_N	E509	21-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E509	21-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_CC2_WS_2021-09-MISS_N	E421	21-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	180 days	4 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E421	21-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	180 days	4 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_PIZP1101_WG_Q3-2021_N	E601A	21-Sep-2021	23-Sep-2021	14 days	2 days	✓	24-Sep-2021	40 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_CC2_WS_2021-09-MISS_N	E358-L	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E358-L	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_CC2_WS_2021-09-MISS_N	E355-L	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E355-L	21-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_CC2_WS_2021-09-MISS_N	E283	21-Sep-2021	----	----	----		23-Sep-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1101_WG_Q3-2021_N	E283	21-Sep-2021	----	----	----		23-Sep-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_CC2_WS_2021-09-MISS_N	E290	21-Sep-2021	----	----	----		23-Sep-2021	14 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E290	21-Sep-2021	----	----	----		23-Sep-2021	14 days	2 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E100	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E100	21-Sep-2021	----	----	----		23-Sep-2021	28 days	2 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E125	21-Sep-2021	----	----	----		26-Sep-2021	0.34 hrs	116 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E125	21-Sep-2021	----	----	----		26-Sep-2021	0.34 hrs	116 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E108	21-Sep-2021	----	----	----		23-Sep-2021	0.25 hrs	47 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E108	21-Sep-2021	----	----	----		23-Sep-2021	0.25 hrs	47 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_CC2_WS_2021-09-MISS_N	E162	21-Sep-2021	----	----	----		24-Sep-2021	7 days	3 days		✓
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZP1101_WG_Q3-2021_N	E162	21-Sep-2021	----	----	----		24-Sep-2021	7 days	3 days		✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_CC2_WS_2021-09-MISS_N	E160-L	21-Sep-2021	----	----	----		24-Sep-2021	7 days	3 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_PIZP1101_WG_Q3-2021_N	E160-L	21-Sep-2021	----	----	----		24-Sep-2021	7 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_CC2_WS_2021-09-MISS_N	E121	21-Sep-2021	----	----	----		24-Sep-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_PIZP1101_WG_Q3-2021_N	E121	21-Sep-2021	----	----	----		24-Sep-2021	3 days	3 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_CC2_WS_2021-09-MISS_N	E420.Cr-L	21-Sep-2021	----	----	----		25-Sep-2021	180 days	4 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E420.Cr-L	21-Sep-2021	----	----	----		25-Sep-2021	180 days	4 days	✓
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> LC_CC2_WS_2021-09-MISS_N	E508	21-Sep-2021	----	----	----		25-Sep-2021	28 days	4 days	✓
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E508	21-Sep-2021	----	----	----		25-Sep-2021	28 days	4 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_CC2_WS_2021-09-MISS_N	E420	21-Sep-2021	----	----	----		25-Sep-2021	180 days	4 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1101_WG_Q3-2021_N	E420	21-Sep-2021	----	----	----		25-Sep-2021	180 days	4 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	300745	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	300732	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	300309	1	2	50.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	300302	1	8	12.5	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	300303	1	8	12.5	5.0	✔
Conductivity in Water	E100	300731	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302401	1	7	14.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	302343	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	302400	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	301869	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	299587	1	16	6.2	5.0	✔
Fluoride in Water by IC	E235.F	300300	1	8	12.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	300304	1	8	12.5	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	300305	1	8	12.5	5.0	✔
ORP by Electrode	E125	303092	1	3	33.3	5.0	✔
pH by Meter	E108	300730	0	30	0.0	5.0	✖
Sulfate in Water by IC	E235.SO4	300301	1	8	12.5	5.0	✔
TDS by Gravimetry	E162	301312	1	18	5.5	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302331	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	301439	1	17	5.8	5.0	✔
Total Mercury in Water by CVAAS	E508	302345	1	19	5.2	5.0	✔
Total Metals in Water by CRC ICPMS	E420	302330	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	301875	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300197	1	19	5.2	5.0	✔
Turbidity by Nephelometry	E121	301694	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	300745	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	300732	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	300309	1	2	50.0	5.0	✔
BC PHC - EPH by GC-FID	E601A	300229	1	3	33.3	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	300302	1	8	12.5	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	300303	1	8	12.5	5.0	✔
Conductivity in Water	E100	300731	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302401	1	7	14.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	302343	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	302400	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	301869	1	19	5.2	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	299587	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	300300	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	300304	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	300305	1	8	12.5	5.0	✓
ORP by Electrode	E125	303092	1	3	33.3	5.0	✓
pH by Meter	E108	300730	2	30	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	300301	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	301312	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302331	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	301439	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	302345	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	302330	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	301875	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300197	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	301311	1	10	10.0	5.0	✓
Turbidity by Nephelometry	E121	301694	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	300745	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	300732	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	300309	1	2	50.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	300229	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	300302	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	300303	1	8	12.5	5.0	✓
Conductivity in Water	E100	300731	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302401	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	302343	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	302400	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	301869	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	299587	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	300300	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	300304	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	300305	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	300301	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	301312	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302331	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	301439	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	302345	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	302330	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	301875	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300197	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	301311	1	10	10.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
Method Blanks (MB) - Continued							
Turbidity by Nephelometry	E121	301694	1	20	5.0	5.0	✓
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	300309	1	2	50.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	300302	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	300303	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	302401	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	302343	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	302400	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	301869	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	299587	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	300300	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	300304	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	300305	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	300301	1	8	12.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302331	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	301439	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	302345	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	302330	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	301875	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300197	1	19	5.2	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
	Vancouver - Environmental			
PHCs and PAHs Hexane Extraction	EP601	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
	Calgary - Environmental			



## QUALITY CONTROL REPORT

**Work Order** : **CG2104308**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : WG-Q3\_20210921  
**Sampler** : S. Fossen/D. Tymstra  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Sep-2021 08:35  
**Date Analysis Commenced** : 22-Sep-2021  
**Issue Date** : 27-Sep-2021 16:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jeanie Mark	Laboratory Analyst	Organics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 18  
Work Order : CG2104308  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 300731)</b>											
CG2104269-003	Anonymous	conductivity	----	E100	2.0	µS/cm	973	974	0.103%	10%	----
<b>Physical Tests (QC Lot: 300732)</b>											
CG2104269-003	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	157	169	7.25%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	157	169	7.25%	20%	----
<b>Physical Tests (QC Lot: 300745)</b>											
CG2104269-003	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.2	2.7	0.4	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 301312)</b>											
CG2104288-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	661	669	1.13%	20%	----
<b>Physical Tests (QC Lot: 301694)</b>											
CG2104291-001	Anonymous	turbidity	----	E121	0.10	NTU	5.30	5.40	1.94%	15%	----
<b>Physical Tests (QC Lot: 303092)</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	299	285	4.73%	15%	----
<b>Anions and Nutrients (QC Lot: 299587)</b>											
CG2104296-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0023	0.0022	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 300197)</b>											
CG2104269-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0131	0.0132	0.00006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 300300)</b>											
CG2104299-002	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 300301)</b>											
CG2104299-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	1620	1620	0.530%	20%	----
<b>Anions and Nutrients (QC Lot: 300302)</b>											
CG2104299-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 300303)</b>											
CG2104299-002	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	13.0	13.1	0.944%	20%	----
<b>Anions and Nutrients (QC Lot: 300304)</b>											
CG2104299-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	29.6	29.4	0.564%	20%	----
<b>Anions and Nutrients (QC Lot: 300305)</b>											
CG2104299-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0459	0.0492	0.0033	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 300309)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 300309) - continued</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0471	0.0464	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 301439)</b>											
CG2104288-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.492	0.492	0.0005	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 301869)</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.82	0.98	0.16	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 301875)</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	carbon, total organic [TOC]	----	E355-L	5.00	mg/L	32.3	31.8	0.48	Diff <2x LOR	----
<b>Total Metals (QC Lot: 302330)</b>											
CG2104198-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00252	0.00247	1.78%	20%	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0214	0.0206	3.71%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.115	0.116	0.001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	0.844 µg/L	0.000812	3.79%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	467	472	1.08%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	47.6 µg/L	0.0458	3.80%	20%	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	0.021	<0.020	0.0007	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	1.01	0.982	2.44%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	184	178	3.06%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	0.297	0.286	3.87%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00624	0.00628	0.604%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.330	0.316	4.34%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	15.4	15.2	1.36%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	9.83 µg/L	0.00903	8.50%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	3.29	3.16	3.96%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	27.3	26.2	3.85%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.769	0.755	1.79%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	355	331	6.79%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.000392	0.000413	5.23%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 302330) - continued</b>											
CG2104198-001	Anonymous	tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0298	0.0317	6.08%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.0566	0.0551	0.0015	Diff <2x LOR	----
<b>Total Metals (QC Lot: 302331)</b>											
CG2104198-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 302345)</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	mercury, total	7439-97-6	E508	0.0000500	mg/L	0.000148	0.000159	0.0000112	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 302343)</b>											
CG2104198-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 302400)</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0482	0.0466	3.21%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00092	0.00094	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.460	0.490	6.29%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	0.023	0.0007	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0150	mg/L	<0.0150 µg/L	<0.0000150	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	28.6	29.8	4.13%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.17 µg/L	0.00017	0.000002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00181	0.00186	0.00005	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.110	0.116	4.50%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000063	0.000064	0.000002	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0093	0.0097	0.0003	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	13.0	13.0	0.579%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.219	0.221	1.17%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0123	0.0125	2.20%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00052	0.00002	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.798	0.795	0.374%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.79	3.81	0.542%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 302400) - continued</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	sodium, dissolved	17341-25-2	E421	0.050	mg/L	21.0	21.1	0.813%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.196	0.199	1.49%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.98	0.93	0.05	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00240	mg/L	<0.00240	<0.00240	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00169	0.00172	1.94%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00057	0.00058	0.000008	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0017	0.00010	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 302401)</b>											
CG2104308-001	LC_PIZP1101_WG_Q3-20 21_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 300731)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 300732)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	1.8	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	1.8	----
<b>Physical Tests (QCLot: 300745)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 301311)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 301312)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 301694)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Anions and Nutrients (QCLot: 299587)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 300197)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 300300)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 300301)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 300302)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 300303)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 300304)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 300305)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 300309)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 301439)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 301439) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 301869)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 301875)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 302330)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 302330) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 302331)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 302345)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 302343)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 302400)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 302400) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 302401)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Hydrocarbons (QCLot: 300229)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 300730)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 300731)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.3	90.0	110	---
<b>Physical Tests (QCLot: 300732)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 300733)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 300745)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	99.2	85.0	115	---
<b>Physical Tests (QCLot: 301311)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	99.5	85.0	115	---
<b>Physical Tests (QCLot: 301312)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.7	85.0	115	---
<b>Physical Tests (QCLot: 301694)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.1	85.0	115	---
<b>Physical Tests (QCLot: 303092)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 299587)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	103	80.0	120	---
<b>Anions and Nutrients (QCLot: 300197)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	93.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 300300)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	110	90.0	110	---
<b>Anions and Nutrients (QCLot: 300301)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 300302)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 300303)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 300304)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 300305)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 300305) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 300309)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	106	85.0	115	----
<b>Anions and Nutrients (QCLot: 301439)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 301869)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 301875)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Total Metals (QCLot: 302330)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	106	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	105	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	93.7	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	98.2	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	106	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	114	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	118	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	109	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	117	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	89.6	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 302330) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	98.2	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	106	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.1	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 302331)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
<b>Total Metals (QCLot: 302345)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	93.9	80.0	120	----
<b>Dissolved Metals (QCLot: 302400)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.9	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.7	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	93.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.2	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	94.5	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.9	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	94.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	97.2	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.3	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.5	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	95.7	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.4	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 302400) - continued</b>									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	86.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	94.0	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.7	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.2	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.6	80.0	120	----
<b>Dissolved Metals (QCLot: 302401)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	94.4	80.0	120	----
<b>Hydrocarbons (QCLot: 300229)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	108	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	98.1	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	104	70.0	130	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 299587)</b>										
CG2104296-006	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0562 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 300197)</b>										
CG2104269-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0548 mg/L	0.0676 mg/L	81.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 300300)</b>										
CG2104299-005	Anonymous	fluoride	16984-48-8	E235.F	1.09 mg/L	1 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 300301)</b>										
CG2104299-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	111 mg/L	100 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 300302)</b>										
CG2104299-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.536 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 300303)</b>										
CG2104299-005	Anonymous	chloride	16887-00-6	E235.Cl-L	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 300304)</b>										
CG2104299-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.61 mg/L	2.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 300305)</b>										
CG2104299-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.502 mg/L	0.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 300309)</b>										
CG2104308-002	LC_CC2_WS_2021-09-MIS S_N	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 301439)</b>										
CG2104288-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.63 mg/L	2.5 mg/L	105	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 301869)</b>										
CG2104308-001	LC_PIZP1101_WG_Q3-202 1_N	carbon, dissolved organic [DOC]	----	E358-L	23.1 mg/L	23.9 mg/L	96.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 301875)</b>										
CG2104308-001	LC_PIZP1101_WG_Q3-202 1_N	carbon, total organic [TOC]	----	E355-L	ND mg/L	23.9 mg/L	ND	70.0	130	----
<b>Total Metals (QCLot: 302330)</b>										
CG2104198-002	Anonymous	aluminum, total	7429-90-5	E420	0.380 mg/L	0.4 mg/L	95.0	70.0	130	----
		antimony, total	7440-36-0	E420	0.0464 mg/L	0.04 mg/L	116	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 302330) - continued</b>										
CG2104198-002	Anonymous	arsenic, total	7440-38-2	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0865 mg/L	0.08 mg/L	108	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		boron, total	7440-42-8	E420	0.229 mg/L	0.2 mg/L	114	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00782 mg/L	0.008 mg/L	97.7	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, total	7440-50-8	E420	0.0360 mg/L	0.04 mg/L	90.1	70.0	130	----
		iron, total	7439-89-6	E420	3.87 mg/L	4 mg/L	96.8	70.0	130	----
		lead, total	7439-92-1	E420	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0474 mg/L	0.04 mg/L	118	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0872 mg/L	0.08 mg/L	109	70.0	130	----
		silicon, total	7440-21-3	E420	19.0 mg/L	20 mg/L	94.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00854 mg/L	0.008 mg/L	107	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00863 mg/L	0.008 mg/L	108	70.0	130	----
		tin, total	7440-31-5	E420	0.0397 mg/L	0.04 mg/L	99.4	70.0	130	----
		titanium, total	7440-32-6	E420	0.0778 mg/L	0.08 mg/L	97.2	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.714 mg/L	0.8 mg/L	89.3	70.0	130	----
<b>Total Metals (QCLot: 302331)</b>										
CG2104198-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0753 mg/L	0.08 mg/L	94.2	70.0	130	----
<b>Total Metals (QCLot: 302345)</b>										
CG2104308-002	LC_CC2_WS_2021-09-MIS S_N	mercury, total	7439-97-6	E508	ND mg/L	0.0001 mg/L	ND	70.0	130	----
<b>Dissolved Metals (QCLot: 302343)</b>										
CG2104198-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000956 mg/L	0.0001 mg/L	95.6	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 302400)</b>										
CG2104308-002	LC_CC2_WS_2021-09-MIS S_N	aluminum, dissolved	7429-90-5	E421	0.195 mg/L	0.2 mg/L	97.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0436 mg/L	0.04 mg/L	109	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00870 mg/L	0.01 mg/L	87.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00389 mg/L	0.004 mg/L	97.2	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0187 mg/L	0.02 mg/L	93.5	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	96.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.89 mg/L	4 mg/L	97.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.20 mg/L	10 mg/L	92.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
sulfur, dissolved	7704-34-9	E421	20.5 mg/L	20 mg/L	103	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00390 mg/L	0.004 mg/L	97.4	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0376 mg/L	0.04 mg/L	93.9	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00388 mg/L	0.004 mg/L	96.9	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.0997 mg/L	0.1 mg/L	99.7	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.377 mg/L	0.4 mg/L	94.3	70.0	130	----		
<b>Dissolved Metals (QCLot: 302401)</b>										
CG2104308-002	LC_CC2_WS_2021-09-MIS S_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----



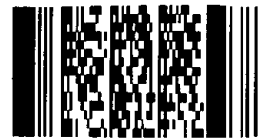
COC ID: <b>WG-Q3_20210921</b>		TURNAROUND TIME: 2-3 Days			RUSH: Priority						
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>				
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	*	*
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	*	*
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	*	*
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	*	*
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	tanva.eick@teck.com	*	*
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930		
Phone Number	250-425-8478			Phone Number	403 407 1794						

SAMPLE DETAILS							ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TH	Y	N	N	Y	N	Y	N	N				
								PRESENT	H2SO4	NABSO4	H2SO4	HCL	HCL	HNO3	HNO3	NONE				
								ANALYSIS	ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA				
LC_PIZP1101_WG_Q3-2021_N	LC_PIZP1101	WG		21-Sep	14:30	G	9		1	2	1	1	1	1	1	1				
<del>LC_C02WS_2021-A-MISS-N</del>	<del>LC_PIZP1101</del>	<del>WG</del>		<del>21-Sep</del>	<del>14:30</del>	<del>G</del>	<del>7</del>		<del>1</del>	<del>2</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>				

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b> PUR USE FORM AND MET ALS SAMPLES TO ALS BC LAB FOR ANALYSIS	<b>RELINQUISHED BY/AFFILIATION</b> D.Tymstra/S. Fossen	<b>DATE/TIME</b> 21-Sep	<b>ACCEPTED BY/AFFILIATION</b> <i>PH</i>	<b>DATE/TIME</b> 9/21/2021
----------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------	----------------------------	---------------------------------------------	-------------------------------

<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default)		Sampler's Name	S. Fossen/D. Tymstra	Mobile #
Priority (2-3 business days) - 50% surcharge	X	Sampler's Signature	<i>[Signature]</i>	Date/Time
Emergency (1 Business Day) - 100% surcharge				September 21, 2021
id - Contact ALS				

Environmental Division  
Calgary  
Work Order Reference  
**CG2104308**



*BC*

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105157**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : PIZP1103 20211022  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Oct-2021 08:20  
**Date Analysis Commenced** : 25-Oct-2021  
**Issue Date** : 02-Nov-2021 18:37

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Russell Zhang		Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_PIZP1103_	----	----	----	----
(Matrix: Water)					WG_Q4-2021_N					
					Client sampling date / time	22-Oct-2021 13:25	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105157-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	411	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	18.2	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	429	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	756	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	136	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	451	----	----	----	----	----
pH	----	E108	0.10	pH units	8.55	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	453	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	13.6	----	----	----	----	----
turbidity	----	E121	0.10	NTU	9.62	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	501	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	10.9	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0367	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.10	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.426	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.265	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.110	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0048	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0589	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0485	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	28.7	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.68	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.88	----	----	----	----	----
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1103_ WG_Q4-2021_N	----	----	----	----
Client sampling date / time					22-Oct-2021 13:25	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105157-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.32	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	8.29	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	88.9	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.85	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.250	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00029	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00104	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0658	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.461	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0550 <sup>DLM</sup>	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	29.8	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00060	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.64	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00378	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.401	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000338	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.125	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	16.1	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.322	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0248	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00150	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.69	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	4.54	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	146	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.793	----	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	11.3	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1103_ WG_Q4-2021_N	----	----	----	----
Client sampling date / time					22-Oct-2021 13:25	---	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2105157-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000019	---	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00022	---	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00360 <sup>DLM</sup>	---	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00230	---	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00121	---	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0086	---	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0022	---	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00023	---	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00087	---	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0612	---	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	---	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	---	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.469	---	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0150 <sup>DLM</sup>	---	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	29.7	---	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00020	---	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.12	---	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00157	---	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	---	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	---	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.112	---	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	15.1	---	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0800	---	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	---	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0228	---	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00053	---	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.53	---	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	---	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.25	---	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	---	---	---	---	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1103_	---	---	---	---
					WG_Q4-2021_N					
					Client sampling date / time	22-Oct-2021 13:25	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2105157-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	127	---	---	---	---	---
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.767	---	---	---	---	---
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	10.7	---	---	---	---	---
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	---	---	---	---	---
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	---	---	---	---	---
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00195	---	---	---	---	---
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	---	---	---	---	---
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	---	---	---	---	---
dissolved mercury filtration location	----	EP509	-	-	Field	---	---	---	---	---
dissolved metals filtration location	----	EP421	-	-	Field	---	---	---	---	---

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105157</b>	Page	: 1 of 12
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 23-Oct-2021 08:20
PO	: VPO00739930	Issue Date	: 02-Nov-2021 18:37
C-O-C number	: PIZP1103 20211022		
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	121 % TKND	20%	Duplicate RPD does not meet the DQO for this test.

**Result Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q4-2021_N	E298	22-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q4-2021_N	E235.Br-L	22-Oct-2021	----	----	----		25-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q4-2021_N	E235.Cl-L	22-Oct-2021	----	----	----		25-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q4-2021_N	E378-U	22-Oct-2021	----	----	----		25-Oct-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q4-2021_N	E235.F	22-Oct-2021	----	----	----		25-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q4-2021_N	E235.NO3-L	22-Oct-2021	----	----	----		25-Oct-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q4-2021_N	E235.NO2-L	22-Oct-2021	----	----	----		25-Oct-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q4-2021_N	E235.SO4	22-Oct-2021	----	----	----		25-Oct-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q4-2021_N	E318	22-Oct-2021	27-Oct-2021	----	----		01-Nov-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q4-2021_N	E372-U	22-Oct-2021	29-Oct-2021	----	----		29-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1103_WG_Q4-2021_N	E421.Cr-L	22-Oct-2021	28-Oct-2021	----	----		28-Oct-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1103_WG_Q4-2021_N	E509	22-Oct-2021	28-Oct-2021	----	----		28-Oct-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1103_WG_Q4-2021_N	E421	22-Oct-2021	28-Oct-2021	----	----		28-Oct-2021	180 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1103_WG_Q4-2021_N	E358-L	22-Oct-2021	28-Oct-2021	----	----		28-Oct-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1103_WG_Q4-2021_N	E355-L	22-Oct-2021	28-Oct-2021	----	----		28-Oct-2021	28 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q4-2021_N	E283	22-Oct-2021	----	----	----		25-Oct-2021	14 days	3 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q4-2021_N	E290	22-Oct-2021	----	----	----		25-Oct-2021	14 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q4-2021_N	E100	22-Oct-2021	----	----	----		25-Oct-2021	28 days	3 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q4-2021_N	E125	22-Oct-2021	----	----	----		26-Oct-2021	0.25 hrs	98 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q4-2021_N	E108	22-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	71 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q4-2021_N	E162	22-Oct-2021	----	----	----		28-Oct-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZP1103_WG_Q4-2021_N	E160-L	22-Oct-2021	----	----	----		28-Oct-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZP1103_WG_Q4-2021_N	E121	22-Oct-2021	----	----	----		25-Oct-2021	3 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZP1103_WG_Q4-2021_N	E420.Cr-L	22-Oct-2021	----	----	----		28-Oct-2021	180 days	6 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_PIZP1103_WG_Q4-2021_N	E420	22-Oct-2021	----	----	----		28-Oct-2021	180 days	6 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 6 of 12  
Work Order : CG2105157  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	328828	1	8	12.5	5.0	✓
Alkalinity Species by Titration	E290	328827	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	328898	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	328755	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	328756	1	20	5.0	5.0	✓
Conductivity in Water	E100	328825	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	331430	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	331511	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	331429	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	332502	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	328735	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	328759	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	328757	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	328758	1	20	5.0	5.0	✓
ORP by Electrode	E125	330051	1	5	20.0	5.0	✓
pH by Meter	E108	328826	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	328754	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	331633	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	330665	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	330612	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	330664	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	332504	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	332695	1	4	25.0	5.0	✓
Turbidity by Nephelometry	E121	328720	1	14	7.1	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	328828	1	8	12.5	5.0	✓
Alkalinity Species by Titration	E290	328827	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	328898	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	328755	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	328756	1	20	5.0	5.0	✓
Conductivity in Water	E100	328825	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	331430	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	331511	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	331429	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	332502	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	328735	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	328759	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	328757	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	328758	1	20	5.0	5.0	✓
ORP by Electrode	E125	330051	1	5	20.0	5.0	✓
pH by Meter	E108	328826	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	328754	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	331633	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	330665	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	330612	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	330664	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	332504	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	332695	1	4	25.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	331251	1	5	20.0	5.0	✓
Turbidity by Nephelometry	E121	328720	1	14	7.1	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	328828	1	8	12.5	5.0	✓
Alkalinity Species by Titration	E290	328827	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	328898	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	328755	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	328756	1	20	5.0	5.0	✓
Conductivity in Water	E100	328825	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	331430	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	331511	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	331429	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	332502	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	328735	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	328759	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	328757	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	328758	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	328754	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	331633	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	330665	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	330612	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	330664	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	332504	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	332695	1	4	25.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	331251	1	5	20.0	5.0	✓
Turbidity by Nephelometry	E121	328720	1	14	7.1	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	328898	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	328755	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	328756	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	331430	0	1	0.0	5.0	✘
Dissolved Mercury in Water by CVAAS	E509	331511	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	331429	1	12	8.3	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	332502	1	9	11.1	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	328735	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	328759	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	328757	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	328758	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	328754	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	330665	0	1	0.0	5.0	✘
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	330612	1	13	7.6	5.0	✔
Total Metals in Water by CRC ICPMS	E420	330664	1	19	5.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	332504	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	332695	1	4	25.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: CG2105157</b>	<b>Page</b>	<b>: 1 of 17</b>
<b>Client</b>	: Teck Coal Limited	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Tom Jeffery	<b>Account Manager</b>	: Lyudmyla Shvets
<b>Address</b>	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	<b>Address</b>	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
<b>Telephone</b>	: 250-433-8467	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: LINE CREEK OPERATION	<b>Date Samples Received</b>	: 23-Oct-2021 08:20
<b>PO</b>	: VPO00739930	<b>Date Analysis Commenced</b>	: 25-Oct-2021
<b>C-O-C number</b>	: PIZP1103 20211022	<b>Issue Date</b>	: 02-Nov-2021 18:37
<b>Sampler</b>	: ----		
<b>Site</b>	: ----		
<b>Quote number</b>	: Teck Coal Master Quote		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Russell Zhang		Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia

Page : 2 of 17  
Work Order : CG2105157  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 328720)</b>											
CG2105157-001	LC_PIZP1103_WG_Q4-20 21_N	turbidity	----	E121	0.10	NTU	9.62	9.12	5.40%	15%	----
<b>Physical Tests (QC Lot: 328825)</b>											
CG2105119-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1260	1280	1.42%	10%	----
<b>Physical Tests (QC Lot: 328826)</b>											
CG2105119-001	Anonymous	pH	----	E108	0.10	pH units	8.51	8.44	0.826%	4%	----
<b>Physical Tests (QC Lot: 328827)</b>											
CG2105119-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	663	741	11.0%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	18.6	16.9	1.7	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	694	741	6.47%	20%	----
<b>Physical Tests (QC Lot: 328828)</b>											
CG2105119-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 330051)</b>											
CG2105157-001	LC_PIZP1103_WG_Q4-20 21_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	451	450	0.267%	15%	----
<b>Physical Tests (QC Lot: 331633)</b>											
CG2105157-001	LC_PIZP1103_WG_Q4-20 21_N	solids, total dissolved [TDS]	----	E162	20	mg/L	453	465	2.50%	20%	----
<b>Anions and Nutrients (QC Lot: 328735)</b>											
CG2105157-001	LC_PIZP1103_WG_Q4-20 21_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0589	0.0596	1.22%	20%	----
<b>Anions and Nutrients (QC Lot: 328754)</b>											
CG2105148-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	15.4	15.3	0.563%	20%	----
<b>Anions and Nutrients (QC Lot: 328755)</b>											
CG2105148-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 328756)</b>											
CG2105148-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.44	0.44	0.005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 328757)</b>											
CG2105148-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 328758)</b>											
CG2105148-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 328759)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 328759) - continued</b>											
CG2105148-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.294	0.284	3.36%	20%	----
<b>Anions and Nutrients (QC Lot: 328898)</b>											
CG2105157-001	LC_PIZP1103_WG_Q4-20 21_N	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0367	0.0391	0.0024	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330612)</b>											
CG2105144-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.733	2.97	121%	20%	TKND
<b>Anions and Nutrients (QC Lot: 332695)</b>											
CG2105063-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	0.229	0.232	1.30%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 332502)</b>											
CG2105157-001	LC_PIZP1103_WG_Q4-20 21_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.68	1.73	0.05	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 332504)</b>											
CG2105157-001	LC_PIZP1103_WG_Q4-20 21_N	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.88	2.12	0.24	Diff <2x LOR	----
<b>Total Metals (QC Lot: 330664)</b>											
CG2105157-001	LC_PIZP1103_WG_Q4-20 21_N	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.250	0.255	1.72%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00029	0.00028	0.00001	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00104	0.00111	6.13%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0658	0.0670	1.79%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.461	0.480	4.09%	20%	----
		cadmium, total	7440-43-9	E420	0.0550	mg/L	<0.0550 µg/L	<0.0000550	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	29.8	30.0	0.612%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.64 µg/L	0.00068	0.00004	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00378	0.00394	0.00016	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.401	0.410	2.14%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000338	0.000354	0.000016	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.125	0.121	3.35%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	16.1	16.2	0.860%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.322	0.335	3.71%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0248	0.0250	0.880%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00150	0.00154	0.00004	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.69	1.73	2.25%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.54	4.59	1.07%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 330664) - continued</b>											
CG2105157-001	LC_PIZP1103_WG_Q4-20 21_N	silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	146	141	2.94%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.793	0.804	1.31%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	11.3	11.1	1.36%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000019	0.000019	0.0000001	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00022	0.00022	0.000006	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00360	mg/L	<0.00360	<0.00360	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00230	0.00231	0.196%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00121	0.00123	0.00002	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0086	0.0083	0.0003	Diff <2x LOR	----
<b>Total Metals (QC Lot: 330665)</b>											
CG2105157-001	LC_PIZP1103_WG_Q4-20 21_N	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00060	0.00055	0.00005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 331429)</b>											
CG2105157-001	LC_PIZP1103_WG_Q4-20 21_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0022	0.0016	0.0005	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00023	0.00024	0.00001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00087	0.00098	0.00011	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0612	0.0620	1.25%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.469	0.486	3.42%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0150	mg/L	<0.0150 µg/L	<0.0000150	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	29.7	29.2	1.77%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.12 µg/L	0.00012	0.000002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00157	0.00158	0.000007	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.112	0.114	2.26%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	15.1	15.2	1.13%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0800	0.0810	1.17%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0228	0.0240	5.04%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00053	<0.00050	0.00003	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.53	1.55	1.29%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.25	4.14	2.56%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 331429) - continued</b>											
CG2105157-001	LC_PIZP1103_WG_Q4-20 21_N	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	127	130	2.07%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.767	0.797	3.83%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	10.7	10.7	0.125%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00195	0.00197	1.24%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	0.00052	0.00002	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0018	0.00006	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 331430)</b>											
CG2105157-001	LC_PIZP1103_WG_Q4-20 21_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00020	0.00021	0.000010	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 331511)</b>											
CG2105081-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 328720)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 328825)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 328827)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 328828)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 331251)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 331633)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 328735)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 328754)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 328755)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 328756)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 328757)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 328758)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 328759)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 328898)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 330612)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 332695)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 332695) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 332502)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 332504)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 330664)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 330664) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 330665)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 331429)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 331430)</b>						



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 331430) - continued</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 331511)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 328720)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	97.4	85.0	115	---
<b>Physical Tests (QCLot: 328825)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	104	90.0	110	---
<b>Physical Tests (QCLot: 328826)</b>									
pH	---	E108	---	pH units	7 pH units	99.1	98.6	101	---
<b>Physical Tests (QCLot: 328827)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 328828)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 330051)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.9	95.4	104	---
<b>Physical Tests (QCLot: 331251)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 331633)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	95.8	85.0	115	---
<b>Anions and Nutrients (QCLot: 328735)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	99.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 328754)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	108	90.0	110	---
<b>Anions and Nutrients (QCLot: 328755)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 328756)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	108	90.0	110	---
<b>Anions and Nutrients (QCLot: 328757)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	109	90.0	110	---
<b>Anions and Nutrients (QCLot: 328758)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 328759)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 328898)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	108	85.0	115	---
<b>Anions and Nutrients (QCLot: 330612)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 330612) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 332695)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	102	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 332502)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	108	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 332504)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	111	80.0	120	----
<b>Total Metals (QCLot: 330664)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	109	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	115	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	112	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	85.0	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	83.2	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	115	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	109	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	110	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	107	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	99.0	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	107	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	120	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	108	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	93.2	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	108	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 330664) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	105	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	109	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	118	80.0	120	----
<b>Total Metals (QCLot: 330665)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
<b>Dissolved Metals (QCLot: 331429)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.0	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.1	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.1	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	86.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	93.9	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.6	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.6	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	111	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 331429) - continued</b>									
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 331430)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 328735)</b>										
CG2105158-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0506 mg/L	0.05 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 328754)</b>										
CG2105148-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	114 mg/L	100 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 328755)</b>										
CG2105148-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.564 mg/L	0.5 mg/L	113	75.0	125	----
<b>Anions and Nutrients (QCLot: 328756)</b>										
CG2105148-002	Anonymous	chloride	16887-00-6	E235.Cl-L	116 mg/L	100 mg/L	116	75.0	125	----
<b>Anions and Nutrients (QCLot: 328757)</b>										
CG2105148-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.92 mg/L	2.5 mg/L	117	75.0	125	----
<b>Anions and Nutrients (QCLot: 328758)</b>										
CG2105148-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.551 mg/L	0.5 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 328759)</b>										
CG2105148-002	Anonymous	fluoride	16984-48-8	E235.F	1.12 mg/L	1 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 328898)</b>										
FC2101002-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 330612)</b>										
CG2105144-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	3.09 mg/L	2.5 mg/L	124	70.0	130	----
<b>Anions and Nutrients (QCLot: 332695)</b>										
CG2105157-001	LC_PIZP1103_WG_Q4-202 1_N	phosphorus, total	7723-14-0	E372-U	0.0505 mg/L	0.0676 mg/L	74.7	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 332502)</b>										
CG2105157-001	LC_PIZP1103_WG_Q4-202 1_N	carbon, dissolved organic [DOC]	----	E358-L	26.1 mg/L	23.9 mg/L	109	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 332504)</b>										
CG2105157-001	LC_PIZP1103_WG_Q4-202 1_N	carbon, total organic [TOC]	----	E355-L	26.9 mg/L	23.9 mg/L	112	70.0	130	----
<b>Total Metals (QCLot: 330664)</b>										
VA21C3550-001	Anonymous	aluminum, total	7429-90-5	E420	1.07 mg/L	1 mg/L	107	70.0	130	----
		antimony, total	7440-36-0	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 330664) - continued</b>										
VA21C3550-001	Anonymous	arsenic, total	7440-38-2	E420	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		barium, total	7440-39-3	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		beryllium, total	7440-41-7	E420	0.209 mg/L	0.2 mg/L	105	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0427 mg/L	0.05 mg/L	85.5	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.5 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.0218 mg/L	0.02 mg/L	109	70.0	130	----
		calcium, total	7440-70-2	E420	20.0 mg/L	20 mg/L	100	70.0	130	----
		cobalt, total	7440-48-4	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		copper, total	7440-50-8	E420	0.0999 mg/L	0.1 mg/L	99.9	70.0	130	----
		iron, total	7439-89-6	E420	10.4 mg/L	10 mg/L	104	70.0	130	----
		lead, total	7439-92-1	E420	0.0946 mg/L	0.1 mg/L	94.6	70.0	130	----
		lithium, total	7439-93-2	E420	0.533 mg/L	0.5 mg/L	107	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	5 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		nickel, total	7440-02-0	E420	0.205 mg/L	0.2 mg/L	103	70.0	130	----
		potassium, total	7440-09-7	E420	19.9 mg/L	20 mg/L	99.6	70.0	130	----
		selenium, total	7782-49-2	E420	0.228 mg/L	0.2 mg/L	114	70.0	130	----
		silicon, total	7440-21-3	E420	51.6 mg/L	50 mg/L	103	70.0	130	----
		silver, total	7440-22-4	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	100 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.0185 mg/L	0.02 mg/L	92.6	70.0	130	----
		tin, total	7440-31-5	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		titanium, total	7440-32-6	E420	0.216 mg/L	0.2 mg/L	108	70.0	130	----
		uranium, total	7440-61-1	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		vanadium, total	7440-62-2	E420	0.537 mg/L	0.5 mg/L	107	70.0	130	----
		zinc, total	7440-66-6	E420	2.19 mg/L	2 mg/L	109	70.0	130	----
<b>Dissolved Metals (QCLot: 331429)</b>										
VA21C3867-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.198 mg/L	0.2 mg/L	98.8	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00915 mg/L	0.01 mg/L	91.5	70.0	130	----



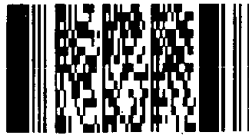
Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 331429) - continued</b>										
VA21C3867-001	Anonymous	boron, dissolved	7440-42-8	E421	0.090 mg/L	0.1 mg/L	90.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00366 mg/L	0.004 mg/L	91.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0186 mg/L	0.02 mg/L	93.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0432 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00370 mg/L	0.004 mg/L	92.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	22.1 mg/L	20 mg/L	111	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00366 mg/L	0.004 mg/L	91.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00400 mg/L	0.004 mg/L	100	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.389 mg/L	0.4 mg/L	97.4	70.0	130	----
<b>Dissolved Metals (QCLot: 331511)</b>										
CG2105127-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----

COC ID: **PIZP1103 20211022**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Sivets			Email 1:	chris.blurton@teck.com	x	x	
Email	tom.jeffery@teck.com			Email	Lyudmyla.Sivets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x	
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	x	x	
	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	tanya.dick@teck.com			
	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930			
	478			Phone Number	403 407 1794							

Environmental Division  
Calgary  
Work Order Reference  
**CG2105157**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH.	N	Y	Y	N	Y	N	N	N	N	N	N
								PRESERV.											
								ANALYSIS											
LC_PIZP1103_WG_Q4-2021_NP	LC_PIZP1103	WG		22-Oct	13:25	G	6			H2SO4	HCl	NONE	HNO3	HNO3	NONE	NaOH/Zn Ac	H2SO4		
								ALS_Package-BOD											
								ALS_Package-DOC											
								HG-D-CVAF-VA											
								HG-T-U-CVAF-VA											
								TECKCOAL-MET-D-VA											
								TECKCOAL-MET-T-VA											
								TECKCOAL-ROUTINE-VA											
								ALS_Package-Sulfide-T											
								ALS_Package-TKN/TOC											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	S. Fossen	22-Oct	<i>[Signature]</i>	23/10 8:20 Am

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	S. Fossen	
	Sampler's Signature	Date/Time
	<i>[Signature]</i>	October 22, 2021

7.0C

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105651**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : DC GW 20211110  
**Sampler** : T. Dick  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 12-Nov-2021 08:40  
**Date Analysis Commenced** : 12-Nov-2021  
**Issue Date** : 23-Nov-2021 14:59

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
IB:INT	Ion Balance Reviewed: Imbalance is due to interference or non-measured component.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID		LC_PIZDC1404	LC_PIZDC1404	---	---	---
(Matrix: Water)					D_WG_Q4-2021	S_WG_Q4-2021	_NP	_NP	---	---	---
Client sampling date / time					10-Nov-2021	10-Nov-2021	---	---	---	---	---
					13:30	14:25	---	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2105651-001	CG2105651-002	-----	-----	-----	-----	-----
					Result	Result	---	---	---	---	---
<b>Physical Tests</b>											
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	2.5	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	362	186	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	442	227	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	442	227	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	706	364	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	280	178	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	436	468	---	---	---	---	---
pH	---	E108	0.10	pH units	8.13	7.87	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	385	209	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	4.1	6.0	---	---	---	---	---
turbidity	---	E121	0.10	NTU	11.1	9.91	---	---	---	---	---
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	2.34	0.0173	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050 <sup>RRV</sup>	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.40 <sup>RRV</sup>	0.11	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.172 <sup>RRV</sup>	0.119	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	2.51	0.104	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0070 <sup>RRV</sup>	0.139	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010 <sup>RRV</sup>	0.0038	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0125	0.0225	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30 <sup>RRV</sup>	4.79	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	2.83	2.56	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	2.87	2.32	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1404 D_WG_Q4-2021 _NP	LC_PIZDC1404 S_WG_Q4-2021 _NP	---	---	---
Client sampling date / time					10-Nov-2021 13:30	10-Nov-2021 14:25	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2105651-001 Result	CG2105651-002 Result	----- ---	----- ---	----- ---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	8.85	4.66	----	----	----	
cation sum	----	EC101	0.10	meq/L	7.92	3.66	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	89.5	78.5 <sup>IB.INT</sup>	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.54	12.0	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0038	0.0336	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	<0.00010	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00154	0.00213	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	3.72	0.221	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.022	<0.010	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0100 <sup>DLM</sup>	0.0128	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	53.7	48.0	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00014	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.98	0.33	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	1.96	1.14	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000116	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.518	0.0054	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	33.8	17.4	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0302	0.0251	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0199	0.00330	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00066	0.00143	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	23.3	1.50	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	0.052	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.79	3.64	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	33.3	1.23	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.226	0.0481	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1404 D_WG_Q4-2021 _NP	LC_PIZDC1404 S_WG_Q4-2021 _NP	---	---	---
Client sampling date / time					10-Nov-2021 13:30	10-Nov-2021 14:25	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2105651-001 Result	CG2105651-002 Result	----- ---	----- ---	----- ---	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	2.20	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00090 <sup>DLM</sup>	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000124	0.000593	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0024	0.0014	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00156	0.00156	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	3.94	0.213	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	<0.010	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	57.1	45.1	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.96	0.29	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00028	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	1.93	0.767	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.569	0.0053	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	33.3	15.8	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0310	0.0228	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0195	0.00314	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00055	0.00125	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	25.8	1.56	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1404 D_WG_Q4-2021 _NP	LC_PIZDC1404 S_WG_Q4-2021 _NP	---	---	---
Client sampling date / time					10-Nov-2021 13:30	10-Nov-2021 14:25	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2105651-001 Result	CG2105651-002 Result	----- ---	----- ---	----- ---	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.71	3.36	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	33.0	0.968	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.237	0.0460	---	---	---	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	2.14	---	---	---	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000114	0.000512	---	---	---	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0019	<0.0010	---	---	---	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	---	---	---	
dissolved metals filtration location	----	EP421	-	-	Field	Field	---	---	---	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105651</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 12-Nov-2021 08:40
PO	: VPO00739930	Issue Date	: 23-Nov-2021 14:59
C-O-C number	: DC GW 20211110		
Sampler	: T. Dick		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404D_WG_Q4-2021_NP	E298	10-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	11 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404S_WG_Q4-2021_NP	E298	10-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	11 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1404D_WG_Q4-2021_NP	E235.Br-L	10-Nov-2021	----	----	----		12-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1404S_WG_Q4-2021_NP	E235.Br-L	10-Nov-2021	----	----	----		12-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1404D_WG_Q4-2021_NP	E235.Cl-L	10-Nov-2021	----	----	----		12-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1404S_WG_Q4-2021_NP	E235.Cl-L	10-Nov-2021	----	----	----		12-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZDC1404D_WG_Q4-2021_NP	E378-U	10-Nov-2021	----	----	----		12-Nov-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_PIZDC1404S_WG_Q4-2021_NP	E378-U	10-Nov-2021	----	----	----		12-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZDC1404D_WG_Q4-2021_NP	E235.F	10-Nov-2021	----	----	----		12-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZDC1404S_WG_Q4-2021_NP	E235.F	10-Nov-2021	----	----	----		12-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_PIZDC1404D_WG_Q4-2021_NP	E235.NO3-L	10-Nov-2021	----	----	----		12-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_PIZDC1404S_WG_Q4-2021_NP	E235.NO3-L	10-Nov-2021	----	----	----		12-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_PIZDC1404D_WG_Q4-2021_NP	E235.NO2-L	10-Nov-2021	----	----	----		12-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_PIZDC1404S_WG_Q4-2021_NP	E235.NO2-L	10-Nov-2021	----	----	----		12-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_PIZDC1404D_WG_Q4-2021_NP	E235.SO4	10-Nov-2021	----	----	----		12-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_PIZDC1404S_WG_Q4-2021_NP	E235.SO4	10-Nov-2021	----	----	----		12-Nov-2021	28 days	2 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404D_WG_Q4-2021_NP	E318	10-Nov-2021	18-Nov-2021	----	----		22-Nov-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404S_WG_Q4-2021_NP	E318	10-Nov-2021	18-Nov-2021	----	----		22-Nov-2021	28 days	12 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404D_WG_Q4-2021_NP	E372-U	10-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404S_WG_Q4-2021_NP	E372-U	10-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1404D_WG_Q4-2021_NP	E421.Cr-L	10-Nov-2021	18-Nov-2021	----	----		19-Nov-2021	180 days	10 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1404S_WG_Q4-2021_NP	E421.Cr-L	10-Nov-2021	18-Nov-2021	----	----		19-Nov-2021	180 days	10 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1404D_WG_Q4-2021_NP	E509	10-Nov-2021	18-Nov-2021	----	----		18-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1404S_WG_Q4-2021_NP	E509	10-Nov-2021	18-Nov-2021	----	----		18-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1404D_WG_Q4-2021_NP	E421	10-Nov-2021	18-Nov-2021	----	----		19-Nov-2021	180 days	10 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1404S_WG_Q4-2021_NP	E421	10-Nov-2021	18-Nov-2021	----	----		19-Nov-2021	180 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1404D_WG_Q4-2021_NP	E358-L	10-Nov-2021	15-Nov-2021	----	----		19-Nov-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1404S_WG_Q4-2021_NP	E358-L	10-Nov-2021	15-Nov-2021	----	----		19-Nov-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404D_WG_Q4-2021_NP	E355-L	10-Nov-2021	15-Nov-2021	----	----		19-Nov-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1404S_WG_Q4-2021_NP	E355-L	10-Nov-2021	15-Nov-2021	----	----		19-Nov-2021	28 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1404D_WG_Q4-2021_NP	E283	10-Nov-2021	----	----	----		12-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1404S_WG_Q4-2021_NP	E283	10-Nov-2021	----	----	----		12-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1404D_WG_Q4-2021_NP	E290	10-Nov-2021	----	----	----		12-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1404S_WG_Q4-2021_NP	E290	10-Nov-2021	----	----	----		12-Nov-2021	14 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> LC_PIZDC1404D_WG_Q4-2021_NP	E100	10-Nov-2021	----	----	----		12-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> LC_PIZDC1404S_WG_Q4-2021_NP	E100	10-Nov-2021	----	----	----		12-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> LC_PIZDC1404S_WG_Q4-2021_NP	E125	10-Nov-2021	----	----	----		17-Nov-2021	0.25 hrs	168 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> LC_PIZDC1404D_WG_Q4-2021_NP	E125	10-Nov-2021	----	----	----		17-Nov-2021	0.25 hrs	169 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> LC_PIZDC1404S_WG_Q4-2021_NP	E108	10-Nov-2021	----	----	----		12-Nov-2021	0.25 hrs	48 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> LC_PIZDC1404D_WG_Q4-2021_NP	E108	10-Nov-2021	----	----	----		12-Nov-2021	0.25 hrs	49 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_PIZDC1404D_WG_Q4-2021_NP	E162	10-Nov-2021	----	----	----		16-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_PIZDC1404S_WG_Q4-2021_NP	E162	10-Nov-2021	----	----	----		16-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZDC1404D_WG_Q4-2021_NP	E160-L	10-Nov-2021	----	----	----		16-Nov-2021	7 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZDC1404S_WG_Q4-2021_NP	E160-L	10-Nov-2021	----	----	----		16-Nov-2021	7 days	6 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZDC1404D_WG_Q4-2021_NP	E121	10-Nov-2021	----	----	----		13-Nov-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZDC1404S_WG_Q4-2021_NP	E121	10-Nov-2021	----	----	----		13-Nov-2021	3 days	3 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1404D_WG_Q4-2021_NP	E420.Cr-L	10-Nov-2021	----	----	----		19-Nov-2021	180 days	9 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1404S_WG_Q4-2021_NP	E420.Cr-L	10-Nov-2021	----	----	----		19-Nov-2021	180 days	9 days	✔	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1404D_WG_Q4-2021_NP	E420	10-Nov-2021	----	----	----		19-Nov-2021	180 days	9 days	✔	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC1404S_WG_Q4-2021_NP	E420	10-Nov-2021	----	----	----		19-Nov-2021	180 days	9 days	✔	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	343714	1	19	5.2	5.0	✓
Alkalinity Species by Titration	E290	343712	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	349562	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	343829	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	343830	1	20	5.0	5.0	✓
Conductivity in Water	E100	343710	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	347302	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	348020	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	347301	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	345112	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	343517	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	343833	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	343831	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	343832	1	20	5.0	5.0	✓
ORP by Electrode	E125	346809	1	20	5.0	5.0	✓
pH by Meter	E108	343711	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	343828	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	345451	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	347465	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	348015	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	347464	2	17	11.7	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	345132	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	344494	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	344159	2	40	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	343714	1	19	5.2	5.0	✓
Alkalinity Species by Titration	E290	343712	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	349562	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	343829	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	343830	1	20	5.0	5.0	✓
Conductivity in Water	E100	343710	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	347302	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	348020	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	347301	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	345112	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	343517	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	343833	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	343831	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	343832	1	20	5.0	5.0	✓
ORP by Electrode	E125	346809	1	20	5.0	5.0	✓
pH by Meter	E108	343711	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	343828	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	345451	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	347465	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	348015	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	347464	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	345132	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	344494	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	345446	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	344159	2	40	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	343714	1	19	5.2	5.0	✓
Alkalinity Species by Titration	E290	343712	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	349562	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	343829	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	343830	1	20	5.0	5.0	✓
Conductivity in Water	E100	343710	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	347302	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	348020	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	347301	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	345112	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	343517	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	343833	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	343831	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	343832	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	343828	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	345451	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	347465	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	348015	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	347464	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	345132	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	344494	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	345446	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	344159	2	40	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	349562	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	343829	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	343830	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	347302	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	348020	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	347301	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	345112	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	343517	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	343833	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	343831	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	343832	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	343828	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	347465	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	348015	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	347464	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	345132	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	344494	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105651**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : DC GW 20211110  
**Sampler** : T. Dick  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 12-Nov-2021 08:40  
**Date Analysis Commenced** : 12-Nov-2021  
**Issue Date** : 23-Nov-2021 14:59

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 17  
Work Order : CG2105651  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 343710)</b>											
CG2105644-002	Anonymous	conductivity	----	E100	2.0	µS/cm	4060	4060	0.00%	10%	----
<b>Physical Tests (QC Lot: 343711)</b>											
CG2105644-002	Anonymous	pH	----	E108	0.10	pH units	7.16	7.18	0.279%	4%	----
<b>Physical Tests (QC Lot: 343712)</b>											
CG2105644-002	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	439	442	0.707%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	535	539	0.707%	20%	----
<b>Physical Tests (QC Lot: 343714)</b>											
CG2105644-002	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	10.0	mg/L	54.9	46.1	8.8	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 344159)</b>											
CG2105635-002	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 344204)</b>											
CG2105636-004	Anonymous	turbidity	----	E121	0.10	NTU	0.18	0.16	0.02	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 345451)</b>											
CG2105635-003	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 346809)</b>											
CG2105642-006	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	456	458	0.438%	15%	----
<b>Anions and Nutrients (QC Lot: 343517)</b>											
CG2105642-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 343828)</b>											
CG2105643-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	98.9	99.3	0.394%	20%	----
<b>Anions and Nutrients (QC Lot: 343829)</b>											
CG2105643-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 343830)</b>											
CG2105643-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	32.2	32.2	0.0304%	20%	----
<b>Anions and Nutrients (QC Lot: 343831)</b>											
CG2105643-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.146	0.143	0.0035	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 343832)</b>											
CG2105643-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 343833)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 343833) - continued</b>											
CG2105643-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.204	0.200	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 344494)</b>											
CG2105642-006	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348015)</b>											
CG2105644-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	3.15	3.06	2.92%	20%	----
<b>Anions and Nutrients (QC Lot: 349562)</b>											
CG2105652-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 345112)</b>											
CG2105642-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 345132)</b>											
CG2105642-006	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.00	0.97	0.04	Diff <2x LOR	----
<b>Total Metals (QC Lot: 347464)</b>											
CG2105642-005	Anonymous	vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00075	0.00066	0.00008	Diff <2x LOR	----
CG2105642-005	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0822	0.0993	18.8%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00059	0.00059	0.000003	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00017	0.00022	0.00005	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0596	0.0619	3.67%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.023	0.025	0.002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.179 µg/L	0.000169	6.00%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	271	280	3.27%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.17 µg/L	0.00017	0.000002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00051	0.00053	0.00002	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.163	0.188	14.4%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000223	0.000228	0.000006	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.344	0.350	1.55%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	154	152	0.929%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00292	0.00318	8.55%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00240	0.00242	0.536%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0118	0.0119	0.624%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	6.02	6.01	0.0922%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	170 µg/L	0.166	1.92%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.61	2.55	2.43%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 347464) - continued</b>											
CG2105642-005	Anonymous	sodium, total	17341-25-2	E420	0.050	mg/L	9.87	10.0	1.44%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.436	0.424	2.80%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	267	263	1.48%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000014	0.000013	0.0000009	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00200	0.00161	0.00040	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.0146	0.0146	0.640%	20%	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0072	0.0073	0.00009	Diff <2x LOR	----
<b>Total Metals (QC Lot: 347465)</b>											
CG2105642-005	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00028	0.00028	0.0000008	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 347301)</b>											
CG2105641-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0020	0.0021	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00340	0.00336	1.17%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0157	0.0162	3.21%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.112	0.112	0.0004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	3.86 µg/L	0.00388	0.491%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	541	541	0.0551%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	91.7 µg/L	0.0919	0.166%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00108	0.00111	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	1.00	1.01	0.175%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	231	232	0.456%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.396	0.396	0.150%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00723	0.00734	1.57%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.536	0.536	0.00774%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	17.4	17.5	0.873%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	35.9 µg/L	0.0343	4.49%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.74	2.75	0.528%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	24.3	24.0	1.13%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.918	0.926	0.906%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 347301) - continued</b>											
CG2105641-001	Anonymous	sulfur, dissolved	7704-34-9	E421	1.00	mg/L	492	482	1.96%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000206	0.000205	0.735%	20%	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0369	0.0362	1.97%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.223	0.225	0.678%	20%	----
<b>Dissolved Metals (QC Lot: 347302)</b>											
CG2105641-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 348020)</b>											
CG2105642-007	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 343710)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 343712)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 343714)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 344159)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 344204)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 345446)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 345451)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 343517)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 343828)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 343829)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 343830)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 343831)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 343832)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 343833)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 344494)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 348015)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 348015) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 349562)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 345112)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 345132)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 347464)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 347464) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 347465)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 347301)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 347301) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 347302)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 348020)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 343710)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	---
<b>Physical Tests (QCLot: 343711)</b>									
pH	---	E108	---	pH units	7 pH units	99.4	98.6	101	---
<b>Physical Tests (QCLot: 343712)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	99.5	85.0	115	---
<b>Physical Tests (QCLot: 343714)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	97.9	85.0	115	---
<b>Physical Tests (QCLot: 344159)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.5	85.0	115	---
<b>Physical Tests (QCLot: 344204)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	97.6	85.0	115	---
<b>Physical Tests (QCLot: 345446)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	91.7	85.0	115	---
<b>Physical Tests (QCLot: 345451)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	93.1	85.0	115	---
<b>Physical Tests (QCLot: 346809)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 343517)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	95.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 343828)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 343829)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.2	85.0	115	---
<b>Anions and Nutrients (QCLot: 343830)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 343831)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 343832)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.7	90.0	110	---
<b>Anions and Nutrients (QCLot: 343833)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 344494)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 344494) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	93.4	80.0	120	----
<b>Anions and Nutrients (QCLot: 348015)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	97.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 349562)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.4	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 345112)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.6	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 345132)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	97.5	80.0	120	----
<b>Total Metals (QCLot: 347464)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	99.7	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.1	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.4	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	87.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.8	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.1	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.5	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.2	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.5	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	99.6	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.1	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	99.5	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	104	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	95.9	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	108	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 347464) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	99.1	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.7	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	98.2	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.6	80.0	120	----
<b>Total Metals (QCLot: 347465)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
<b>Dissolved Metals (QCLot: 347301)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.5	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	93.5	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.7	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	95.5	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	94.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.0	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	94.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	94.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.7	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	94.0	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	92.5	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.3	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.1	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.9	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.8	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 347301) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.3	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	92.7	80.0	120	----
<b>Dissolved Metals (QCLot: 347302)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.4	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 343517)</b>										
CG2105642-006	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0514 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 343828)</b>										
CG2105655-014	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 343829)</b>										
CG2105655-014	Anonymous	bromide	24959-67-9	E235.Br-L	0.524 mg/L	0.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 343830)</b>										
CG2105655-014	Anonymous	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 343831)</b>										
CG2105655-014	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.65 mg/L	2.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 343832)</b>										
CG2105655-014	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.532 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 343833)</b>										
CG2105655-014	Anonymous	fluoride	16984-48-8	E235.F	1.03 mg/L	1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 344494)</b>										
CG2105642-007	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0583 mg/L	0.0676 mg/L	86.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 348015)</b>										
CG2105644-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.67 mg/L	2.5 mg/L	107	70.0	130	----
<b>Anions and Nutrients (QCLot: 349562)</b>										
CG2105652-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.116 mg/L	0.1 mg/L	116	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 345112)</b>										
CG2105642-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.6 mg/L	23.9 mg/L	103	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 345132)</b>										
CG2105642-006	Anonymous	carbon, total organic [TOC]	----	E355-L	22.0 mg/L	23.9 mg/L	91.9	70.0	130	----
<b>Total Metals (QCLot: 347464)</b>										
CG2105642-006	Anonymous	aluminum, total	7429-90-5	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, total	7440-36-0	E420	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 347464) - continued</b>										
CG2105642-006	Anonymous	beryllium, total	7440-41-7	E420	0.0373 mg/L	0.04 mg/L	93.4	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00922 mg/L	0.01 mg/L	92.2	70.0	130	----
		boron, total	7440-42-8	E420	0.084 mg/L	0.1 mg/L	84.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00366 mg/L	0.004 mg/L	91.4	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0185 mg/L	0.02 mg/L	92.5	70.0	130	----
		iron, total	7439-89-6	E420	1.94 mg/L	2 mg/L	97.0	70.0	130	----
		lead, total	7439-92-1	E420	0.0177 mg/L	0.02 mg/L	88.3	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0192 mg/L	0.02 mg/L	96.3	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0213 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.49 mg/L	10 mg/L	94.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00382 mg/L	0.004 mg/L	95.4	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00347 mg/L	0.004 mg/L	86.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		titanium, total	7440-32-6	E420	0.0428 mg/L	0.04 mg/L	107	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.351 mg/L	0.4 mg/L	87.7	70.0	130	----
<b>Total Metals (QCLot: 347465)</b>										
CG2105642-006	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
<b>Dissolved Metals (QCLot: 347301)</b>										
CG2105641-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.381 mg/L	0.4 mg/L	95.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0733 mg/L	0.08 mg/L	91.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0169 mg/L	0.02 mg/L	84.4	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 347301) - continued</b>										
CG2105641-002	Anonymous	boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00770 mg/L	0.008 mg/L	96.2	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0345 mg/L	0.04 mg/L	86.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.74 mg/L	4 mg/L	93.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0353 mg/L	0.04 mg/L	88.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0850 mg/L	0.08 mg/L	106	70.0	130	----
		silicon, dissolved	7440-21-3	E421	17.9 mg/L	20 mg/L	89.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00768 mg/L	0.008 mg/L	96.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00726 mg/L	0.008 mg/L	90.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0831 mg/L	0.08 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.200 mg/L	0.2 mg/L	99.8	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.673 mg/L	0.8 mg/L	84.1	70.0	130	----
<b>Dissolved Metals (QCLot: 347302)</b>										
CG2105641-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0769 mg/L	0.08 mg/L	96.2	70.0	130	----
<b>Dissolved Metals (QCLot: 348020)</b>										
CG2105642-009	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000980 mg/L	0.0001 mg/L	98.0	70.0	130	----

<b>COC ID:</b>	<b>DC GW 20211110</b>	<b>TURNAROUND TIME:</b>		<b>RUSH:</b>	
<b>PROJECT/CLIENT INFO</b>			<b>LABORATORY</b>		<b>OTHER INFO</b>
Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary		Report Format / Distribution
Project Manager	Tom Jeffery	Lab Contact	Lyudmyla Shvets		Excel
Email	tom.jeffery@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com		PDF
Address	Box 2003	Address	2559 29 Street NE		EDD
	15km North Hwy 43				
City	Sparwood	Province	BC	City	Calgary
Postal Code	V0B 2G0	Country	Canada	Province	AB
Phone Number	250-425-8478	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403 407 1794		PO number
					VPO00739930

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FIL	F	N	N	F	N	F	N	N				
LC_PIZDC1404D_WG_Q4-2021_NP	LC_PIZDC1404D	WG	N	11/10/2021	13:10	G	6	RESERV.	H2SO4	NAHSO4	H2SO4	HCL	HCL	HNO3	HNO3	NONE				
LC_PIZDC1404S_WG_Q4-2021_NP	LC_PIZDC1404S	WG	N	11/10/2021	14:35	G	6	ANALYSIS	ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-NIG-T-CL	TECKCOAL-ROUTINE-VA				

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
	T. Dick	Nov 10		11/12 840
<b>SERVICE REQUEST (rush - subject to availability)</b>	<b>Sampler's Name</b>	<b>Mobile #</b>	<b>Date/Time</b>	
Regular (default) <input checked="" type="checkbox"/>	T. Dick			
Priority (2-3 business days) - 50% surcharge	<b>Sampler's Signature</b>			
Emergency (1 Business Day) - 100% surcharge	T Dick			
For Emergency <1 Day, ASAP or Weekend - Contact ALS				November 10, 2021

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2105651**



Telephone : +1 403 407 1800



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105681**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
 Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : DC GW 20211112  
**Sampler** : TD  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 13-Nov-2021 08:45  
**Date Analysis Commenced** : 13-Nov-2021  
**Issue Date** : 25-Nov-2021 08:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_PIZDC0901	---	---	---	---
(Matrix: Water)						_WG_Q4-2021_				
					Client sampling date / time	12-Nov-2021	---	---	---	---
						13:00				
Analyte	CAS Number	Method	LOR	Unit	CG2105681-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	5.8	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	367	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	448	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	367	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	632	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	346	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	466	---	---	---	---	---
pH	---	E108	0.10	pH units	7.64	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	377	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	4.6	---	---	---	---	---
turbidity	---	E121	0.10	NTU	12.7	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0188	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.53	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.072	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.099	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0389	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0167	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0218	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	12.1	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	2.78	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	2.33	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC0901 _WG_Q4-2021_ NP	----	----	----	----
Client sampling date / time					12-Nov-2021 13:00	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105681-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	7.61	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	7.07	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.9	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.68	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0466	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00039	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00030	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.262	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0988	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	98.3	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00021	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.11	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00099	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.088	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000126	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0033	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	24.1	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00776	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000646	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00158	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.33	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	1.02	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	5.73	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	2.66	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.170	----	----	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC0901 _WG_Q4-2021_ NP	----	----	----	----
Client sampling date / time					12-Nov-2021 13:00	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105681-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	4.92	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000015	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00075	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00271	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00078	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00038	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00031	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.268	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0722	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	95.1	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00016	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00069	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000072	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0029	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	26.4	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00094	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000754	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00117	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.33	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	1.27	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC0901 _WG_Q4-2021_ NP	----	----	----	----
Client sampling date / time					12-Nov-2021 13:00	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105681-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.54	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.75	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.169	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.71	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000011	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00294	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0013	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105681</b>	Page	: 1 of 11
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 13-Nov-2021 08:45
PO	: VPO00739930	Issue Date	: 25-Nov-2021 08:55
C-O-C number	: DC GW 20211112		
Sampler	: TD		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q4-2021_NP	E298	12-Nov-2021	22-Nov-2021	----	----		22-Nov-2021	28 days	10 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2021_NP	E235.Br-L	12-Nov-2021	----	----	----		13-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2021_NP	E235.Cl-L	12-Nov-2021	----	----	----		13-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2021_NP	E378-U	12-Nov-2021	----	----	----		13-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2021_NP	E235.F	12-Nov-2021	----	----	----		13-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2021_NP	E235.NO3-L	12-Nov-2021	----	----	----		13-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2021_NP	E235.NO2-L	12-Nov-2021	----	----	----		13-Nov-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2021_NP	E235.SO4	12-Nov-2021	----	----	----		13-Nov-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q4-2021_NP	E318	12-Nov-2021	19-Nov-2021	----	----		20-Nov-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q4-2021_NP	E372-U	12-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC0901_WG_Q4-2021_NP	E421.Cr-L	12-Nov-2021	18-Nov-2021	----	----		19-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC0901_WG_Q4-2021_NP	E509	12-Nov-2021	19-Nov-2021	----	----		19-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC0901_WG_Q4-2021_NP	E421	12-Nov-2021	18-Nov-2021	----	----		19-Nov-2021	180 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC0901_WG_Q4-2021_NP	E358-L	12-Nov-2021	15-Nov-2021	----	----		19-Nov-2021	28 days	7 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC0901_WG_Q4-2021_NP	E355-L	12-Nov-2021	15-Nov-2021	----	----		19-Nov-2021	28 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2021_NP	E283	12-Nov-2021	----	----	----		15-Nov-2021	14 days	3 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2021_NP	E290	12-Nov-2021	----	----	----		15-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2021_NP	E100	12-Nov-2021	----	----	----		15-Nov-2021	28 days	3 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2021_NP	E125	12-Nov-2021	----	----	----		18-Nov-2021	0.25 hrs	141 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2021_NP	E108	12-Nov-2021	----	----	----		15-Nov-2021	0.25 hrs	69 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2021_NP	E162	12-Nov-2021	----	----	----		17-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_PIZDC0901_WG_Q4-2021_NP	E160-L	12-Nov-2021	----	----	----		17-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> LC_PIZDC0901_WG_Q4-2021_NP	E121	12-Nov-2021	----	----	----		14-Nov-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC0901_WG_Q4-2021_NP	E420.Cr-L	12-Nov-2021	----	----	----		19-Nov-2021	180 days	7 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> LC_PIZDC0901_WG_Q4-2021_NP	E420	12-Nov-2021	----	----	----		19-Nov-2021	180 days	7 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 5 of 11  
Work Order : CG2105681  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	344899	1	10	10.0	5.0	✓
Alkalinity Species by Titration	E290	344894	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	350200	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	344469	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	344470	1	13	7.6	5.0	✓
Conductivity in Water	E100	344892	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	347479	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	348141	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	347480	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	345146	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	344435	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	344467	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	344471	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	344472	1	13	7.6	5.0	✓
ORP by Electrode	E125	347475	1	20	5.0	5.0	✓
pH by Meter	E108	344893	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	344468	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	346408	1	10	10.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	347471	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	348808	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	347470	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	345161	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	345010	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	344478	1	5	20.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	344899	1	10	10.0	5.0	✓
Alkalinity Species by Titration	E290	344894	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	350200	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	344469	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	344470	1	13	7.6	5.0	✓
Conductivity in Water	E100	344892	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	347479	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	348141	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	347480	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	345146	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	344435	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	344467	1	13	7.6	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	344471	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	344472	1	13	7.6	5.0	✓
ORP by Electrode	E125	347475	1	20	5.0	5.0	✓
pH by Meter	E108	344893	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	344468	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	346408	1	10	10.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	347471	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	348808	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	347470	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	345161	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	345010	1	16	6.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	346400	1	13	7.6	5.0	✓
Turbidity by Nephelometry	E121	344478	1	5	20.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	344899	1	10	10.0	5.0	✓
Alkalinity Species by Titration	E290	344894	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	350200	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	344469	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	344470	1	13	7.6	5.0	✓
Conductivity in Water	E100	344892	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	347479	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	348141	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	347480	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	345146	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	344435	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	344467	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	344471	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	344472	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	344468	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	346408	1	10	10.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	347471	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	348808	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	347470	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	345161	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	345010	1	16	6.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	346400	1	13	7.6	5.0	✓
Turbidity by Nephelometry	E121	344478	1	5	20.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	350200	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	344469	1	13	7.6	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	344470	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	347479	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	348141	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	347480	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	345146	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	344435	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	344467	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	344471	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	344472	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	344468	1	13	7.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	347471	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	348808	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	347470	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	345161	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	345010	1	16	6.2	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105681**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : DC GW 20211112  
**Sampler** : TD  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 13-Nov-2021 08:45  
**Date Analysis Commenced** : 13-Nov-2021  
**Issue Date** : 25-Nov-2021 08:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 17  
Work Order : CG2105681  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 344478)</b>											
CG2105680-001	Anonymous	turbidity	----	E121	0.10	NTU	114	110	3.74%	15%	----
<b>Physical Tests (QC Lot: 344892)</b>											
CG2105673-004	Anonymous	conductivity	----	E100	2.0	µS/cm	1790	1780	0.280%	10%	----
<b>Physical Tests (QC Lot: 344893)</b>											
CG2105673-004	Anonymous	pH	----	E108	0.10	pH units	7.62	7.64	0.262%	4%	----
<b>Physical Tests (QC Lot: 344894)</b>											
CG2105673-004	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	489	482	1.50%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	489	482	1.50%	20%	----
<b>Physical Tests (QC Lot: 344899)</b>											
CG2105676-003	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	2.8	2.5	0.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 346408)</b>											
CG2105677-002	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1560	1570	0.639%	20%	----
<b>Physical Tests (QC Lot: 347475)</b>											
CG2105675-010	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	448	440	1.91%	15%	----
<b>Anions and Nutrients (QC Lot: 344435)</b>											
CG2105676-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	0.0012	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 344467)</b>											
CG2105676-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.145	0.142	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 344468)</b>											
CG2105676-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	302	299	0.886%	20%	----
<b>Anions and Nutrients (QC Lot: 344469)</b>											
CG2105676-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 344470)</b>											
CG2105676-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	5.74	5.68	1.03%	20%	----
<b>Anions and Nutrients (QC Lot: 344471)</b>											
CG2105676-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	19.9	19.7	0.903%	20%	----
<b>Anions and Nutrients (QC Lot: 344472)</b>											
CG2105676-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0307	0.0298	0.0009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 345010)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 345010) - continued</b>											
CG2105675-010	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0046	0.0046	0.00002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348808)</b>											
CG2105567-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 350200)</b>											
CG2105673-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 345146)</b>											
CG2105675-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.01	0.89	0.12	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 345161)</b>											
CG2105676-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 347470)</b>											
CG2105662-002	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0069	0.0089	0.0020	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00014	0.00017	0.00003	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0588	0.0588	0.154%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0145 µg/L	0.0000128	0.0000017	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	88.3	88.8	0.560%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.014	0.016	0.001	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0081	0.0082	0.00007	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	45.7	47.0	2.79%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00217	0.00219	0.995%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000956	0.00103	7.10%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00064	0.00065	0.000005	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.918	0.926	0.924%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	40.8 µg/L	0.0410	0.723%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.17	2.27	4.48%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	1.79	1.75	2.18%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.131	0.135	2.92%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	77.0	79.8	3.62%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 347470) - continued</b>											
CG2105662-002	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00266	0.00271	1.74%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 347471)</b>											
CG2105662-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00015	0.00022	0.00008	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 347479)</b>											
CG2105677-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 347480)</b>											
CG2105677-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0021	<0.0020	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00204	0.00198	2.90%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00034	0.00035	0.000008	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0349	0.0353	1.00%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.028	0.029	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	<0.0100 µg/L	<0.0000100	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	294	296	0.407%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	0.30 µg/L	0.00028	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00076	0.00076	0.000006	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.232	0.223	4.03%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	216	215	0.465%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.00045	0.00049	0.00004	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.0116	0.0114	1.33%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.0756	0.0772	2.10%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	6.52	6.61	1.28%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	342 µg/L	0.360	5.11%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.83	2.94	4.03%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	41.3	41.1	0.466%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.986	0.959	2.85%	20%	----

Page : 6 of 17  
 Work Order : CG2105681  
 Client : Teck Coal Limited  
 Project : LINE CREEK OPERATION



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 347480) - continued</b>											
CG2105677-001	Anonymous	sulfur, dissolved	7704-34-9	E421	1.00	mg/L	397	404	1.68%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000037	0.000032	0.000005	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0182	0.0184	0.666%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 348141)</b>											
CG2105681-001	LC_PIZDC0901_WG_Q4-2 021_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 344478)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 344892)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 344894)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 344899)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 346400)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 346408)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 344435)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 344467)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 344468)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 344469)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 344470)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 344471)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 344472)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 345010)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 348808)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 350200)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 350200) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 345146)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 345161)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 347470)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 347470) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 347471)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 347479)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 347480)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---

Page : 10 of 17  
Work Order : CG2105681  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 347480) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 348141)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 344478)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 344892)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	95.0	90.0	110	---
<b>Physical Tests (QCLot: 344893)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 344894)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 344899)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	98.1	85.0	115	---
<b>Physical Tests (QCLot: 346400)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.5	85.0	115	---
<b>Physical Tests (QCLot: 346408)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 347475)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 344435)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	95.6	80.0	120	---
<b>Anions and Nutrients (QCLot: 344467)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	93.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 344468)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	91.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 344469)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	94.9	85.0	115	---
<b>Anions and Nutrients (QCLot: 344470)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	94.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 344471)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	94.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 344472)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 345010)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	90.6	80.0	120	---
<b>Anions and Nutrients (QCLot: 348808)</b>									



Page : 12 of 17  
 Work Order : CG2105681  
 Client : Teck Coal Limited  
 Project : LINE CREEK OPERATION



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 348808) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	93.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 350200)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	92.2	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 345146)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	89.7	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 345161)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	92.5	80.0	120	----
<b>Total Metals (QCLot: 347470)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	93.8	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	94.6	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	96.6	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	96.3	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	92.8	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	94.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	96.6	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	93.4	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	93.7	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	95.0	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	115	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	90.9	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	95.6	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	95.7	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	96.4	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.0	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	98.6	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	89.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.6	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 347470) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.4	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.2	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	97.5	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.6	80.0	120	----
<b>Total Metals (QCLot: 347471)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	92.5	80.0	120	----
<b>Dissolved Metals (QCLot: 347479)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	96.7	80.0	120	----
<b>Dissolved Metals (QCLot: 347480)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	95.4	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	88.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.4	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.5	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.0	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.6	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	96.3	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	92.1	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.9	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.6	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.1	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.0	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.6	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 347480) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	97.6	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	93.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 344435)</b>										
CG2105676-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0484 mg/L	0.05 mg/L	96.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 344467)</b>										
CG2105676-002	Anonymous	fluoride	16984-48-8	E235.F	0.882 mg/L	1 mg/L	88.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 344468)</b>										
CG2105676-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 344469)</b>										
CG2105676-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.463 mg/L	0.5 mg/L	92.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 344470)</b>										
CG2105676-002	Anonymous	chloride	16887-00-6	E235.Cl-L	92.4 mg/L	100 mg/L	92.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 344471)</b>										
CG2105676-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 344472)</b>										
CG2105676-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.463 mg/L	0.5 mg/L	92.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 345010)</b>										
CG2105675-011	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0602 mg/L	0.0676 mg/L	89.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 348808)</b>										
CG2105676-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.37 mg/L	2.5 mg/L	94.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 350200)</b>										
CG2105673-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0991 mg/L	0.1 mg/L	99.1	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 345146)</b>										
CG2105675-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.6 mg/L	23.9 mg/L	98.7	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 345161)</b>										
CG2105676-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.8 mg/L	23.9 mg/L	99.6	70.0	130	----
<b>Total Metals (QCLot: 347470)</b>										
CG2105676-001	Anonymous	aluminum, total	7429-90-5	E420	0.188 mg/L	0.2 mg/L	94.0	70.0	130	----
		antimony, total	7440-36-0	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 347470) - continued</b>										
CG2105676-001	Anonymous	beryllium, total	7440-41-7	E420	0.0359 mg/L	0.04 mg/L	89.9	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00978 mg/L	0.01 mg/L	97.8	70.0	130	----
		boron, total	7440-42-8	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00367 mg/L	0.004 mg/L	91.8	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0178 mg/L	0.02 mg/L	89.1	70.0	130	----
		copper, total	7440-50-8	E420	0.0176 mg/L	0.02 mg/L	88.1	70.0	130	----
		iron, total	7439-89-6	E420	1.98 mg/L	2 mg/L	98.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0213 mg/L	0.02 mg/L	107	70.0	130	----
		nickel, total	7440-02-0	E420	0.0356 mg/L	0.04 mg/L	89.1	70.0	130	----
		potassium, total	7440-09-7	E420	3.77 mg/L	4 mg/L	94.2	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.31 mg/L	10 mg/L	93.1	70.0	130	----
		silver, total	7440-22-4	E420	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00360 mg/L	0.004 mg/L	89.9	70.0	130	----
		tin, total	7440-31-5	E420	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		titanium, total	7440-32-6	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, total	7440-61-1	E420	0.00490 mg/L	0.004 mg/L	123	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0986 mg/L	0.1 mg/L	98.6	70.0	130	----
		zinc, total	7440-66-6	E420	0.367 mg/L	0.4 mg/L	91.8	70.0	130	----
<b>Total Metals (QCLot: 347471)</b>										
CG2105676-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0370 mg/L	0.04 mg/L	92.6	70.0	130	----
<b>Dissolved Metals (QCLot: 347479)</b>										
CG2105677-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
<b>Dissolved Metals (QCLot: 347480)</b>										
CG2105677-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.192 mg/L	0.2 mg/L	96.0	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 347480) - continued</b>										
CG2105677-002	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00859 mg/L	0.01 mg/L	85.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	88.4	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0178 mg/L	0.02 mg/L	88.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0913 mg/L	0.1 mg/L	91.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0371 mg/L	0.04 mg/L	92.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.70 mg/L	4 mg/L	92.6	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.76 mg/L	10 mg/L	87.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00369 mg/L	0.004 mg/L	92.2	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00348 mg/L	0.004 mg/L	86.9	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.356 mg/L	0.4 mg/L	88.9	70.0	130	----
<b>Dissolved Metals (QCLot: 348141)</b>										
CG2105682-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000993 mg/L	0.0001 mg/L	99.3	70.0	130	----

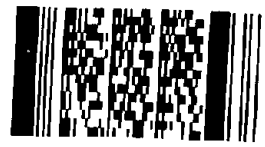
COC ID:	DC GW 20211112	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO
Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary		Report Format / Distribution
Project Manager	Tom Jeffery	Lab Contact	Lyudmyla Shvets		Excel
Email	tom.jeffery@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com		PDF
Address	Box 2003	Address	2559 29 Street NE		EDD
	15km North Hwy 43				
City	Sparwood	City	Calgary	Province	AB
Postal Code	VOB 2G0	Postal Code	T1Y 7B5	Country	Canada
Phone Number	250-425-8478	Phone Number	403 407 1794	PO number	VPO00739930

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	F	N	N	F	N	F	N	N				
								PREP/ANALYSIS	H2SO4	NAHSO4	H2SO4	HCL	HCL	HNO3	HNO3	NONE				
								ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHC-I-CL	TECKCOAL-ROUTINE-VA					
LC_PIZDC0901_WG_Q4-2021_NP	LC_PIZDC0901	WG	N	11/12/2021	13:00	G	6	1			1	1		1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	T. Dick	Nov 12	<i>[Signature]</i>	13 Nov 2021 3:45 PM
SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Sampler's Signature	Mobile #	Date/Time
Regular (default) X	T. Dick	<i>[Signature]</i>		November 12, 2021
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2105681**

*7.20*



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105801**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : PIZDC1306 20211117  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 18-Nov-2021 08:50  
**Date Analysis Commenced** : 18-Nov-2021  
**Issue Date** : 26-Nov-2021 09:58

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_PIZDC1306	---	---	---	---
(Matrix: Water)						_WG_Q4-2021_				
					Client sampling date / time	17-Nov-2021	---	---	---	---
						14:10				
Analyte	CAS Number	Method	LOR	Unit	CG2105801-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	15.5	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	291	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	354	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	291	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	484	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	241	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	431	---	---	---	---	---
pH	---	E108	0.10	pH units	7.87	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	257	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	1.8	---	---	---	---	---
turbidity	---	E121	0.10	NTU	2.49	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.12	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.169	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.057	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.180	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0043	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0049	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	6.28	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	1.97	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	1.91	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1306 _WG_Q4-2021_ NP	----	----	----	----
Client sampling date / time					17-Nov-2021 14:10	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105801-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.97	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	4.91	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	82.2	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	9.74	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0268	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00020	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.174	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.128	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	63.4	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.018	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0126	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	24.0	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00064	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00200	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00110	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.03	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	2.43	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.99	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	0.889	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0721	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1306 _WG_Q4-2021_ NP	----	----	----	----
Client sampling date / time					17-Nov-2021 14:10	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105801-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	2.52	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00073	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000912	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00082	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0032	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00020	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.162	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.116	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	59.6	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00046	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0120	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	22.4	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00186	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00100	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.01	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	2.68	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1306 _WG_Q4-2021_ NP	----	----	----	----
Client sampling date / time					17-Nov-2021 14:10	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105801-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.75	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.968	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0686	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.40	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000907	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00056	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0030	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2105801</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Tom Jeffery <b>Address</b> : PO BOX 2003 15km North Hwy 43 Sparwood BC Canada <b>Telephone</b> : 250-433-8467 <b>Project</b> : LINE CREEK OPERATION <b>PO</b> : VPO00739930 <b>C-O-C number</b> : PIZDC1306 20211117 <b>Sampler</b> : ---- <b>Site</b> : ---- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 1 <b>No. of samples analysed</b> : 1	<b>Page</b> : 1 of 11 <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Lyudmyla Shvets <b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5 <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 18-Nov-2021 08:50 <b>Issue Date</b> : 26-Nov-2021 09:58
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### ***Outliers: Reference Material (RM) Samples***

- No Reference Material (RM) Sample outliers occur.

#### ***Outliers : Analysis Holding Time Compliance (Breaches)***

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q4-2021_NP	E298	17-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2021_NP	E235.Br-L	17-Nov-2021	----	----	----		19-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2021_NP	E235.Cl-L	17-Nov-2021	----	----	----		19-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2021_NP	E378-U	17-Nov-2021	----	----	----		18-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2021_NP	E235.F	17-Nov-2021	----	----	----		19-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2021_NP	E235.NO3-L	17-Nov-2021	----	----	----		19-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2021_NP	E235.NO2-L	17-Nov-2021	----	----	----		19-Nov-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2021_NP	E235.SO4	17-Nov-2021	----	----	----		19-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q4-2021_NP	E318	17-Nov-2021	23-Nov-2021	----	----		24-Nov-2021	28 days	7 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q4-2021_NP	E372-U	17-Nov-2021	19-Nov-2021	----	----		19-Nov-2021	28 days	2 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1306_WG_Q4-2021_NP	E421.Cr-L	17-Nov-2021	22-Nov-2021	----	----		22-Nov-2021	180 days	5 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1306_WG_Q4-2021_NP	E509	17-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	28 days	7 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1306_WG_Q4-2021_NP	E421	17-Nov-2021	22-Nov-2021	----	----		22-Nov-2021	180 days	5 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1306_WG_Q4-2021_NP	E358-L	17-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	4 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1306_WG_Q4-2021_NP	E355-L	17-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	4 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> LC_PIZDC1306_WG_Q4-2021_NP	E283	17-Nov-2021	----	----	----		18-Nov-2021	14 days	1 days	✔





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_PIZDC1306_WG_Q4-2021_NP	E290	17-Nov-2021	----	----	----		18-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZDC1306_WG_Q4-2021_NP	E100	17-Nov-2021	----	----	----		18-Nov-2021	28 days	1 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC1306_WG_Q4-2021_NP	E125	17-Nov-2021	----	----	----		24-Nov-2021	0.25 hrs	167 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC1306_WG_Q4-2021_NP	E108	17-Nov-2021	----	----	----		18-Nov-2021	0.25 hrs	23 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZDC1306_WG_Q4-2021_NP	E162	17-Nov-2021	----	----	----		23-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE LC_PIZDC1306_WG_Q4-2021_NP	E160-L	17-Nov-2021	----	----	----		23-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE LC_PIZDC1306_WG_Q4-2021_NP	E121	17-Nov-2021	----	----	----		20-Nov-2021	3 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) LC_PIZDC1306_WG_Q4-2021_NP	E420.Cr-L	17-Nov-2021	----	----	----		23-Nov-2021	180 days	6 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
HDPE total (nitric acid) LC_PIZDC1306_WG_Q4-2021_NP	E420	17-Nov-2021	----	----	----		23-Nov-2021	180 days	6 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 5 of 11  
Work Order : CG2105801  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	347684	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	347666	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	351755	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348443	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	348444	1	20	5.0	5.0	✓
Conductivity in Water	E100	347668	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	350171	1	2	50.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	351328	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	350172	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349620	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	347656	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	348445	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	348440	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	348441	1	20	5.0	5.0	✓
ORP by Electrode	E125	351727	1	20	5.0	5.0	✓
pH by Meter	E108	347670	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	348442	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	349540	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	350976	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	350331	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	350977	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349625	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	347924	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	349208	1	19	5.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	347684	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	347666	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	351755	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348443	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	348444	1	20	5.0	5.0	✓
Conductivity in Water	E100	347668	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	350171	1	2	50.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	351328	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	350172	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349620	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	347656	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	348445	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	348440	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	348441	1	20	5.0	5.0	✓
ORP by Electrode	E125	351727	1	20	5.0	5.0	✓
pH by Meter	E108	347670	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	348442	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	349540	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	350976	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	350331	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	350977	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349625	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	347924	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	349536	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	349208	1	19	5.2	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	347684	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	347666	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	351755	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348443	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	348444	1	20	5.0	5.0	✓
Conductivity in Water	E100	347668	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	350171	1	2	50.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	351328	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	350172	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349620	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	347656	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	348445	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	348440	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	348441	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	348442	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	349540	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	350976	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	350331	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	350977	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349625	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	347924	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	349536	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	349208	1	19	5.2	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	351755	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348443	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	348444	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	350171	1	2	50.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	351328	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	350172	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349620	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	347656	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	348445	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	348440	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	348441	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	348442	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	350976	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	350331	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	350977	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349625	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	347924	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2105801**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : PIZDC1306 20211117  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 18-Nov-2021 08:50  
**Date Analysis Commenced** : 18-Nov-2021  
**Issue Date** : 26-Nov-2021 09:58

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 18  
Work Order : CG2105801  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 347666)</b>											
CG2105639-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	103	102	1.17%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	103	102	1.17%	20%	----
<b>Physical Tests (QC Lot: 347668)</b>											
CG2105779-020	Anonymous	conductivity	----	E100	2.0	µS/cm	1010	1020	0.197%	10%	----
<b>Physical Tests (QC Lot: 347670)</b>											
CG2105798-002	Anonymous	pH	----	E108	0.10	pH units	7.65	7.66	0.131%	4%	----
<b>Physical Tests (QC Lot: 347684)</b>											
CG2105639-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.3	<2.0	0.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 349208)</b>											
CG2105794-001	Anonymous	turbidity	----	E121	0.10	NTU	10.7	10.1	5.52%	15%	----
<b>Physical Tests (QC Lot: 349540)</b>											
CG2105769-002	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	181	200	19	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 351727)</b>											
CG2105794-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	439	438	0.410%	15%	----
<b>Anions and Nutrients (QC Lot: 347656)</b>											
CG2105639-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0022	0.0020	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 347924)</b>											
CG2105797-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.200	mg/L	6.36	6.21	2.36%	20%	----
<b>Anions and Nutrients (QC Lot: 348440)</b>											
CG2105794-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.742	0.724	2.42%	20%	----
<b>Anions and Nutrients (QC Lot: 348441)</b>											
CG2105794-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0059	0.0062	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348442)</b>											
CG2105794-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	556	551	0.823%	20%	----
<b>Anions and Nutrients (QC Lot: 348443)</b>											
CG2105794-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348444)</b>											
CG2105794-003	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	19.2	19.0	0.936%	20%	----
<b>Anions and Nutrients (QC Lot: 348445)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 348445) - continued</b>											
CG2105794-003	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.117	0.115	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 350331)</b>											
CG2105794-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.194	0.223	0.029	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351755)</b>											
CG2105794-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0169	0.0168	0.0001	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 349620)</b>											
CG2105794-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.39	2.46	0.07	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 349625)</b>											
CG2105794-003	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.06	2.93	0.13	Diff <2x LOR	----
<b>Total Metals (QC Lot: 350976)</b>											
CG2105794-003	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00048	0.00042	0.00006	Diff <2x LOR	----
<b>Total Metals (QC Lot: 350977)</b>											
CG2105794-003	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.254	0.263	3.66%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00016	0.00015	0.000004	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00026	0.00027	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0608	0.0591	2.87%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.019	0.019	0.0002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0831 µg/L	0.0000720	14.4%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	155	152	1.83%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.33 µg/L	0.00031	0.00002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00078	0.00074	0.00004	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.170	0.171	0.543%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000265	0.000265	0.0000003	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0176	0.0172	2.59%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	99.0	96.2	2.82%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0128	0.0124	3.73%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000848	0.000821	3.21%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00255	0.00239	0.00015	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.04	1.96	4.05%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	50.1 µg/L	0.0509	1.55%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.52	3.75	6.12%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	8.35	8.22	1.51%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 350977) - continued</b>											
CG2105794-003	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	0.416	0.406	2.24%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	205	204	0.600%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000015	0.000016	0.000001	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00984	0.0103	4.51%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00263	0.00267	1.62%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00108	0.00114	0.00006	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0042	0.0041	0.00006	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 350171)</b>											
CG2105794-003	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 350172)</b>											
CG2105794-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0017	0.0017	0.000006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00012	0.00012	0.000001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	0.00013	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0457	0.0452	1.13%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.019	0.019	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0265 µg/L	0.0000303	0.0000038	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	149	146	2.25%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00026	0.00026	0.000009	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0182	0.0169	7.63%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	90.7	90.9	0.208%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00872	0.00856	1.83%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000779	0.000767	1.58%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00153	0.00154	0.000010	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.88	1.88	0.00213%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	57.4 µg/L	0.0583	1.45%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.09	3.08	0.365%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	8.27	8.23	0.480%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.389	0.389	0.0107%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 350172) - continued</b>											
CG2105794-003	Anonymous	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	194	194	0.481%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00256	0.00257	0.468%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0012	0.00007	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 351328)</b>											
CG2105794-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 347666)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 347668)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 347684)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 349208)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 349536)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 349540)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 347656)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 347924)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 348440)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 348441)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 348442)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 348443)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 348444)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 348445)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 350331)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 351755)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 351755) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 349620)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 349625)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 350976)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 350977)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 350977) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 350171)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 350172)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----

Page : 10 of 18  
Work Order : CG2105801  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 350172) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 351328)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 347666)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	110	85.0	115	---
<b>Physical Tests (QCLot: 347668)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.7	90.0	110	---
<b>Physical Tests (QCLot: 347670)</b>									
pH	---	E108	---	pH units	7 pH units	99.7	98.6	101	---
<b>Physical Tests (QCLot: 347684)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 349208)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 349536)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	98.1	85.0	115	---
<b>Physical Tests (QCLot: 349540)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	92.3	85.0	115	---
<b>Physical Tests (QCLot: 351727)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 347656)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	105	80.0	120	---
<b>Anions and Nutrients (QCLot: 347924)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	95.6	80.0	120	---
<b>Anions and Nutrients (QCLot: 348440)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 348441)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 348442)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 348443)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 348444)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 348445)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 350331)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 350331) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	94.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 351755)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.9	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 349620)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	99.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 349625)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 350976)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
<b>Total Metals (QCLot: 350977)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	109	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	99.4	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.2	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	90.9	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	96.8	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.8	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.6	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.6	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	96.9	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.7	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.1	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	95.8	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	93.9	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	90.3	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 350977) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.5	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.5	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	93.5	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.8	80.0	120	----
<b>Dissolved Metals (QCLot: 350171)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 350172)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100.0	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.6	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.4	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	102	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 350172) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 347656)</b>										
CG2105794-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0496 mg/L	0.05 mg/L	99.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 347924)</b>										
CG2105797-002	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 348440)</b>										
CG2105827-014	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.64 mg/L	2.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 348441)</b>										
CG2105827-014	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.528 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 348442)</b>										
CG2105827-014	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 348443)</b>										
CG2105827-014	Anonymous	bromide	24959-67-9	E235.Br-L	0.518 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 348444)</b>										
CG2105827-014	Anonymous	chloride	16887-00-6	E235.Cl-L	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 348445)</b>										
CG2105827-014	Anonymous	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 350331)</b>										
CG2105801-001	LC_PIZDC1306_WG_Q4-20 21_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.48 mg/L	2.5 mg/L	99.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 351755)</b>										
CG2105797-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 349620)</b>										
CG2105794-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.3 mg/L	23.9 mg/L	97.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 349625)</b>										
CG2105794-003	Anonymous	carbon, total organic [TOC]	----	E355-L	24.5 mg/L	23.9 mg/L	103	70.0	130	----
<b>Total Metals (QCLot: 350976)</b>										
CG2105801-001	LC_PIZDC1306_WG_Q4-20 21_NP	chromium, total	7440-47-3	E420.Cr-L	0.0393 mg/L	0.04 mg/L	98.3	70.0	130	----
<b>Total Metals (QCLot: 350977)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 350977) - continued</b>										
CG2105801-001	LC_PIZDC1306_WG_Q4-20 21_NP	aluminum, total	7429-90-5	E420	0.185 mg/L	0.2 mg/L	92.4	70.0	130	----
		antimony, total	7440-36-0	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00980 mg/L	0.01 mg/L	98.0	70.0	130	----
		boron, total	7440-42-8	E420	0.087 mg/L	0.1 mg/L	86.8	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00396 mg/L	0.004 mg/L	99.0	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		iron, total	7439-89-6	E420	1.94 mg/L	2 mg/L	96.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0189 mg/L	0.02 mg/L	94.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0922 mg/L	0.1 mg/L	92.2	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, total	7440-02-0	E420	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		potassium, total	7440-09-7	E420	3.87 mg/L	4 mg/L	96.7	70.0	130	----
		selenium, total	7782-49-2	E420	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
		silicon, total	7440-21-3	E420	9.05 mg/L	10 mg/L	90.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00394 mg/L	0.004 mg/L	98.6	70.0	130	----
		sodium, total	17341-25-2	E420	1.99 mg/L	2 mg/L	99.5	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	20.1 mg/L	20 mg/L	100	70.0	130	----
		thallium, total	7440-28-0	E420	0.00373 mg/L	0.004 mg/L	93.2	70.0	130	----
		tin, total	7440-31-5	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
		uranium, total	7440-61-1	E420	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0983 mg/L	0.1 mg/L	98.3	70.0	130	----
		zinc, total	7440-66-6	E420	0.379 mg/L	0.4 mg/L	94.8	70.0	130	----
<b>Dissolved Metals (QCLot: 350171)</b>										
CG2105801-001	LC_PIZDC1306_WG_Q4-20 21_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0389 mg/L	0.04 mg/L	97.2	70.0	130	----
<b>Dissolved Metals (QCLot: 350172)</b>										
CG2105801-001	LC_PIZDC1306_WG_Q4-20 21_NP	aluminum, dissolved	7429-90-5	E421	0.194 mg/L	0.2 mg/L	97.1	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 350172) - continued</b>										
CG2105801-001	LC_PIZDC1306_WG_Q4-20 21_NP	antimony, dissolved	7440-36-0	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0377 mg/L	0.04 mg/L	94.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00914 mg/L	0.01 mg/L	91.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.094 mg/L	0.1 mg/L	94.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00392 mg/L	0.004 mg/L	98.1	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0181 mg/L	0.02 mg/L	90.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	96.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0877 mg/L	0.1 mg/L	87.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0368 mg/L	0.04 mg/L	91.9	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.66 mg/L	4 mg/L	91.6	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0461 mg/L	0.04 mg/L	115	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.48 mg/L	10 mg/L	84.8	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00400 mg/L	0.004 mg/L	100	70.0	130	----
		sodium, dissolved	17341-25-2	E421	2.01 mg/L	2 mg/L	100	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
sulfur, dissolved	7704-34-9	E421	20.8 mg/L	20 mg/L	104	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00359 mg/L	0.004 mg/L	89.8	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00410 mg/L	0.004 mg/L	102	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.0980 mg/L	0.1 mg/L	98.0	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.384 mg/L	0.4 mg/L	96.0	70.0	130	----		
<b>Dissolved Metals (QCLot: 351328)</b>										
CG2105801-001	LC_PIZDC1306_WG_Q4-20 21_NP	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----



COC ID: **PIZDC1306 20211117**      TURNAROUND TIME:      RUSH:

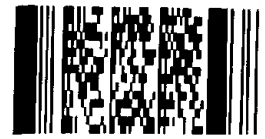
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Line Creek Operation *			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudnyla Shvets			Email 1:	chris.blurton@teck.com	x	x	
Email	tom.jeffery@teck.com			Email	Lyudnyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x	
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	x	x	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	tanva.dick@teck.com			
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930			
Phone Number	250-425-8478			Phone Number	403 407 1794							

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	F	N	N	F	N	F	N	N	Field	Lab	N
								PRESERV.	H2SO4	NAHSO4	H2SO4	HCL	HCL	HNO3	HNO3	NONE			
								ANALYSIS	ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-NHG-T-CL	TECKCOAL-ROUTINE-VA			
LC_PIZDC1306_WG_Q4-2021_NP	LC_PIZDC1306	WG		17-Nov	14:10	G	6		1		1	1		1	1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	T. Dick	17-Nov	<i>[Signature]</i>	17/11 8:55

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Date/Time
Regular (default) <input checked="" type="checkbox"/> X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	T. Dick		November 17, 2021

Environmental Division  
Calgary  
Work Order Reference  
**CG2105801**



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105851**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : PIZDC1307 & 8 20211118  
**Sampler** : T. Dick  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 19-Nov-2021 08:40  
**Date Analysis Commenced** : 19-Nov-2021  
**Issue Date** : 29-Nov-2021 19:08

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1308 D_WG_Q4-2021 _NP	LC_PIZDC1307 S_WG_Q4-2021 _NP	---	---	---
Client sampling date / time					18-Nov-2021 13:05	18-Nov-2021 14:00	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2105851-001 Result	CG2105851-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	4.0	<2.0	---	---	---	
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	380	241	---	---	---	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	464	294	---	---	---	
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	3.6	---	---	---	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	2.2	---	---	---	
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---	
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	380	245	---	---	---	
conductivity	---	E100	2.0	µS/cm	608	388	---	---	---	
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	315	168	---	---	---	
oxidation-reduction potential [ORP]	---	E125	0.10	mV	443	433	---	---	---	
pH	---	E108	0.10	pH units	7.87	8.30	---	---	---	
solids, total dissolved [TDS]	---	E162	10	mg/L	328	211	---	---	---	
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	2.8	---	---	---	
turbidity	---	E121	0.10	NTU	1.99	8.03	---	---	---	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.116	0.212	---	---	---	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	---	---	---	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.89	0.20	---	---	---	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.227	0.570	---	---	---	
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.078	0.168	---	---	---	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	---	---	---	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0010	<0.0010	---	---	---	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0131	---	---	---	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	3.39	<0.30	---	---	---	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	3.60 <sup>DTC,RRV</sup>	2.05	---	---	---	
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	2.24 <sup>DTC,RRV</sup>	1.73	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1308 D_WG_Q4-2021 _NP	LC_PIZDC1307 S_WG_Q4-2021 _NP	---	---	---
Client sampling date / time					18-Nov-2021 13:05	18-Nov-2021 14:00	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2105851-001 Result	CG2105851-002 Result	----- ---	----- ---	----- ---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	7.70	4.93	----	----	----	
cation sum	----	EC101	0.10	meq/L	6.49	4.14	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	84.3	84.0	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	8.53	8.71	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0037	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00018	0.00167	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.418	1.44	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.013	0.022	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0594	<0.0150 <sup>DLM</sup>	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	85.8	38.5	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.75	<0.10	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.339	1.29	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0153	0.0743	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	26.9	20.1	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0651	0.00855	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00538	0.0337	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00152	<0.00050	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.53	5.09	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	0.096	<0.050	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	5.07	3.05	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	2.88	13.8	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.123	0.139	----	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1308 D_WG_Q4-2021 _NP	LC_PIZDC1307 S_WG_Q4-2021 _NP	---	---	---
Client sampling date / time					18-Nov-2021 13:05	18-Nov-2021 14:00	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2105851-001 Result	CG2105851-002 Result	----- ---	----- ---	----- ---	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	1.83	<0.50	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000027	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00115	0.000027	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0029	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	0.00171	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.381	1.38	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.013	0.022	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0392	<0.0150 <sup>DLM</sup>	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	82.8	36.4	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.71	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00024	<0.00020	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.250	1.18	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0141	0.0722	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	26.2	18.8	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0622	0.00815	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00474	0.0324	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00137	<0.00050	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.42	4.94	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.068	<0.050	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZDC1308 D_WG_Q4-2021 _NP	LC_PIZDC1307 S_WG_Q4-2021 _NP	----	----	----
Client sampling date / time					18-Nov-2021 13:05	18-Nov-2021 14:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105851-001 Result	CG2105851-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.93	2.86	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.78	13.7	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.114	0.133	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.84	<0.50	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000024	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00113	0.000023	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0015	0.0012	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105851</b>	Page	: 1 of 14
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 19-Nov-2021 08:40
PO	: VPO00739930	Issue Date	: 29-Nov-2021 19:08
C-O-C number	: PIZDC1307 & 8 20211118		
Sampler	: T. Dick		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Total Metals	Anonymous	Anonymous	silver, total	7440-22-4	E420	43.6 % DUP-H	20%	Duplicate RPD does not meet the DQO for this test.
Total Metals	Anonymous	Anonymous	titanium, total	7440-32-6	E420	24.4 % DUP-H	20%	Duplicate RPD does not meet the DQO for this test.

**Result Qualifiers**

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307S_WG_Q4-2021_NP	E298	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308D_WG_Q4-2021_NP	E298	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1307S_WG_Q4-2021_NP	E235.Br-L	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1308D_WG_Q4-2021_NP	E235.Br-L	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1307S_WG_Q4-2021_NP	E235.Cl-L	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZDC1308D_WG_Q4-2021_NP	E235.Cl-L	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_PIZDC1307S_WG_Q4-2021_NP	E378-U	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_PIZDC1308D_WG_Q4-2021_NP	E378-U	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZDC1307S_WG_Q4-2021_NP	E235.F	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZDC1308D_WG_Q4-2021_NP	E235.F	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_PIZDC1307S_WG_Q4-2021_NP	E235.NO3-L	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_PIZDC1308D_WG_Q4-2021_NP	E235.NO3-L	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_PIZDC1307S_WG_Q4-2021_NP	E235.NO2-L	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_PIZDC1308D_WG_Q4-2021_NP	E235.NO2-L	18-Nov-2021	----	----	----		19-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_PIZDC1307S_WG_Q4-2021_NP	E235.SO4	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_PIZDC1308D_WG_Q4-2021_NP	E235.SO4	18-Nov-2021	----	----	----		19-Nov-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307S_WG_Q4-2021_NP	E318	18-Nov-2021	24-Nov-2021	----	----		26-Nov-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308D_WG_Q4-2021_NP	E318	18-Nov-2021	24-Nov-2021	----	----		26-Nov-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307S_WG_Q4-2021_NP	E372-U	18-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308D_WG_Q4-2021_NP	E372-U	18-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1307S_WG_Q4-2021_NP	E421.Cr-L	18-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1308D_WG_Q4-2021_NP	E421.Cr-L	18-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1307S_WG_Q4-2021_NP	E509	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZDC1308D_WG_Q4-2021_NP	E509	18-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1307S_WG_Q4-2021_NP	E421	18-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZDC1308D_WG_Q4-2021_NP	E421	18-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1307S_WG_Q4-2021_NP	E358-L	18-Nov-2021	22-Nov-2021	----	----		24-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZDC1308D_WG_Q4-2021_NP	E358-L	18-Nov-2021	22-Nov-2021	----	----		24-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1307S_WG_Q4-2021_NP	E355-L	18-Nov-2021	22-Nov-2021	----	----		24-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZDC1308D_WG_Q4-2021_NP	E355-L	18-Nov-2021	22-Nov-2021	----	----		24-Nov-2021	28 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1307S_WG_Q4-2021_NP	E283	18-Nov-2021	----	----	----		22-Nov-2021	14 days	4 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZDC1308D_WG_Q4-2021_NP	E283	18-Nov-2021	----	----	----		22-Nov-2021	14 days	4 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1307S_WG_Q4-2021_NP	E290	18-Nov-2021	----	----	----		22-Nov-2021	14 days	4 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZDC1308D_WG_Q4-2021_NP	E290	18-Nov-2021	----	----	----		22-Nov-2021	14 days	4 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZDC1307S_WG_Q4-2021_NP	E100	18-Nov-2021	----	----	----		22-Nov-2021	28 days	4 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZDC1308D_WG_Q4-2021_NP	E100	18-Nov-2021	----	----	----		22-Nov-2021	28 days	4 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC1307S_WG_Q4-2021_NP	E125	18-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	168 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZDC1308D_WG_Q4-2021_NP	E125	18-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	169 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC1307S_WG_Q4-2021_NP	E108	18-Nov-2021	----	----	----		22-Nov-2021	0.25 hrs	92 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZDC1308D_WG_Q4-2021_NP	E108	18-Nov-2021	----	----	----		22-Nov-2021	0.25 hrs	93 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZDC1307S_WG_Q4-2021_NP	E162	18-Nov-2021	----	----	----		24-Nov-2021	7 days	6 days		✓
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZDC1308D_WG_Q4-2021_NP	E162	18-Nov-2021	----	----	----		24-Nov-2021	7 days	6 days		✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] LC_PIZDC1307S_WG_Q4-2021_NP	E160-L	18-Nov-2021	----	----	----		24-Nov-2021	7 days	6 days		✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_PIZDC1308D_WG_Q4-2021_NP	E160-L	18-Nov-2021	----	----	----		24-Nov-2021	7 days	6 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_PIZDC1307S_WG_Q4-2021_NP	E121	18-Nov-2021	----	----	----		21-Nov-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_PIZDC1308D_WG_Q4-2021_NP	E121	18-Nov-2021	----	----	----		21-Nov-2021	3 days	3 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1307S_WG_Q4-2021_NP	E420.Cr-L	18-Nov-2021	----	----	----		25-Nov-2021	180 days	7 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1308D_WG_Q4-2021_NP	E420.Cr-L	18-Nov-2021	----	----	----		25-Nov-2021	180 days	7 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1307S_WG_Q4-2021_NP	E420	18-Nov-2021	----	----	----		25-Nov-2021	180 days	7 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZDC1308D_WG_Q4-2021_NP	E420	18-Nov-2021	----	----	----		25-Nov-2021	180 days	7 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	349779	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	349790	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	352571	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348933	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	348934	1	15	6.6	5.0	✓
Conductivity in Water	E100	349788	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352082	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352083	1	4	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349833	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	348901	1	2	50.0	5.0	✓
Fluoride in Water by IC	E235.F	348931	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	348935	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	348936	1	15	6.6	5.0	✓
ORP by Electrode	E125	352818	1	13	7.6	5.0	✓
pH by Meter	E108	349789	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	348932	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	350733	1	19	5.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351882	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	352120	1	12	8.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351883	2	19	10.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349837	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349396	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	349391	1	8	12.5	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	349779	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	349790	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	352571	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348933	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	348934	1	15	6.6	5.0	✓
Conductivity in Water	E100	349788	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352082	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352083	1	4	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349833	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	348901	1	2	50.0	5.0	✓
Fluoride in Water by IC	E235.F	348931	1	15	6.6	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	348935	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	348936	1	15	6.6	5.0	✓
ORP by Electrode	E125	352818	1	13	7.6	5.0	✓
pH by Meter	E108	349789	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	348932	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	350733	1	19	5.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351882	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	352120	1	12	8.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351883	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349837	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349396	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	350730	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	349391	1	8	12.5	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	349779	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	349790	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	352571	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348933	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	348934	1	15	6.6	5.0	✓
Conductivity in Water	E100	349788	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352082	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352083	1	4	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349833	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	348901	1	2	50.0	5.0	✓
Fluoride in Water by IC	E235.F	348931	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	348935	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	348936	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	348932	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	350733	1	19	5.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351882	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	352120	1	12	8.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351883	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349837	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349396	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	350730	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	349391	1	8	12.5	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	352571	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348933	1	15	6.6	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	348934	1	15	6.6	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352082	1	4	25.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	352083	1	4	25.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349833	1	15	6.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	348901	0	2	0.0	5.0	✖
Fluoride in Water by IC	E235.F	348931	1	15	6.6	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	348935	1	15	6.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	348936	1	15	6.6	5.0	✔
Sulfate in Water by IC	E235.SO4	348932	1	15	6.6	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351882	1	13	7.6	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	352120	1	12	8.3	5.0	✔
Total Metals in Water by CRC ICPMS	E420	351883	1	19	5.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349837	1	6	16.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349396	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2105851**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : PIZDC1307 & 8 20211118  
**Sampler** : T. Dick  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 19-Nov-2021 08:40  
**Date Analysis Commenced** : 19-Nov-2021  
**Issue Date** : 29-Nov-2021 19:08

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2105851  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 349391)</b>											
CG2105844-001	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 349779)</b>											
CG2105841-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 349788)</b>											
CG2105844-002	Anonymous	conductivity	----	E100	2.0	µS/cm	335	335	0.00%	10%	----
<b>Physical Tests (QC Lot: 349789)</b>											
CG2105844-002	Anonymous	pH	----	E108	0.10	pH units	8.33	8.34	0.120%	4%	----
<b>Physical Tests (QC Lot: 349790)</b>											
CG2105844-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	132	131	0.762%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	3.4	4.0	0.6	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	135	135	0.296%	20%	----
<b>Physical Tests (QC Lot: 350733)</b>											
CG2105844-001	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1800	1710	4.90%	20%	----
<b>Physical Tests (QC Lot: 352818)</b>											
CG2105844-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	513	513	0.0390%	15%	----
<b>Anions and Nutrients (QC Lot: 348901)</b>											
CG2105851-001	LC_PIZDC1308D_WG_Q4-2021_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348931)</b>											
CG2105842-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348932)</b>											
CG2105842-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	639	638	0.121%	20%	----
<b>Anions and Nutrients (QC Lot: 348933)</b>											
CG2105842-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348934)</b>											
CG2105842-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	12.5	12.4	0.665%	20%	----
<b>Anions and Nutrients (QC Lot: 348935)</b>											
CG2105842-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	7.64	7.53	1.42%	20%	----
<b>Anions and Nutrients (QC Lot: 348936)</b>											
CG2105842-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0225	0.0204	0.0021	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 349396)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 349396) - continued</b>											
CG2105842-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352120)</b>											
CG2105834-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.090	0.097	0.007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352571)</b>											
CG2105841-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0072	0.0068	0.0004	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 349833)</b>											
CG2105842-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	8.10	8.18	1.04%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 349837)</b>											
CG2105846-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 351882)</b>											
CG2105834-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00065	0.00072	0.00008	Diff <2x LOR	----
<b>Total Metals (QC Lot: 351883)</b>											
CG2105834-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.369	0.411	10.8%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	1.30	1.30	0.0692%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	0.304 µg/L	0.000295	0.000009	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000133	0.000085	43.6%	20%	DUP-H
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00922	0.0118	24.4%	20%	DUP-H
CG2105834-001	Anonymous	antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00132	0.00140	5.56%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0345	0.0369	6.92%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.042	0.042	0.0009	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0376 µg/L	0.0000377	0.0000001	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	245	242	1.37%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.46 µg/L	0.00054	0.00007	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00125	0.00142	0.00017	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000288	0.000365	0.000078	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0244	0.0242	0.866%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	59.1	57.8	2.16%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.175	0.172	1.47%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000996	0.00105	5.56%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00178	0.00198	0.00020	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.28	2.32	1.66%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	7.31	7.36	0.745%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 351883) - continued</b>											
CG2105834-001	Anonymous	sodium, total	17341-25-2	E420	0.050	mg/L	5.24	5.05	3.67%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.723	0.712	1.63%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	230	222	3.28%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000022	0.000024	0.000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00188	0.00184	2.26%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00061	0.00105	0.00044	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0128	0.0138	0.0010	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352082)</b>											
CG2105846-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00039	0.00044	0.00005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352083)</b>											
CG2105846-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0052	0.0049	0.0004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	0.00012	0.000004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00012	0.000007	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0870	0.0865	0.649%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.010	<0.010	0.00008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0080 µg/L	0.0000087	0.0000006	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	61.7	61.2	0.807%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00083	0.00083	0.000002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0081	0.0080	0.0001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.5	19.0	2.79%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00167	0.00166	0.478%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.709	0.723	1.91%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	4.24 µg/L	0.00448	5.37%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.32	3.37	1.48%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.12	3.20	2.59%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.197	0.191	3.05%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 352083) - continued</b>											
CG2105846-001	Anonymous	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	12.2	12.4	1.24%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00136	0.00134	1.57%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0031	0.0034	0.0003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352217)</b>											
CG2105834-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 349391)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 349779)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 349788)</b>						
conductivity	----	E100	1	µS/cm	1.2	----
<b>Physical Tests (QCLot: 349790)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 350730)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 350733)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 348901)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 348931)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 348932)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 348933)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 348934)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 348935)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 348936)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 349396)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 352120)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 352571)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 352571) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 349833)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 349837)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 351882)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 351883)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 351883) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 352082)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 352083)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----

Page : 10 of 17  
Work Order : CG2105851  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 352083) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 352217)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 349391)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	102	85.0	115	---
<b>Physical Tests (QCLot: 349779)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 349788)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 349789)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 349790)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 350730)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.0	85.0	115	---
<b>Physical Tests (QCLot: 350733)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.5	85.0	115	---
<b>Physical Tests (QCLot: 352818)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 348901)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	96.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 348931)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 348932)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	95.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 348933)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.4	85.0	115	---
<b>Anions and Nutrients (QCLot: 348934)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	95.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 348935)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	96.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 348936)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 349396)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	96.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 352120)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 352120) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 352571)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 349833)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	118	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 349837)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	95.3	80.0	120	----
<b>Total Metals (QCLot: 351882)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Total Metals (QCLot: 351883)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	111	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	89.8	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	106	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	107	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	105	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	109	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.7	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	108	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.9	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	105	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 351883) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	110	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
<b>Dissolved Metals (QCLot: 352082)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
<b>Dissolved Metals (QCLot: 352083)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.1	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.5	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	92.8	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.5	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.2	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 352083) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.5	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.7	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 348931)</b>										
CG2105842-004	Anonymous	fluoride	16984-48-8	E235.F	1.03 mg/L	1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 348932)</b>										
CG2105842-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	112 mg/L	100 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 348933)</b>										
CG2105842-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.583 mg/L	0.5 mg/L	116	75.0	125	----
<b>Anions and Nutrients (QCLot: 348934)</b>										
CG2105842-004	Anonymous	chloride	16887-00-6	E235.Cl-L	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 348935)</b>										
CG2105842-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.72 mg/L	2.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 348936)</b>										
CG2105842-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.508 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 349396)</b>										
CG2105844-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0625 mg/L	0.0676 mg/L	92.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 352120)</b>										
CG2105834-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.57 mg/L	2.5 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 352571)</b>										
CG2105842-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0999 mg/L	0.1 mg/L	99.9	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 349833)</b>										
CG2105842-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	30.3 mg/L	23.9 mg/L	127	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 349837)</b>										
CG2105846-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.8 mg/L	23.9 mg/L	99.4	70.0	130	----
<b>Total Metals (QCLot: 351882)</b>										
CG2105834-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
<b>Total Metals (QCLot: 351883)</b>										
CG2105834-002	Anonymous	aluminum, total	7429-90-5	E420	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, total	7440-36-0	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 351883) - continued</b>										
CG2105834-002	Anonymous	beryllium, total	7440-41-7	E420	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00992 mg/L	0.01 mg/L	99.2	70.0	130	----
		boron, total	7440-42-8	E420	0.093 mg/L	0.1 mg/L	93.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00398 mg/L	0.004 mg/L	99.4	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0181 mg/L	0.02 mg/L	90.7	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		lithium, total	7439-93-2	E420	0.0975 mg/L	0.1 mg/L	97.5	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, total	7440-02-0	E420	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		potassium, total	7440-09-7	E420	3.88 mg/L	4 mg/L	97.0	70.0	130	----
		selenium, total	7782-49-2	E420	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, total	7440-21-3	E420	9.46 mg/L	10 mg/L	94.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00391 mg/L	0.004 mg/L	97.7	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00387 mg/L	0.004 mg/L	96.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, total	7440-32-6	E420	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		uranium, total	7440-61-1	E420	0.00392 mg/L	0.004 mg/L	98.1	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0999 mg/L	0.1 mg/L	99.9	70.0	130	----
		zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	96.1	70.0	130	----
<b>Dissolved Metals (QCLot: 352082)</b>										
CG2105846-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----
<b>Dissolved Metals (QCLot: 352083)</b>										
CG2105846-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.203 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0223 mg/L	0.02 mg/L	111	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00920 mg/L	0.01 mg/L	92.0	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 352083) - continued</b>										
CG2105846-002	Anonymous	boron, dissolved	7440-42-8	E421	0.099 mg/L	0.1 mg/L	99.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00406 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	97.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0981 mg/L	0.1 mg/L	98.1	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.95 mg/L	4 mg/L	98.8	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0467 mg/L	0.04 mg/L	117	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.58 mg/L	10 mg/L	95.8	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00400 mg/L	0.004 mg/L	99.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00398 mg/L	0.004 mg/L	99.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.399 mg/L	0.4 mg/L	99.7	70.0	130	----
<b>Dissolved Metals (QCLot: 352217)</b>										
CG2105834-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000103 mg/L	0.0001 mg/L	103	70.0	130	----

<b>COC ID:</b> PIZDC1307 & 8 20211118		<b>TURNAROUND TIME:</b>				<b>RUSH:</b>					
<b>PROJECT/CLIENT INFO</b>					<b>LABORATORY</b>				<b>OTHER INFO</b>		
Facility Name / Job#: Line Creek Operation					Lab Name: ALS Calgary				Report Format / Distribution		
Project Manager: Tom Jeffery					Lab Contact: Lyudmyla Shvets				Excel		
Email: tom.jeffery@teck.com					Email: Lyudmyla.Shvets@ALSGlobal.com				PDF		
Address: Box 2003					Address: 2559 29 Street NE				EDD		
15km North Hwy 43					City: Calgary				Email 1: chris.blurton@teck.com		
City: Sparwood					Province: AB				Email 2: teckcoal@equisonline.com		
Postal Code: V0B 2G0					Postal Code: T1Y 7B5				Email 3: drake.tymstra@teck.com		
Province: BC					Country: Canada				Email 4: Shanise.fossen@teck.com		
Country: Canada					Phone Number: 403 407 1794				Email 4: tanya.dick@teck.com		
Postal Code: V0B 2G0					Phone Number: 403 407 1794				PO number: 17000739930		
Telephone: 403-425-8478											

Environmental Division  
Calgary  
Work Order Reference  
**CG2105851**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	F	N	N	F	N	F	N	N	Filtered - F: Field, L: Lab, PL: Field & Lab, N: None
								PRESERV.	H2SO4	NAHSO4	H2SO4	HCL	HCL	HNO3	HNO3	NONE	
								ANALYSIS	ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-NHG-T-CL	TECKCOAL-ROUTINE-VA	
LC_PIZDC1308_WG_Q4-2021_NP	LC_PIZDC1308	WG		18-Nov	13:05	G	6		1		1	1		1	1	1	
LC_PIZDC1307_WG_Q4-2021_NP	LC_PIZDC1307	WG		18-Nov	14:00	G			1		1	1		1	1	1	

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
	T. Dick	18-Nov	<i>[Signature]</i>	11/19/21

<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) X	Sampler's Name	T. Dick	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	November 18, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

S

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105868**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : ER4A & B 20211119  
**Sampler** : TD  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Nov-2021 09:00  
**Date Analysis Commenced** : 21-Nov-2021  
**Issue Date** : 30-Nov-2021 11:50

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kelley Macdonald	Lab Assistant	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_MW_ER4A	LC_MW_ER4B	----	----	----
(Matrix: Water)					Client sampling date / time	19-Nov-2021 13:45	19-Nov-2021 14:45	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105868-001	CG2105868-002	-----	-----	-----	
					Result	Result	----	----	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	3.6	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	179	218	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	218	266	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	179	218	----	----	----	
conductivity	----	E100	2.0	µS/cm	511	529	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	246	257	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	463	451	----	----	----	
pH	----	E108	0.10	pH units	8.07	8.05	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	342	344	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	0.89	<0.10	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0195	0.0073	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.72	2.21	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.117	0.140	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.263 <sup>TKN</sup>	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	2.81	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0011	0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0024	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	109	82.3	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.93	1.97 <sup>DTC,RRV</sup>	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.60	0.67 <sup>DTC,RRV</sup>	----	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_ER4A	LC_MW_ER4B	---	---	---
Client sampling date / time					19-Nov-2021 13:45	19-Nov-2021 14:45	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2105868-001	CG2105868-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	5.93	6.34	---	---	---	
cation sum	---	EC101	0.10	meq/L	5.04	5.25	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	85.0	82.8	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	8.11	9.40	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0032	<0.0030	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0524	0.0861	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	0.0194	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	71.5	73.2	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00016	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	0.157	<0.010	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0060	0.0092	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	19.1	21.4	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0542	<0.00010	---	---	---	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00526	0.00130	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	0.536	0.470	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	13.0	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	2.44	2.49	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	2.73	2.46	---	---	---	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.313	0.265	---	---	---	



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_MW_ER4A	LC_MW_ER4B	---	---	---
(Matrix: Water)					Client sampling date / time	19-Nov-2021 13:45	19-Nov-2021 14:45	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2105868-001	CG2105868-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	36.9	29.0	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000284	0.00109	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	<0.0010	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0513	0.0861	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0176	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	67.4	69.3	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00013	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00028	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.149	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0054	0.0081	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.8	20.4	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0516	<0.00010	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00486	0.00121	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.534	0.462	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	15.0	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.10	2.15	---	---	---	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_ER4A	LC_MW_ER4B	---	---	---
Client sampling date / time					19-Nov-2021 13:45	19-Nov-2021 14:45	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2105868-001	CG2105868-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.50	2.33	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.292	0.250	---	---	---	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	31.9	25.1	---	---	---	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000266	0.00103	---	---	---	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	---	---	---	
dissolved metals filtration location	----	EP421	-	-	Field	Field	---	---	---	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	<0.25	---	---	---	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	<0.40	---	---	---	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	<0.25	---	---	---	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	<0.25	---	---	---	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	95.0	95.0	---	---	---	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105868</b>	Page	: 1 of 16
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 20-Nov-2021 09:00
PO	: VPO00739930	Issue Date	: 30-Nov-2021 11:50
C-O-C number	: ER4A & B 20211119		
Sampler	: TD		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Total Metals	Anonymous	Anonymous	silver, total	7440-22-4	E420	43.6 % DUP-H	20%	Duplicate RPD does not meet the DQO for this test.
Total Metals	Anonymous	Anonymous	titanium, total	7440-32-6	E420	24.4 % DUP-H	20%	Duplicate RPD does not meet the DQO for this test.

**Result Qualifiers**

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A	E298	19-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B	E298	19-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4A	E235.Br-L	19-Nov-2021	----	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4B	E235.Br-L	19-Nov-2021	----	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4A	E235.Cl-L	19-Nov-2021	----	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ER4B	E235.Cl-L	19-Nov-2021	----	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_MW_ER4A	E378-U	19-Nov-2021	----	----	----		21-Nov-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_MW_ER4B	E378-U	19-Nov-2021	----	----	----		21-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_MW_ER4A	E235.F	19-Nov-2021	----	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_MW_ER4B	E235.F	19-Nov-2021	----	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_MW_ER4A	E235.NO3-L	19-Nov-2021	----	----	----		21-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_MW_ER4B	E235.NO3-L	19-Nov-2021	----	----	----		21-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_MW_ER4A	E235.NO2-L	19-Nov-2021	----	----	----		21-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_MW_ER4B	E235.NO2-L	19-Nov-2021	----	----	----		21-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_MW_ER4A	E235.SO4	19-Nov-2021	----	----	----		21-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_MW_ER4B	E235.SO4	19-Nov-2021	----	----	----		21-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A	E318	19-Nov-2021	25-Nov-2021	----	----		29-Nov-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B	E318	19-Nov-2021	25-Nov-2021	----	----		29-Nov-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A	E372-U	19-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B	E372-U	19-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4A	E421.Cr-L	19-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4B	E421.Cr-L	19-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_ER4A	E509	19-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_ER4B	E509	19-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4A	E421	19-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ER4B	E421	19-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	6 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_MW_ER4A	E601A	19-Nov-2021	22-Nov-2021	14 days	3 days	✓	23-Nov-2021	40 days	1 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_MW_ER4B	E601A	19-Nov-2021	22-Nov-2021	14 days	3 days	✓	23-Nov-2021	40 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_ER4A	E358-L	19-Nov-2021	23-Nov-2021	----	----		25-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_ER4B	E358-L	19-Nov-2021	23-Nov-2021	----	----		25-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4A	E355-L	19-Nov-2021	23-Nov-2021	----	----		25-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ER4B	E355-L	19-Nov-2021	23-Nov-2021	----	----		25-Nov-2021	28 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_MW_ER4A	E283	19-Nov-2021	----	----	----		22-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_MW_ER4B	E283	19-Nov-2021	----	----	----		22-Nov-2021	14 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_MW_ER4A	E290	19-Nov-2021	----	----	----		23-Nov-2021	14 days	4 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_MW_ER4B	E290	19-Nov-2021	----	----	----		23-Nov-2021	14 days	4 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_MW_ER4A	E100	19-Nov-2021	----	----	----		23-Nov-2021	28 days	4 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_MW_ER4B	E100	19-Nov-2021	----	----	----		23-Nov-2021	28 days	4 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_MW_ER4B	E125	19-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	213 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_MW_ER4A	E125	19-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	214 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_MW_ER4B	E108	19-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	91 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_MW_ER4A	E108	19-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	92 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_MW_ER4A	E162	19-Nov-2021	----	----	----		25-Nov-2021	7 days	6 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> LC_MW_ER4B	E162	19-Nov-2021	----	----	----		25-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_MW_ER4A	E160-L	19-Nov-2021	----	----	----		25-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_MW_ER4B	E160-L	19-Nov-2021	----	----	----		25-Nov-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_MW_ER4A	E121	19-Nov-2021	----	----	----		21-Nov-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_MW_ER4B	E121	19-Nov-2021	----	----	----		21-Nov-2021	3 days	2 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_MW_ER4A	E420.Cr-L	19-Nov-2021	----	----	----		25-Nov-2021	180 days	6 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_MW_ER4B	E420.Cr-L	19-Nov-2021	----	----	----		25-Nov-2021	180 days	6 days	✓
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> LC_MW_ER4B	E508	19-Nov-2021	----	----	----		25-Nov-2021	28 days	5 days	✓
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> LC_MW_ER4A	E508	19-Nov-2021	----	----	----		25-Nov-2021	28 days	6 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_MW_ER4A	E420	19-Nov-2021	----	----	----		25-Nov-2021	180 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_MW_ER4B	E420	19-Nov-2021	----	----	----		25-Nov-2021	180 days	6 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	349791	1	15	6.6	5.0	✓
Alkalinity Species by Titration	E290	350518	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	352815	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	349609	1	3	33.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	349610	1	3	33.3	5.0	✓
Conductivity in Water	E100	350520	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352491	1	2	50.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352492	1	3	33.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350257	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	349552	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	349613	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	349611	1	3	33.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	349612	1	3	33.3	5.0	✓
ORP by Electrode	E125	354439	1	20	5.0	5.0	✓
pH by Meter	E108	350519	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	349608	1	3	33.3	5.0	✓
TDS by Gravimetry	E162	350856	1	15	6.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351882	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353009	1	9	11.1	5.0	✓
Total Mercury in Water by CVAAS	E508	352191	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351883	2	19	10.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350258	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349579	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	349637	1	3	33.3	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	349791	1	15	6.6	5.0	✓
Alkalinity Species by Titration	E290	350518	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	352815	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	350037	1	7	14.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	349609	1	3	33.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	349610	1	3	33.3	5.0	✓
Conductivity in Water	E100	350520	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352491	1	2	50.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352492	1	3	33.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350257	1	14	7.1	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	349552	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	349613	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	349611	1	3	33.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	349612	1	3	33.3	5.0	✓
ORP by Electrode	E125	354439	1	20	5.0	5.0	✓
pH by Meter	E108	350519	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	349608	1	3	33.3	5.0	✓
TDS by Gravimetry	E162	350856	1	15	6.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351882	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353009	1	9	11.1	5.0	✓
Total Mercury in Water by CVAAS	E508	352191	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351883	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350258	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349579	1	16	6.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	350845	1	14	7.1	5.0	✓
Turbidity by Nephelometry	E121	349637	1	3	33.3	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	349791	1	15	6.6	5.0	✓
Alkalinity Species by Titration	E290	350518	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	352815	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	350037	1	7	14.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	349609	1	3	33.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	349610	1	3	33.3	5.0	✓
Conductivity in Water	E100	350520	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352491	1	2	50.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352492	1	3	33.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350257	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	349552	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	349613	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	349611	1	3	33.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	349612	1	3	33.3	5.0	✓
Sulfate in Water by IC	E235.SO4	349608	1	3	33.3	5.0	✓
TDS by Gravimetry	E162	350856	1	15	6.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351882	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353009	1	9	11.1	5.0	✓
Total Mercury in Water by CVAAS	E508	352191	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351883	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350258	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349579	1	16	6.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	350845	1	14	7.1	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<i>Method Blanks (MB) - Continued</i>							
Turbidity by Nephelometry	E121	349637	1	3	33.3	5.0	✓
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	352815	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	349609	1	3	33.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	349610	1	3	33.3	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352491	1	2	50.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352492	1	3	33.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350257	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	349552	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	349613	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	349611	1	3	33.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	349612	1	3	33.3	5.0	✓
Sulfate in Water by IC	E235.SO4	349608	1	3	33.3	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	351882	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353009	1	9	11.1	5.0	✓
Total Mercury in Water by CVAAS	E508	352191	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	351883	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350258	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349579	1	16	6.2	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .





<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
	Vancouver - Environmental			
PHCs and PAHs Hexane Extraction	EP601	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
	Calgary - Environmental			

## QUALITY CONTROL REPORT

**Work Order** : **CG2105868**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : ER4A & B 20211119  
**Sampler** : TD  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Nov-2021 09:00  
**Date Analysis Commenced** : 21-Nov-2021  
**Issue Date** : 30-Nov-2021 11:50

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kelley Macdonald	Lab Assistant	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2105868  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 349637)</b>											
CG2105868-001	LC_MW_ER4A	turbidity	----	E121	0.10	NTU	0.89	0.90	0.010	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 349791)</b>											
CG2105864-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	4.0	4.4	0.4	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 350518)</b>											
CG2105864-005	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	275	278	0.941%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	275	278	0.941%	20%	----
<b>Physical Tests (QC Lot: 350519)</b>											
CG2105864-005	Anonymous	pH	----	E108	0.10	pH units	8.11	8.10	0.123%	4%	----
<b>Physical Tests (QC Lot: 350520)</b>											
CG2105864-005	Anonymous	conductivity	----	E100	2.0	µS/cm	2240	2190	2.26%	10%	----
<b>Physical Tests (QC Lot: 350856)</b>											
CG2105860-018	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1760	1720	2.19%	20%	----
<b>Physical Tests (QC Lot: 354439)</b>											
CG2105864-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	511	509	0.451%	15%	----
<b>Anions and Nutrients (QC Lot: 349552)</b>											
CG2105864-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 349579)</b>											
CG2105864-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 349608)</b>											
CG2105868-001	LC_MW_ER4A	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	109	108	0.981%	20%	----
<b>Anions and Nutrients (QC Lot: 349609)</b>											
CG2105868-001	LC_MW_ER4A	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 349610)</b>											
CG2105868-001	LC_MW_ER4A	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.72	2.71	0.347%	20%	----
<b>Anions and Nutrients (QC Lot: 349611)</b>											
CG2105868-001	LC_MW_ER4A	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 349612)</b>											
CG2105868-001	LC_MW_ER4A	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 349613)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 349613) - continued</b>											
CG2105868-001	LC_MW_ER4A	fluoride	16984-48-8	E235.F	0.020	mg/L	0.117	0.120	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352815)</b>											
CG2105864-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0124	0.0061	0.0063	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353009)</b>											
CG2105868-001	LC_MW_ER4A	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 350257)</b>											
CG2105864-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.52	0.52	0.002	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 350258)</b>											
CG2105864-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.61	0.66	0.04	Diff <2x LOR	----
<b>Total Metals (QC Lot: 351882)</b>											
CG2105834-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00065	0.00072	0.00008	Diff <2x LOR	----
<b>Total Metals (QC Lot: 351883)</b>											
CG2105834-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.369	0.411	10.8%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	1.30	1.30	0.0692%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	0.304 µg/L	0.000295	0.000009	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000133	0.000085	43.6%	20%	DUP-H
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00922	0.0118	24.4%	20%	DUP-H
CG2105834-001	Anonymous	antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00132	0.00140	5.56%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0345	0.0369	6.92%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.042	0.042	0.0009	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0376 µg/L	0.0000377	0.0000001	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	245	242	1.37%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.46 µg/L	0.00054	0.00007	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00125	0.00142	0.00017	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000288	0.000365	0.000078	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0244	0.0242	0.866%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	59.1	57.8	2.16%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.175	0.172	1.47%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000996	0.00105	5.56%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00178	0.00198	0.00020	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.28	2.32	1.66%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	7.31	7.36	0.745%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 351883) - continued</b>											
CG2105834-001	Anonymous	sodium, total	17341-25-2	E420	0.050	mg/L	5.24	5.05	3.67%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.723	0.712	1.63%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	230	222	3.28%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000022	0.000024	0.000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00188	0.00184	2.26%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00061	0.00105	0.00044	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0128	0.0138	0.0010	Diff <2x LOR	----
<b>Total Metals (QC Lot: 352191)</b>											
CG2105868-001	LC_MW_ER4A	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352217)</b>											
CG2105834-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352491)</b>											
CG2105868-001	LC_MW_ER4A	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352492)</b>											
CG2105868-001	LC_MW_ER4A	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0014	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0513	0.0510	0.605%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	67.4	67.9	0.766%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.149	0.148	0.540%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0054	0.0053	0.00004	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.8	18.7	0.937%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0516	0.0515	0.298%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00486	0.00486	0.0881%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.534	0.528	1.11%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 352492) - continued</b>											
CG2105868-001	LC_MW_ER4A	silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.10	2.12	0.861%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.50	2.43	2.58%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.292	0.294	0.756%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	31.9	32.4	1.82%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000266	0.000260	2.21%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 349637)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 349791)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 350518)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 350520)</b>						
conductivity	----	E100	1	µS/cm	1.2	----
<b>Physical Tests (QCLot: 350845)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 350856)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 349552)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 349579)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 349608)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 349609)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 349610)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 349611)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 349612)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 349613)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 352815)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 353009)</b>						





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 353009) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 350257)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 350258)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 351882)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 351883)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 351883) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 352191)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 352217)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 352491)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 352492)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 352492) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Hydrocarbons (QCLot: 350037)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 349637)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	105	85.0	115	---
<b>Physical Tests (QCLot: 349791)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	96.4	85.0	115	---
<b>Physical Tests (QCLot: 350518)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	110	85.0	115	---
<b>Physical Tests (QCLot: 350519)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 350520)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	---
<b>Physical Tests (QCLot: 350845)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	89.9	85.0	115	---
<b>Physical Tests (QCLot: 350856)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	92.2	85.0	115	---
<b>Physical Tests (QCLot: 354439)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 349552)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	108	80.0	120	---
<b>Anions and Nutrients (QCLot: 349579)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	99.4	80.0	120	---
<b>Anions and Nutrients (QCLot: 349608)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 349609)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	101	85.0	115	---
<b>Anions and Nutrients (QCLot: 349610)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 349611)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 349612)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 349613)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 352815)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 352815) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
<b>Anions and Nutrients (QCLot: 353009)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	101	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 350257)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	93.0	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 350258)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	97.4	80.0	120	----
<b>Total Metals (QCLot: 351882)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Total Metals (QCLot: 351883)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	111	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	89.8	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	106	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	107	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	105	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	109	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.7	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	108	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.9	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	105	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 351883) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	110	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 352191)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	99.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 352491)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 352492)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.8	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.4	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	93.2	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	92.9	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	87.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	94.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	90.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.9	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.6	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	90.6	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.3	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	98.5	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.2	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 352492) - continued</b>									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	93.0	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.0	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
<b>Hydrocarbons (QCLot: 350037)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	7719.3 µg/L	103	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3536.8 µg/L	106	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	10414 µg/L	105	70.0	130	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 349552)</b>										
CG2105864-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0471 mg/L	0.05 mg/L	94.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 349579)</b>										
CG2105864-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0621 mg/L	0.0676 mg/L	91.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 349608)</b>										
CG2105868-002	LC_MW_ER4B	sulfate (as SO4)	14808-79-8	E235.SO4	112 mg/L	100 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 349609)</b>										
CG2105868-002	LC_MW_ER4B	bromide	24959-67-9	E235.Br-L	0.582 mg/L	0.5 mg/L	116	75.0	125	----
<b>Anions and Nutrients (QCLot: 349610)</b>										
CG2105868-002	LC_MW_ER4B	chloride	16887-00-6	E235.Cl-L	116 mg/L	100 mg/L	116	75.0	125	----
<b>Anions and Nutrients (QCLot: 349611)</b>										
CG2105868-002	LC_MW_ER4B	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 349612)</b>										
CG2105868-002	LC_MW_ER4B	nitrite (as N)	14797-65-0	E235.NO2-L	0.552 mg/L	0.5 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 349613)</b>										
CG2105868-002	LC_MW_ER4B	fluoride	16984-48-8	E235.F	1.11 mg/L	1 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 352815)</b>										
CG2105864-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 353009)</b>										
CG2105868-002	LC_MW_ER4B	Kjeldahl nitrogen, total [TKN]	----	E318	2.54 mg/L	2.5 mg/L	101	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 350257)</b>										
CG2105864-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.1 mg/L	23.9 mg/L	92.3	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 350258)</b>										
CG2105864-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.0 mg/L	23.9 mg/L	96.4	70.0	130	----
<b>Total Metals (QCLot: 351882)</b>										
CG2105834-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
<b>Total Metals (QCLot: 351883)</b>										
CG2105834-002	Anonymous	aluminum, total	7429-90-5	E420	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, total	7440-36-0	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 351883) - continued</b>										
CG2105834-002	Anonymous	arsenic, total	7440-38-2	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00992 mg/L	0.01 mg/L	99.2	70.0	130	----
		boron, total	7440-42-8	E420	0.093 mg/L	0.1 mg/L	93.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00398 mg/L	0.004 mg/L	99.4	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0181 mg/L	0.02 mg/L	90.7	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		lithium, total	7439-93-2	E420	0.0975 mg/L	0.1 mg/L	97.5	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, total	7440-02-0	E420	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		potassium, total	7440-09-7	E420	3.88 mg/L	4 mg/L	97.0	70.0	130	----
		selenium, total	7782-49-2	E420	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, total	7440-21-3	E420	9.46 mg/L	10 mg/L	94.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00391 mg/L	0.004 mg/L	97.7	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00387 mg/L	0.004 mg/L	96.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, total	7440-32-6	E420	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		uranium, total	7440-61-1	E420	0.00392 mg/L	0.004 mg/L	98.1	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0999 mg/L	0.1 mg/L	99.9	70.0	130	----
		zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	96.1	70.0	130	----
<b>Total Metals (QCLot: 352191)</b>										
CG2105868-002	LC_MW_ER4B	mercury, total	7439-97-6	E508	0.0000955 mg/L	0.0001 mg/L	95.5	70.0	130	----
<b>Dissolved Metals (QCLot: 352217)</b>										
CG2105834-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000103 mg/L	0.0001 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 352491)</b>										
CG2105868-002	LC_MW_ER4B	chromium, dissolved	7440-47-3	E421.Cr-L	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 352492)</b>										
CG2105868-002	LC_MW_ER4B	aluminum, dissolved	7429-90-5	E421	0.192 mg/L	0.2 mg/L	96.1	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0195 mg/L	0.02 mg/L	97.3	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0362 mg/L	0.04 mg/L	90.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00852 mg/L	0.01 mg/L	85.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.084 mg/L	0.1 mg/L	83.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00387 mg/L	0.004 mg/L	96.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0183 mg/L	0.02 mg/L	91.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0178 mg/L	0.02 mg/L	88.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0877 mg/L	0.1 mg/L	87.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.96 mg/L	4 mg/L	98.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0400 mg/L	0.04 mg/L	100.0	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.71 mg/L	10 mg/L	87.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00378 mg/L	0.004 mg/L	94.4	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00359 mg/L	0.004 mg/L	89.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00384 mg/L	0.004 mg/L	95.9	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0991 mg/L	0.1 mg/L	99.1	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.375 mg/L	0.4 mg/L	93.8	70.0	130	----

COC ID: **ER4A & B 20211119**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	chris.blurton@teck.com		x	x
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		x	x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com		x	x
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com		x	x
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	tanya.dick@teck.com		x	x
	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	17000739930			
				Phone Number	403 407 1794							

Environmental Division  
Calgary  
Work Order Reference  
**CG2105868**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	F	N	N	F	N	F	N	N				
								ANALYSIS	ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET/HG-T-CL	TECKCOAL-ROUTINE-VA				
LC_MW_ER4A_WG_Q4-2021_N	LC_MW_ER4A	WG		19-Nov	13:45	G	6		1	2	1	1	1	1	1	1				
LC_MW_ER4B_WG_Q4-2021_N	LC_MW_ER4B	WG		19-Nov	14:45	G	6		1	2	1	1	1	1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	T. Dick	19-Nov	<i>[Signature]</i>	20/11/21 9:00 AM

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	T. Dick	
	Sampler's Signature	Date/Time
		November 19, 2021

*7.12*



**Environmental**

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105922**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : LC GW 20211122  
**Sampler** : SF  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Nov-2021 09:00  
**Date Analysis Commenced** : 23-Nov-2021  
**Issue Date** : 02-Dec-2021 16:50

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

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## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Kelley Macdonald	Lab Assistant	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Mackenzie Lamoureux	Lab Assistant	Metals, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta
Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	<i>Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.</i>
DLHC	<i>Detection Limit Raised: Dilution required due to high concentration of test analyte(s).</i>
DTC	<i>Dissolved concentration exceeds total. Results were confirmed by re-analysis.</i>
RRV	<i>Reported result verified by repeat analysis.</i>



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1105_ WG_Q4-2021_N	WG_Q4-2021_0 12_RD2	WG_Q4-2021_0 13_MT3	WG_Q4-2021_0 10_CC2	LC_PIZP1104_ WG_Q4-2021_N P
Client sampling date / time					22-Nov-2021 14:20	22-Nov-2021 14:20	22-Nov-2021 14:20	22-Nov-2021 14:20	22-Nov-2021 13:50	
Analyte	CAS Number	Method	LOR	Unit	CG2105922-001 Result	CG2105922-002 Result	CG2105922-003 Result	CG2105922-004 Result	CG2105922-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	13.1	2.3	2.1	11.1	6.6	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	437	<1.0	<1.0	417	255	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	533	<1.0	<1.0	508	311	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	437	<1.0	<1.0	417	255	
conductivity	----	E100	2.0	µS/cm	1390	<2.0	<2.0	1420	1270	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	720	<0.50	<0.50	713	572	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	461	503	463	417	407	
pH	----	E108	0.10	pH units	7.22	5.87	5.54	7.24	7.44	
solids, total dissolved [TDS]	----	E162	10	mg/L	906	<10	<10	900	857	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	424	<1.0	<1.0	476	21.8	
turbidity	----	E121	0.10	NTU	290	<0.10	<0.10	290	25.2	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0882	0.0085	<0.0050	0.0717	0.0055	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	2.62	<0.050	<0.050	2.70	3.18	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	199	<0.10	<0.10	200	245	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.268	<0.020	<0.020	0.271	0.332	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.084	<0.050	<0.050	0.075	0.054	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0536	<0.0050	<0.0050	0.0329	0.303	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0031	<0.0010	<0.0010	0.0029	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.384 <sup>DLHC</sup>	<0.0020	<0.0020	0.403 <sup>DLHC</sup>	0.0352	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	106	<0.30	<0.30	105	80.8	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.84	----	<0.50	0.81	0.88	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	9.55	<0.50	<0.50	8.09	1.35	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1105_ WG_Q4-2021_N	WG_Q4-2021_0 12_RD2	WG_Q4-2021_0 13_MT3	WG_Q4-2021_0 10_CC2	LC_PIZP1104_ WG_Q4-2021_N P
Client sampling date / time					22-Nov-2021 14:20	22-Nov-2021 14:20	22-Nov-2021 14:20	22-Nov-2021 14:20	22-Nov-2021 13:50	
Analyte	CAS Number	Method	LOR	Unit	CG2105922-001	CG2105922-002	CG2105922-003	CG2105922-004	CG2105922-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	16.6	<0.10	<0.10	16.2	13.7	
cation sum	----	EC101	0.10	meq/L	15.1	<0.10	<0.10	15.0	12.2	
ion balance (cations/anions ratio)	----	EC101	0.010	%	91.0	100	100	92.6	89.0	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.73	<0.010	<0.010	3.85	5.79	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	2.76	<0.0030	<0.0030	2.62	0.0603	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00040	<0.00010	<0.00010	0.00041	<0.00010	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00225	<0.00010	<0.00010	0.00228	0.00065	
barium, total	7440-39-3	E420	0.00010	mg/L	0.224	<0.00010	<0.00010	0.226	0.253	
beryllium, total	7440-41-7	E420	0.020	µg/L	0.199	<0.020	<0.020	0.186	<0.020	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	0.024	<0.010	<0.010	0.025	0.024	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.479	<0.0050	<0.0050	0.505	0.0515	
calcium, total	7440-70-2	E420	0.050	mg/L	194	<0.050	<0.050	206	147	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00456	<0.00010	<0.00010	0.00429	0.00048	
cobalt, total	7440-48-4	E420	0.10	µg/L	2.47	<0.10	<0.10	2.55	0.63	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00579	<0.00050	<0.00050	0.00586	<0.00050	
iron, total	7439-89-6	E420	0.010	mg/L	5.93	<0.010	<0.010	5.96	1.24	
lead, total	7439-92-1	E420	0.000050	mg/L	0.00238	<0.000050	<0.000050	0.00242	0.000179	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0235	<0.0010	<0.0010	0.0254	0.0250	
magnesium, total	7439-95-4	E420	0.0050	mg/L	56.5	<0.0050	<0.0050	59.4	47.8	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.420	<0.00010	<0.00010	0.434	0.251	
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000202	<0.0000050	<0.0000050	0.0000206	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000917	<0.000050	<0.000050	0.000911	0.000974	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00814	<0.00050	<0.00050	0.00840	0.00209	
potassium, total	7440-09-7	E420	0.050	mg/L	2.84	<0.050	<0.050	2.85	2.85	
selenium, total	7782-49-2	E420	0.050	µg/L	0.239	<0.050	<0.050	0.284	0.125	
silicon, total	7440-21-3	E420	0.10	mg/L	8.67	<0.10	<0.10	8.74	4.52	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000069	<0.000010	<0.000010	0.000066	<0.000010	
sodium, total	17341-25-2	E420	0.050	mg/L	14.1	<0.050	<0.050	15.1	15.5	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1105_ WG_Q4-2021_N	WG_Q4-2021_0 12_RD2	WG_Q4-2021_0 13_MT3	WG_Q4-2021_0 10_CC2	LC_PIZP1104_ WG_Q4-2021_N P
Client sampling date / time					22-Nov-2021 14:20	22-Nov-2021 14:20	22-Nov-2021 14:20	22-Nov-2021 14:20	22-Nov-2021 13:50	
Analyte	CAS Number	Method	LOR	Unit	CG2105922-001 Result	CG2105922-002 Result	CG2105922-003 Result	CG2105922-004 Result	CG2105922-005 Result	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.408	<0.00020	<0.00020	0.432	0.501	
sulfur, total	7704-34-9	E420	0.50	mg/L	35.6	<0.50	<0.50	37.9	27.3	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000165	<0.000010	<0.000010	0.000160	0.000023	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00043	<0.00010	<0.00010	0.00045	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0175	<0.00030	<0.00030	0.0136	0.00098	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000522	<0.000010	<0.000010	0.000539	0.00277	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00812	<0.00050	<0.00050	0.00772	<0.00050	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0378	<0.0030	<0.0030	0.0383	<0.0030	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0014	----	0.0016 <sup>RRV</sup>	0.0021	0.0016	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00011	----	<0.00010	0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	----	<0.00010	0.00016	0.00051	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.109	----	<0.00010	0.111	0.243	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.021	----	<0.010	0.020	0.028	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0665	----	<0.0050	0.0682	0.0168	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	193	<0.050	<0.050	186	145	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.70	----	<0.10	0.74	0.62	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00046	----	<0.00020	<0.00020	0.00078 <sup>DTC</sup>	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.063	----	<0.010	0.068	0.961	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0210	----	<0.0010	0.0202	0.0239	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	57.9	<0.0050	<0.0050	60.4	51.1	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.165	----	<0.00010	0.169	0.268	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000321	----	<0.000050	0.000308	0.00109	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00274	----	<0.00050	0.00284	0.00222	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.04	<0.050	<0.050	2.12	2.98	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1105_ WG_Q4-2021_N	WG_Q4-2021_0 12_RD2	WG_Q4-2021_0 13_MT3	WG_Q4-2021_0 10_CC2	LC_PIZP1104_ WG_Q4-2021_N P
Client sampling date / time					22-Nov-2021 14:20	22-Nov-2021 14:20	22-Nov-2021 14:20	22-Nov-2021 14:20	22-Nov-2021 13:50	
Analyte	CAS Number	Method	LOR	Unit	CG2105922-001 Result	CG2105922-002 Result	CG2105922-003 Result	CG2105922-004 Result	CG2105922-005 Result	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.091	----	<0.050	0.108	0.105	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.62	----	<0.050	4.90	4.36	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	14.7	<0.050	<0.050	15.4	16.1	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.422	----	<0.00020	0.416	0.504	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	36.0	----	<0.50	38.3	28.9	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000016	----	<0.000010	0.000018	0.000019	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00028	----	<0.00010	0.00030	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000350	----	<0.000010	0.000334	0.00295	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0040	----	<0.0010	0.0046	0.0040	
dissolved mercury filtration location	----	EP509	-	-	Field	----	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Laboratory	Field	Field	Field	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	----	----	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	96.6	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105922</b>	Page	: 1 of 24
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 23-Nov-2021 09:00
PO	: VPO00739930	Issue Date	: 02-Dec-2021 16:51
C-O-C number	: LC GW 20211122		
Sampler	: SF		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Laboratory Control Sample (LCS) Recoveries</b>								
Total Metals	QC-MRG2-3537310 02	----	potassium, total	7440-09-7	E420	122 % <sup>MES</sup>	80.0-120%	Recovery greater than upper control limit
Total Metals	QC-MRG2-3537310 02	----	sodium, total	17341-25-2	E420	122 % <sup>MES</sup>	80.0-120%	Recovery greater than upper control limit

**Result Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q4-2021_NP	E298	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q4-2021_N	E298	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_010_CC2	E298	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_012_RD2	E298	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_013_MT3	E298	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q4-2021_NP	E235.Br-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1105_WG_Q4-2021_N	E235.Br-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE WG_Q4-2021_010_CC2	E235.Br-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE WG_Q4-2021_012_RD2	E235.Br-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE WG_Q4-2021_013_MT3	E235.Br-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE LC_PIZP1104_WG_Q4-2021_NP	E235.Cl-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE LC_PIZP1105_WG_Q4-2021_N	E235.Cl-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE WG_Q4-2021_010_CC2	E235.Cl-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE WG_Q4-2021_012_RD2	E235.Cl-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE WG_Q4-2021_013_MT3	E235.Cl-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_PIZP1104_WG_Q4-2021_NP	E378-U	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_PIZP1105_WG_Q4-2021_N	E378-U	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE WG_Q4-2021_010_CC2	E378-U	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE WG_Q4-2021_012_RD2	E378-U	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE WG_Q4-2021_013_MT3	E378-U	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZP1104_WG_Q4-2021_NP	E235.F	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_PIZP1105_WG_Q4-2021_N	E235.F	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE WG_Q4-2021_010_CC2	E235.F	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE WG_Q4-2021_012_RD2	E235.F	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE WG_Q4-2021_013_MT3	E235.F	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q4-2021_NP	E235.NO3-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q4-2021_N	E235.NO3-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q4-2021_010_CC2	E235.NO3-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q4-2021_012_RD2	E235.NO3-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q4-2021_013_MT3	E235.NO3-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q4-2021_NP	E235.NO2-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q4-2021_N	E235.NO2-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q4-2021_010_CC2	E235.NO2-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q4-2021_012_RD2	E235.NO2-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> WG_Q4-2021_013_MT3	E235.NO2-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> LC_PIZP1104_WG_Q4-2021_NP	E235.SO4	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> LC_PIZP1105_WG_Q4-2021_N	E235.SO4	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> WG_Q4-2021_010_CC2	E235.SO4	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> WG_Q4-2021_012_RD2	E235.SO4	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> WG_Q4-2021_013_MT3	E235.SO4	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q4-2021_NP	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q4-2021_N	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_010_CC2	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_012_RD2	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_013_MT3	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q4-2021_NP	E372-U	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q4-2021_N	E372-U	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_010_CC2	E372-U	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_012_RD2	E372-U	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_013_MT3	E372-U	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1104_WG_Q4-2021_NP	E421.Cr-L	22-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1105_WG_Q4-2021_N	E421.Cr-L	22-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	180 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q4-2021_010_CC2	E421.Cr-L	22-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q4-2021_013_MT3	E421.Cr-L	22-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1105_WG_Q4-2021_N	E509	22-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> WG_Q4-2021_010_CC2	E509	22-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> WG_Q4-2021_013_MT3	E509	22-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1104_WG_Q4-2021_NP	E509	22-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1104_WG_Q4-2021_NP	E421	22-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_PIZP1105_WG_Q4-2021_N	E421	22-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q4-2021_010_CC2	E421	22-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	180 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q4-2021_013_MT3	E421	22-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> WG_Q4-2021_012_RD2	E421	22-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	180 days	7 days	✓	
<b>Hydrocarbons : BC PHCs - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_PIZP1105_WG_Q4-2021_N	E601A	22-Nov-2021	25-Nov-2021	14 days	3 days	✓	26-Nov-2021	40 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1104_WG_Q4-2021_NP	E358-L	22-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1105_WG_Q4-2021_N	E358-L	22-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> WG_Q4-2021_010_CC2	E358-L	22-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> WG_Q4-2021_013_MT3	E358-L	22-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1104_WG_Q4-2021_NP	E355-L	22-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1105_WG_Q4-2021_N	E355-L	22-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_010_CC2	E355-L	22-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_012_RD2	E355-L	22-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_013_MT3	E355-L	22-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q4-2021_NP	E283	22-Nov-2021	----	----	----		24-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1105_WG_Q4-2021_N	E283	22-Nov-2021	----	----	----		24-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> WG_Q4-2021_010_CC2	E283	22-Nov-2021	----	----	----		24-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> WG_Q4-2021_012_RD2	E283	22-Nov-2021	----	----	----		24-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> WG_Q4-2021_013_MT3	E283	22-Nov-2021	----	----	----		24-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZP1104_WG_Q4-2021_NP	E290	22-Nov-2021	----	----	----		24-Nov-2021	14 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_PIZP1105_WG_Q4-2021_N	E290	22-Nov-2021	----	----	----		24-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE WG_Q4-2021_010_CC2	E290	22-Nov-2021	----	----	----		24-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE WG_Q4-2021_012_RD2	E290	22-Nov-2021	----	----	----		25-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE WG_Q4-2021_013_MT3	E290	22-Nov-2021	----	----	----		25-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZP1104_WG_Q4-2021_NP	E100	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZP1105_WG_Q4-2021_N	E100	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE WG_Q4-2021_010_CC2	E100	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE WG_Q4-2021_012_RD2	E100	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE WG_Q4-2021_013_MT3	E100	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : ORP by Electrode</b>										
HDPE LC_PIZP1104_WG_Q4-2021_NP	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	145 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE LC_PIZP1105_WG_Q4-2021_N	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	145 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE WG_Q4-2021_010_CC2	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	145 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE WG_Q4-2021_012_RD2	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	145 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE WG_Q4-2021_013_MT3	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	145 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LC_PIZP1105_WG_Q4-2021_N	E108	22-Nov-2021	----	----	----		24-Nov-2021	0.25 hrs	43 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE WG_Q4-2021_010_CC2	E108	22-Nov-2021	----	----	----		24-Nov-2021	0.25 hrs	43 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE WG_Q4-2021_012_RD2	E108	22-Nov-2021	----	----	----		24-Nov-2021	0.25 hrs	43 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE WG_Q4-2021_013_MT3	E108	22-Nov-2021	----	----	----		24-Nov-2021	0.25 hrs	43 hrs	* EHTR-FM





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZP1104_WG_Q4-2021_NP	E108	22-Nov-2021	----	----	----		24-Nov-2021	0.25 hrs	44 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZP1104_WG_Q4-2021_NP	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZP1105_WG_Q4-2021_N	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE WG_Q4-2021_010_CC2	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE WG_Q4-2021_012_RD2	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE WG_Q4-2021_013_MT3	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE LC_PIZP1104_WG_Q4-2021_NP	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE LC_PIZP1105_WG_Q4-2021_N	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE WG_Q4-2021_010_CC2	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE WG_Q4-2021_012_RD2	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE WG_Q4-2021_013_MT3	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE LC_PIZP1104_WG_Q4-2021_NP	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE LC_PIZP1105_WG_Q4-2021_N	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE WG_Q4-2021_010_CC2	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE WG_Q4-2021_012_RD2	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE WG_Q4-2021_013_MT3	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
HDPE total (nitric acid) LC_PIZP1104_WG_Q4-2021_NP	E420.Cr-L	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
HDPE total (nitric acid) LC_PIZP1105_WG_Q4-2021_N	E420.Cr-L	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> WG_Q4-2021_010_CC2	E420.Cr-L	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> WG_Q4-2021_012_RD2	E420.Cr-L	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> WG_Q4-2021_013_MT3	E420.Cr-L	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> LC_PIZP1105_WG_Q4-2021_N	E508	22-Nov-2021	----	----	----		27-Nov-2021	28 days	5 days	✔
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> WG_Q4-2021_010_CC2	E508	22-Nov-2021	----	----	----		27-Nov-2021	28 days	5 days	✔
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> WG_Q4-2021_012_RD2	E508	22-Nov-2021	----	----	----		27-Nov-2021	28 days	5 days	✔
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> WG_Q4-2021_013_MT3	E508	22-Nov-2021	----	----	----		27-Nov-2021	28 days	5 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1104_WG_Q4-2021_NP	E420	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1105_WG_Q4-2021_N	E420	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> WG_Q4-2021_010_CC2	E420	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> WG_Q4-2021_012_RD2	E420	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> WG_Q4-2021_013_MT3	E420	22-Nov-2021	----	----	----		27-Nov-2021	180 days	5 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	351505	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	351499	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354292	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351350	2	35	5.7	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351351	2	35	5.7	5.0	✓
Conductivity in Water	E100	351500	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	354500	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355560	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	354501	1	13	7.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	351188	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351377	2	34	5.8	5.0	✓
Fluoride in Water by IC	E235.F	351354	2	35	5.7	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351352	2	35	5.7	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351353	2	35	5.7	5.0	✓
ORP by Electrode	E125	354753	1	20	5.0	5.0	✓
pH by Meter	E108	351498	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	351349	2	35	5.7	5.0	✓
TDS by Gravimetry	E162	352774	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353731	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353877	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	354050	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353732	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	351189	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351720	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	351857	1	11	9.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	351505	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	351499	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354292	1	19	5.2	5.0	✓
BC PHCs - EPH by GC-FID	E601A	352907	1	5	20.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351350	2	35	5.7	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351351	2	35	5.7	5.0	✓
Conductivity in Water	E100	351500	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	354500	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355560	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	354501	1	13	7.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	351188	1	11	9.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351377	2	34	5.8	5.0	✓
Fluoride in Water by IC	E235.F	351354	2	35	5.7	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351352	2	35	5.7	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351353	2	35	5.7	5.0	✓
ORP by Electrode	E125	354753	1	20	5.0	5.0	✓
pH by Meter	E108	351498	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	351349	2	35	5.7	5.0	✓
TDS by Gravimetry	E162	352774	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353731	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353877	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	354050	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353732	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	351189	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351720	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352771	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	351857	1	11	9.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	351505	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	351499	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354292	1	19	5.2	5.0	✓
BC PHCs - EPH by GC-FID	E601A	352907	1	5	20.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351350	2	35	5.7	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351351	2	35	5.7	5.0	✓
Conductivity in Water	E100	351500	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	354500	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355560	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	354501	1	13	7.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	351188	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351377	2	34	5.8	5.0	✓
Fluoride in Water by IC	E235.F	351354	2	35	5.7	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351352	2	35	5.7	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351353	2	35	5.7	5.0	✓
Sulfate in Water by IC	E235.SO4	351349	2	35	5.7	5.0	✓
TDS by Gravimetry	E162	352774	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353731	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353877	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	354050	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353732	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	351189	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351720	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352771	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<i>Method Blanks (MB) - Continued</i>							
Turbidity by Nephelometry	E121	351857	1	11	9.0	5.0	✓
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	354292	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351350	2	35	5.7	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351351	2	35	5.7	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	354500	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355560	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	354501	2	13	15.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	351188	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351377	2	34	5.8	5.0	✓
Fluoride in Water by IC	E235.F	351354	2	35	5.7	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351352	2	35	5.7	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351353	2	35	5.7	5.0	✓
Sulfate in Water by IC	E235.SO4	351349	2	35	5.7	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353731	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353877	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	354050	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353732	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	351189	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351720	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHCs - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
	Vancouver - Environmental			
PHCs and PAHs Hexane Extraction	EP601	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
	Calgary - Environmental			

## QUALITY CONTROL REPORT

**Work Order** : **CG2105922**

**Page** : 1 of 23

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : LC GW 20211122  
**Sampler** : SF  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Nov-2021 09:00  
**Date Analysis Commenced** : 23-Nov-2021  
**Issue Date** : 02-Dec-2021 16:51

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Kelley Macdonald	Lab Assistant	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Mackenzie Lamoureux	Lab Assistant	Metals, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Shirley Li  
Sorina Motea  
Vladka Stamenova

Laboratory Analyst  
Analyst

Metals, Calgary, Alberta  
Organics, Calgary, Alberta  
Inorganics, Calgary, Alberta

Page : 3 of 23  
Work Order : CG2105922  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 351498)</b>											
CG2105920-001	Anonymous	pH	----	E108	0.10	pH units	8.30	8.29	0.120%	4%	----
<b>Physical Tests (QC Lot: 351499)</b>											
CG2105920-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	592	612	3.39%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	4.0	3.4	0.6	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	596	616	3.27%	20%	----
<b>Physical Tests (QC Lot: 351500)</b>											
CG2105920-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2610	2610	0.00%	10%	----
<b>Physical Tests (QC Lot: 351505)</b>											
CG2105922-001	LC_PIZP1105_WG_Q4-2021_N	acidity (as CaCO3)	----	E283	2.0	mg/L	13.1	13.7	0.6	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 351857)</b>											
CG2105917-005	Anonymous	turbidity	----	E121	0.10	NTU	21.6	21.0	2.81%	15%	----
<b>Physical Tests (QC Lot: 352774)</b>											
CG2105917-006	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	842	847	0.592%	20%	----
<b>Physical Tests (QC Lot: 354753)</b>											
CG2105917-005	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	457	461	0.981%	15%	----
<b>Anions and Nutrients (QC Lot: 351349)</b>											
CG2105913-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	207	206	0.482%	20%	----
<b>Anions and Nutrients (QC Lot: 351350)</b>											
CG2105913-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351351)</b>											
CG2105913-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	11.9	11.9	0.504%	20%	----
<b>Anions and Nutrients (QC Lot: 351352)</b>											
CG2105913-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	7.81	7.75	0.762%	20%	----
<b>Anions and Nutrients (QC Lot: 351353)</b>											
CG2105913-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0016	<0.0010	0.0006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351354)</b>											
CG2105913-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.261	0.253	2.85%	20%	----
<b>Anions and Nutrients (QC Lot: 351355)</b>											
CG2105922-003	WG_Q4-2021_013_MT3	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351356)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 351356) - continued</b>											
CG2105922-003	WG_Q4-2021_013_MT3	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351357)</b>											
CG2105922-003	WG_Q4-2021_013_MT3	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351358)</b>											
CG2105922-003	WG_Q4-2021_013_MT3	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351359)</b>											
CG2105922-003	WG_Q4-2021_013_MT3	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351360)</b>											
CG2105922-003	WG_Q4-2021_013_MT3	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351377)</b>											
CG2105913-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0040	0.0038	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351378)</b>											
CG2105922-004	WG_Q4-2021_010_CC2	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0029	0.0029	0.00002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351720)</b>											
CG2105920-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353877)</b>											
CG2105917-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.347	0.333	0.014	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354292)</b>											
CG2105918-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0162	0.0108	0.0054	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 351188)</b>											
CG2105922-001	LC_PIZP1105_WG_Q4-2021_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.84	0.82	0.02	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 351189)</b>											
CG2105922-001	LC_PIZP1105_WG_Q4-2021_N	carbon, total organic [TOC]	----	E355-L	2.50	mg/L	9.55	7.91	1.64	Diff <2x LOR	----
<b>Total Metals (QC Lot: 353731)</b>											
CG2105898-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 353732)</b>											
CG2105898-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00055	0.00052	0.00003	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0388	0.0406	4.40%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.032	0.033	0.002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	0.833 µg/L	0.000846	1.60%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 353732) - continued</b>											
CG2105898-001	Anonymous	calcium, total	7440-70-2	E420	0.100	mg/L	306	310	1.47%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.169	0.165	2.47%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	147	150	1.90%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00152	0.00151	0.975%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.0423	0.0427	1.03%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	5.06	5.17	2.09%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	259 µg/L	0.263	1.29%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	2.20	2.24	1.55%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	7.42	7.38	0.556%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.294	0.288	2.07%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	246	251	2.22%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.000024	0.000027	0.000003	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0132	0.0132	0.368%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.0169	0.0164	0.0005	Diff <2x LOR	----
<b>Total Metals (QC Lot: 354050)</b>											
CG2105922-001	LC_PIZP1105_WG_Q4-20 21_N	mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000202	0.0000207	0.0000005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 354500)</b>											
CG2105922-001	LC_PIZP1105_WG_Q4-20 21_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 354501)</b>											
CG2105922-001	LC_PIZP1105_WG_Q4-20 21_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0014	0.0014	0.00004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00011	<0.00010	0.000008	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00013	0.000008	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.109	0.104	4.09%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 354501) - continued</b>											
CG2105922-001	LC_PIZP1105_WG_Q4-2021_N	boron, dissolved	7440-42-8	E421	0.010	mg/L	0.021	0.019	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0665 µg/L	0.0000696	4.52%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	193	174	10.4%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.70 µg/L	0.00072	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00046	0.00043	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.063	0.063	0.0006	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0210	0.0189	10.7%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	57.9	56.0	3.33%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.165	0.160	2.56%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000321	0.000293	0.000028	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00274	0.00268	0.00006	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.04	1.98	2.86%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.091 µg/L	0.000124	0.000033	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.62	4.64	0.280%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	14.7	14.6	0.789%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.422	0.388	8.53%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	36.0	36.1	0.322%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000016	0.000018	0.000001	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00028	0.00027	0.00002	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000350	0.000326	6.92%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0040	0.0043	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 355230)</b>											
CG2105893-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0010	<0.0010	0.00002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00031	0.00032	0.000006	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.131	0.128	2.79%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.080	0.081	0.0007	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000200	0.0000178	0.0000023	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	65.4	63.4	3.15%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 355230) - continued</b>											
CG2105893-001	Anonymous	cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00129	0.00132	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0842	0.0839	0.392%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.100	mg/L	48.5	47.3	2.48%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00620	0.00627	1.02%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00119	0.00115	3.22%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00149	0.00142	0.00007	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	2.70	2.70	0.215%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000259	0.000262	0.000003	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	8.96	8.94	0.148%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	26.7	26.9	0.778%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.739	0.706	4.64%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	7.44	7.37	1.03%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0149	0.0147	1.56%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0028	0.0026	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 355560)</b>											
CG2105917-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 351499)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 351500)</b>						
conductivity	----	E100	1	µS/cm	1.2	----
<b>Physical Tests (QCLot: 351505)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 351857)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 352771)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 352774)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 351349)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 351350)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 351351)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 351352)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 351353)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 351354)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 351355)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 351356)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 351357)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 351358)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 351358) - continued</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 351359)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 351360)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 351377)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 351378)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 351720)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 353877)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 354292)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 351188)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 351189)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 353731)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 353732)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 353732) - continued</b>						
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 354050)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 354500)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 354501)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 354501) - continued</b>						
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 355230)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 355230) - continued</b>						
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.000017	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 355560)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Hydrocarbons (QCLot: 352907)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 351498)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 351499)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	114	85.0	115	----
<b>Physical Tests (QCLot: 351500)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	98.0	90.0	110	----
<b>Physical Tests (QCLot: 351505)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	110	85.0	115	----
<b>Physical Tests (QCLot: 351857)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	103	85.0	115	----
<b>Physical Tests (QCLot: 352771)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	106	85.0	115	----
<b>Physical Tests (QCLot: 352774)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	94.6	85.0	115	----
<b>Physical Tests (QCLot: 354753)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	102	95.4	104	----
<b>Anions and Nutrients (QCLot: 351349)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 351350)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	106	85.0	115	----
<b>Anions and Nutrients (QCLot: 351351)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 351352)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 351353)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 351354)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 351355)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 351356)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 351357)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 351357) - continued</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.8	85.0	115	----
<b>Anions and Nutrients (QCLot: 351358)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 351359)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 351360)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 351377)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	95.4	80.0	120	----
<b>Anions and Nutrients (QCLot: 351378)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	96.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 351720)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	89.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 353877)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 354292)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 351188)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	90.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 351189)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	93.8	80.0	120	----
<b>Total Metals (QCLot: 353731)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	115	80.0	120	----
<b>Total Metals (QCLot: 353732)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	117	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	119	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	116	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	118	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	108	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	116	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	118	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	111	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	114	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	113	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 353732) - continued</b>									
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	118	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	112	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	112	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	119	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	117	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	112	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	117	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	# 122	80.0	120	MES
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	119	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	113	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	# 122	80.0	120	MES
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	114	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	116	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	112	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	112	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	116	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	118	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	116	80.0	120	----
<b>Total Metals (QCLot: 354050)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	97.3	80.0	120	----
<b>Dissolved Metals (QCLot: 354500)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
<b>Dissolved Metals (QCLot: 354501)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	114	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	113	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	112	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.5	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	99.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	110	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	108	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 354501) - continued</b>									
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	107	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	112	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	112	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	112	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	108	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.3	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.1	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	110	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	113	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	112	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	116	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	116	80.0	120	----
<b>Dissolved Metals (QCLot: 355230)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.8	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.9	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	92.7	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	94.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.6	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 355230) - continued</b>									
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	95.8	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.8	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	106	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.1	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.0	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	94.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.2	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.4	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.9	80.0	120	----
<b>Hydrocarbons (QCLot: 352907)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	7719.3 µg/L	70.9	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3536.8 µg/L	77.4	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	10414 µg/L	73.2	70.0	130	----

**Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 351349)</b>										
CG2105913-008	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 351350)</b>										
CG2105913-008	Anonymous	bromide	24959-67-9	E235.Br-L	0.480 mg/L	0.5 mg/L	96.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 351351)</b>										
CG2105913-008	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 351352)</b>										
CG2105913-008	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.55 mg/L	2.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 351353)</b>										
CG2105913-008	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.513 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 351354)</b>										
CG2105913-008	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 351355)</b>										
CG2105923-005	Anonymous	fluoride	16984-48-8	E235.F	0.996 mg/L	1 mg/L	99.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 351356)</b>										
CG2105923-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 351357)</b>										
CG2105923-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.495 mg/L	0.5 mg/L	99.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 351358)</b>										
CG2105923-005	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 351359)</b>										
CG2105923-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.60 mg/L	2.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 351360)</b>										
CG2105923-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.513 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 351377)</b>										
CG2105913-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0534 mg/L	0.05 mg/L	107	70.0	130	----
<b>Anions and Nutrients (QCLot: 351378)</b>										
CG2105922-005	LC_PIZP1104_WG_Q4-2021_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0524 mg/L	0.05 mg/L	105	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 351720)</b>										
CG2105922-001	LC_PIZP1105_WG_Q4-2021_N	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 353877)</b>										
CG2105917-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.77 mg/L	2.5 mg/L	111	70.0	130	----
<b>Anions and Nutrients (QCLot: 354292)</b>										
CG2105918-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.107 mg/L	0.1 mg/L	107	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 351188)</b>										
CG2105922-001	LC_PIZP1105_WG_Q4-2021_N	carbon, dissolved organic [DOC]	----	E358-L	22.1 mg/L	23.9 mg/L	92.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 351189)</b>										
CG2105922-001	LC_PIZP1105_WG_Q4-2021_N	carbon, total organic [TOC]	----	E355-L	21.6 mg/L	23.9 mg/L	90.6	70.0	130	----
<b>Total Metals (QCLot: 353731)</b>										
CG2105898-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0785 mg/L	0.08 mg/L	98.2	70.0	130	----
<b>Total Metals (QCLot: 353732)</b>										
CG2105898-002	Anonymous	aluminum, total	7429-90-5	E420	0.401 mg/L	0.4 mg/L	100	70.0	130	----
		antimony, total	7440-36-0	E420	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0748 mg/L	0.08 mg/L	93.4	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0184 mg/L	0.02 mg/L	92.2	70.0	130	----
		boron, total	7440-42-8	E420	0.203 mg/L	0.2 mg/L	102	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00781 mg/L	0.008 mg/L	97.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0379 mg/L	0.04 mg/L	94.7	70.0	130	----
		copper, total	7440-50-8	E420	0.0364 mg/L	0.04 mg/L	91.0	70.0	130	----
		iron, total	7439-89-6	E420	3.74 mg/L	4 mg/L	93.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0368 mg/L	0.04 mg/L	92.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.180 mg/L	0.2 mg/L	90.1	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
		nickel, total	7440-02-0	E420	0.0730 mg/L	0.08 mg/L	91.3	70.0	130	----
		potassium, total	7440-09-7	E420	7.70 mg/L	8 mg/L	96.3	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	19.3 mg/L	20 mg/L	96.5	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 353732) - continued</b>										
CG2105898-002	Anonymous	silver, total	7440-22-4	E420	0.00735 mg/L	0.008 mg/L	91.9	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00736 mg/L	0.008 mg/L	92.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		titanium, total	7440-32-6	E420	0.0766 mg/L	0.08 mg/L	95.8	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.713 mg/L	0.8 mg/L	89.1	70.0	130	----
<b>Total Metals (QCLot: 354050)</b>										
CG2105922-002	WG_Q4-2021_012_RD2	mercury, total	7439-97-6	E508	0.0000968 mg/L	0.0001 mg/L	96.8	70.0	130	----
<b>Dissolved Metals (QCLot: 354500)</b>										
CG2105922-003	WG_Q4-2021_013_MT3	chromium, dissolved	7440-47-3	E421.Cr-L	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 354501)</b>										
CG2105922-003	WG_Q4-2021_013_MT3	aluminum, dissolved	7429-90-5	E421	0.184 mg/L	0.2 mg/L	92.1	70.0	130	----
		calcium, dissolved	7440-70-2	E421	3.77 mg/L	4 mg/L	94.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	1.03 mg/L	1 mg/L	103	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.434 mg/L	0.4 mg/L	108	70.0	130	----
CG2105922-003	WG_Q4-2021_013_MT3	antimony, dissolved	7440-36-0	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00944 mg/L	0.01 mg/L	94.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.097 mg/L	0.1 mg/L	97.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.02 mg/L	2 mg/L	101	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0970 mg/L	0.1 mg/L	97.0	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.09 mg/L	4 mg/L	102	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 354501) - continued</b>										
CG2105922-003	WG_Q4-2021_013_MT3	selenium, dissolved	7782-49-2	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.28 mg/L	10 mg/L	92.8	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, dissolved	17341-25-2	E421	2.01 mg/L	2 mg/L	100	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.7 mg/L	20 mg/L	98.4	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00392 mg/L	0.004 mg/L	97.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00421 mg/L	0.004 mg/L	105	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 355230)</b>										
CG2105893-001	Anonymous	aluminum, dissolved	7429-90-5	E421	1.85 mg/L	2 mg/L	92.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.211 mg/L	0.2 mg/L	106	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.200 mg/L	0.2 mg/L	99.9	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.191 mg/L	0.2 mg/L	95.6	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.369 mg/L	0.4 mg/L	92.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0881 mg/L	0.1 mg/L	88.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.930 mg/L	1 mg/L	93.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0366 mg/L	0.04 mg/L	91.5	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.184 mg/L	0.2 mg/L	92.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.176 mg/L	0.2 mg/L	88.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	18.4 mg/L	20 mg/L	92.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.181 mg/L	0.2 mg/L	90.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.989 mg/L	1 mg/L	98.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.188 mg/L	0.2 mg/L	94.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.199 mg/L	0.2 mg/L	99.6	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.368 mg/L	0.4 mg/L	92.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	46.2 mg/L	40 mg/L	116	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.381 mg/L	0.4 mg/L	95.2	70.0	130	----
		silicon, dissolved	7440-21-3	E421	88.1 mg/L	100 mg/L	88.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0314 mg/L	0.04 mg/L	78.4	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	189 mg/L	200 mg/L	94.7	70.0	130	----



Page : 23 of 23  
 Work Order : CG2105922  
 Client : Teck Coal Limited  
 Project : LINE CREEK OPERATION

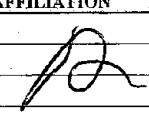


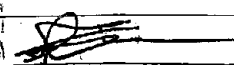
Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 355230) - continued</b>										
CG2105893-001	Anonymous	thallium, dissolved	7440-28-0	E421	0.0361 mg/L	0.04 mg/L	90.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.187 mg/L	0.2 mg/L	93.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.372 mg/L	0.4 mg/L	93.0	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.926 mg/L	1 mg/L	92.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.54 mg/L	4 mg/L	88.5	70.0	130	----
<b>Dissolved Metals (QCLot: 355560)</b>										
CG2105917-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000987 mg/L	0.0001 mg/L	98.7	70.0	130	----

COC ID: <b>LC GW 20211122</b>		TURNAROUND TIME:			RUSH:																	
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO															
Facility Name / Job#		Line Creek Operation		Lab Name		ALS Calgary			Report Format / Distribution		Excel	PDF	EDD									
Project Manager		Tom Jeffery		Lab Contact		Lyudmyla Shvets			Email 1:		tom.jeffery@teck.com	x	x									
Email		tom.jeffery@teck.com		Email		Lyudmyla.Shvets@ALSGlobal.com			Email 2:		teckcoal@equisonline.com		x									
Address		Box 2003		Address		2559 29 Street NE			Email 3:		drake.tymstra@teck.com	x	x									
		15km North Hwy 43							Email 4:		Shanise.fossen@teck.com	x	x									
City		Sparwood		Province		BC			City		Calgary		Province		AB		Email 4:		tanya.dick@teck.com		x	x
Postal Code		V0B 2G0		Country		Canada			Postal Code		T1Y 7B5		Country		Canada		PO number		VPO00739930			
Phone Number		250-425-8478		Phone Number		403 407 1794																

SAMPLE DETAILS								ANALYSIS REQUESTED								Filtered - F: Field, L: Lab, FL: Field & Lab, N: None					
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FILE	F	N	N	F	N	F	N	N	N				
								ANALYSIS	ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA					
LC_P1ZP1105_WG_Q4-2021_N	LC_P1ZP1105	WG	N	11/22/2021	14:20	G	9		1	2	1	1	1	1	1	1					
WG_Q4-2021_012_RD2	LC_RD2	WG	N	11/22/2021	14:20	G	4				1		1		1	1					
WG_Q4-2021_013_MT3	LC_P1ZP1105	WG	N	11/22/2021	14:20	G	7		1		1	1	1	1	1	1					
WG_Q4-2021_010_CC2	LC_P1ZP1105	WG	N	11/22/2021	14:20	G	7		1		1	1	1	1	1	1					
LC_P1ZP1104_WG_Q4-2021_NP	LC_P1ZP1104	WG	N	11/22/2021	13:50	G	6		1		1	1	1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
		S. Fossen		Nov 22				 11/23/2021	

SERVICE REQUEST (rush - subject to availability)		Sampler's Name		Mobile #	
Regular (default) <input checked="" type="checkbox"/>		S. Fossen			
Priority (2-3 business days) - 50% surcharge		Sampler's Signature		Date/Time	
Emergency (1 Business Day) - 100% surcharge				November 22, 2021	
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2105922**





**Environmental**

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105941**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : LC GW 20211123  
**Sampler** : S.Fossen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 24-Nov-2021 08:41  
**Date Analysis Commenced** : 25-Nov-2021  
**Issue Date** : 10-Dec-2021 08:33

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

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## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Dwayne Bennett	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maqsood Ul Hassan	Laboratory Analyst	Organics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

Sample(s) CG2105941\_001, 003: Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID		LC_PIZP1101_	WG_Q4-2021_0	WG_Q4-2021_0	----	----
(Matrix: Water)					WG_Q4-2021_N	11_MT2	10_CC3				
Client sampling date / time					23-Nov-2021 13:55	23-Nov-2021 13:55	23-Nov-2021 13:55	----	----		
Analyte	CAS Number	Method	LOR	Unit	CG2105941-001	CG2105941-002	CG2105941-003	-----	-----		
					Result	Result	Result	----	----		
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	175	<1.0	178	----	----		
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	214	<1.0	217	----	----		
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----		
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----		
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----		
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----		
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	175	<1.0	178	----	----		
conductivity	----	E100	2.0	µS/cm	295 <sup>RRV</sup>	<2.0	297	----	----		
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	120	<0.50	120	----	----		
oxidation-reduction potential [ORP]	----	E125	0.10	mV	376	526	346	----	----		
pH	----	E108	0.10	pH units	8.14	5.11	8.16	----	----		
solids, total dissolved [TDS]	----	E162	10	mg/L	533 <sup>RRV</sup>	<10	415	----	----		
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2160	<1.0	2180	----	----		
turbidity	----	E121	0.10	NTU	3110	<0.10	83.2	----	----		
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0848	0.0313 <sup>RRV</sup>	0.0874	----	----		
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----		
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.87	<0.10	0.86	----	----		
fluoride	16984-48-8	E235.F	0.020	mg/L	1.79	<0.020	1.80	----	----		
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.114	0.057 <sup>RRV</sup>	0.158	----	----		
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.207	<0.0050	0.206	----	----		
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0013	<0.0010	0.0012	----	----		
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0118	<0.0010	0.0112	----	----		
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	1.89 <sup>DLHC</sup>	<0.0020	1.86 <sup>DLHC</sup>	----	----		
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	3.31	<0.30	3.27	----	----		
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	<0.50	----	----		
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	9.88	<0.50	<10.0 <sup>DLM</sup>	----	----		
<b>Ion Balance</b>											



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1101_ WG_Q4-2021_N	WG_Q4-2021_0 11_MT2	WG_Q4-2021_0 10_CC3	----	----
Client sampling date / time					23-Nov-2021 13:55	23-Nov-2021 13:55	23-Nov-2021 13:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105941-001	CG2105941-002	CG2105941-003	-----	-----	
					Result	Result	Result	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	3.70	<0.10	3.76	----	----	
cation sum	----	EC101	0.10	meq/L	3.37	<0.10	3.40	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	91.1	100	90.4	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.67	<0.010	5.03	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	23.3	<0.0030	24.7	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00051	<0.00010	0.00055	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00937	<0.00010	0.00954	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	1.19	<0.00010	1.23	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	1.50	<0.020	1.52	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	0.000490	<0.000050	0.000516	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.045	<0.010	0.047	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	4.14	<0.0050	4.13	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	187	<0.050	185	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.0383	<0.00010	0.0383	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	16.2	<0.10	16.3	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.119	<0.00050	0.120	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	35.5	<0.010	36.4	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.0233	<0.000050	0.0237	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0421	<0.0010	0.0451	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	41.9	<0.0050	41.3	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	1.78	<0.00010	1.78	----	----	
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000111	<0.0000050	0.0000138	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00736	<0.000050	0.00744	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0622	<0.00050	0.0631	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	6.55	<0.050	6.70	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	8.38	<0.050	8.04	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	34.9	<0.10	34.8	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.00158	<0.000010	0.00166	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	19.5	<0.050	19.8	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.426	<0.00020	0.428	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1101_ WG_Q4-2021_N	WG_Q4-2021_0 11_MT2	WG_Q4-2021_0 10_CC3	----	----
Client sampling date / time					23-Nov-2021 13:55	23-Nov-2021 13:55	23-Nov-2021 13:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105941-001	CG2105941-002	CG2105941-003	-----	-----	
					Result	Result	Result	---	---	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	1.08	<0.50	1.06	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.00152	<0.000010	0.00156	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00065	<0.00010	0.00071	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0442	<0.00030	0.0500	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00448	<0.000010	0.00447	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0605	<0.00050	0.0622	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.274	<0.0030	0.298	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0046	<0.0010	0.0032	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00055	<0.00010	0.00053	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00077	<0.00010	0.00075	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.618	<0.00010	0.645	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.023	<0.010	0.022	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0366	<0.0050	0.0386	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	25.7	<0.050	25.3	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.22	<0.10	0.24	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00048	<0.00020	0.00046	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0092	<0.0010	0.0092	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	13.7	<0.0050	13.9	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.198	<0.00010	0.222	----	----	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0127 <sup>DTC</sup>	<0.000050	0.0120 <sup>DTC</sup>	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00118	<0.00050	0.00119	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.942	<0.050	0.960	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	1.60	<0.050	1.41	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.37	<0.050	3.34	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_PIZP1101_ WG_Q4-2021_N	WG_Q4-2021_0 11_MT2	WG_Q4-2021_0 10_CC3	----	----
Client sampling date / time					23-Nov-2021 13:55	23-Nov-2021 13:55	23-Nov-2021 13:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105941-001	CG2105941-002	CG2105941-003	-----	-----	
					Result	Result	Result	---	---	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000020 <sup>DLM</sup>	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	21.3	<0.050	21.9	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.201	<0.00020	0.198	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.45	<0.50	1.29	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000032	<0.000010	0.000030	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00243	<0.000010	0.00236	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00128	<0.00050	0.00117	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
dissolved mercury filtration location	----	EP509	-	-	Laboratory	Field	Laboratory	----	----	
dissolved metals filtration location	----	EP421	-	-	Laboratory	Field	Laboratory	----	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	----	----	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	----	----	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	0.34	----	----	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	97.0	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105941</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 24-Nov-2021 08:41
PO	: VPO00739930	Issue Date	: 10-Dec-2021 08:34
C-O-C number	: LC GW 20211123		
Sampler	: S.Fossen		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q4-2021_N	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_010_CC3	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_011_MT2	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1101_WG_Q4-2021_N	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> WG_Q4-2021_010_CC3	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> WG_Q4-2021_011_MT2	E235.Br-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_PIZP1101_WG_Q4-2021_N	E235.Cl-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE WG_Q4-2021_010_CC3	E235.Cl-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE WG_Q4-2021_011_MT2	E235.Cl-L	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_PIZP1101_WG_Q4-2021_N	E378-U	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE WG_Q4-2021_010_CC3	E378-U	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE WG_Q4-2021_011_MT2	E378-U	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE LC_PIZP1101_WG_Q4-2021_N	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE WG_Q4-2021_010_CC3	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE WG_Q4-2021_011_MT2	E235.F	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE LC_PIZP1101_WG_Q4-2021_N	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q4-2021_010_CC3	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q4-2021_011_MT2	E235.NO3-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_PIZP1101_WG_Q4-2021_N	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q4-2021_010_CC3	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> WG_Q4-2021_011_MT2	E235.NO2-L	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> LC_PIZP1101_WG_Q4-2021_N	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> WG_Q4-2021_010_CC3	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> WG_Q4-2021_011_MT2	E235.SO4	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q4-2021_N	E318	23-Nov-2021	29-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_010_CC3	E318	23-Nov-2021	29-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_011_MT2	E318	23-Nov-2021	29-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q4-2021_N	E372-U	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_010_CC3	E372-U	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_011_MT2	E372-U	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	28 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE - dissolved (lab preserved)</b> LC_PIZP1101_WG_Q4-2021_N	E421.Cr-L	23-Nov-2021	03-Dec-2021	----	----		03-Dec-2021	180 days	10 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE - dissolved (lab preserved)</b> WG_Q4-2021_010_CC3	E421.Cr-L	23-Nov-2021	03-Dec-2021	----	----		03-Dec-2021	180 days	10 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE - dissolved (lab preserved)</b> WG_Q4-2021_011_MT2	E421.Cr-L	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_PIZP1101_WG_Q4-2021_N	E509	23-Nov-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	15 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> WG_Q4-2021_010_CC3	E509	23-Nov-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	15 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> WG_Q4-2021_011_MT2	E509	23-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE - dissolved (lab preserved)</b> LC_PIZP1101_WG_Q4-2021_N	E421	23-Nov-2021	03-Dec-2021	----	----		03-Dec-2021	180 days	10 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE - dissolved (lab preserved)</b> WG_Q4-2021_010_CC3	E421	23-Nov-2021	03-Dec-2021	----	----		03-Dec-2021	180 days	10 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE - dissolved (lab preserved)</b> WG_Q4-2021_011_MT2	E421	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔	
<b>Hydrocarbons : BC PHCs - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> LC_PIZP1101_WG_Q4-2021_N	E601A	23-Nov-2021	28-Nov-2021	14 days	5 days	✔	28-Nov-2021	40 days	0 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_PIZP1101_WG_Q4-2021_N	E358-L	23-Nov-2021	25-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> WG_Q4-2021_010_CC3	E358-L	23-Nov-2021	25-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> WG_Q4-2021_011_MT2	E358-L	23-Nov-2021	25-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_PIZP1101_WG_Q4-2021_N	E355-L	23-Nov-2021	25-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_010_CC3	E355-L	23-Nov-2021	25-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> WG_Q4-2021_011_MT2	E355-L	23-Nov-2021	25-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_PIZP1101_WG_Q4-2021_N	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> WG_Q4-2021_010_CC3	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> WG_Q4-2021_011_MT2	E283	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_PIZP1101_WG_Q4-2021_N	E290	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> WG_Q4-2021_010_CC3	E290	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> WG_Q4-2021_011_MT2	E290	23-Nov-2021	----	----	----		25-Nov-2021	14 days	2 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_PIZP1101_WG_Q4-2021_N	E100	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE WG_Q4-2021_010_CC3	E100	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE WG_Q4-2021_011_MT2	E100	23-Nov-2021	----	----	----		25-Nov-2021	28 days	2 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_PIZP1101_WG_Q4-2021_N	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	164 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE WG_Q4-2021_010_CC3	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	164 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE WG_Q4-2021_011_MT2	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	164 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_PIZP1101_WG_Q4-2021_N	E108	23-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	44 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE WG_Q4-2021_010_CC3	E108	23-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	44 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE WG_Q4-2021_011_MT2	E108	23-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	44 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_PIZP1101_WG_Q4-2021_N	E162	23-Nov-2021	----	----	----		29-Nov-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE WG_Q4-2021_010_CC3	E162	23-Nov-2021	----	----	----		29-Nov-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE WG_Q4-2021_011_MT2	E162	23-Nov-2021	----	----	----		29-Nov-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE LC_PIZP1101_WG_Q4-2021_N	E160-L	23-Nov-2021	----	----	----		29-Nov-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE WG_Q4-2021_010_CC3	E160-L	23-Nov-2021	----	----	----		29-Nov-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE WG_Q4-2021_011_MT2	E160-L	23-Nov-2021	----	----	----		29-Nov-2021	7 days	6 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE LC_PIZP1101_WG_Q4-2021_N	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE WG_Q4-2021_010_CC3	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE WG_Q4-2021_011_MT2	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1101_WG_Q4-2021_N	E420.Cr-L	23-Nov-2021	----	----	----		27-Nov-2021	180 days	4 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> WG_Q4-2021_010_CC3	E420.Cr-L	23-Nov-2021	----	----	----		27-Nov-2021	180 days	4 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> WG_Q4-2021_011_MT2	E420.Cr-L	23-Nov-2021	----	----	----		27-Nov-2021	180 days	4 days	✓
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> LC_PIZP1101_WG_Q4-2021_N	E508	23-Nov-2021	----	----	----		27-Nov-2021	28 days	4 days	✓
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> WG_Q4-2021_010_CC3	E508	23-Nov-2021	----	----	----		27-Nov-2021	28 days	4 days	✓
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> WG_Q4-2021_011_MT2	E508	23-Nov-2021	----	----	----		27-Nov-2021	28 days	4 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_PIZP1101_WG_Q4-2021_N	E420	23-Nov-2021	----	----	----		27-Nov-2021	180 days	4 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> WG_Q4-2021_010_CC3	E420	23-Nov-2021	----	----	----		27-Nov-2021	180 days	4 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> WG_Q4-2021_011_MT2	E420	23-Nov-2021	----	----	----		27-Nov-2021	180 days	4 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 11 of 18  
Work Order : CG2105941  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	352509	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	352505	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352650	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352651	1	20	5.0	5.0	✓
Conductivity in Water	E100	352504	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353202	2	19	10.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	356547	2	13	15.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353203	3	19	15.7	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352835	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352916	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	352654	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352652	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352653	1	20	5.0	5.0	✓
ORP by Electrode	E125	355391	1	20	5.0	5.0	✓
pH by Meter	E108	352503	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352649	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	354284	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353476	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	354085	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353477	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352836	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352688	1	10	10.0	5.0	✓
Turbidity by Nephelometry	E121	352593	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	352509	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	352505	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
BC PHCs - EPH by GC-FID	E601A	354442	1	2	50.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352650	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352651	1	20	5.0	5.0	✓
Conductivity in Water	E100	352504	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353202	2	19	10.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	356547	2	13	15.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353203	2	19	10.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352835	1	7	14.2	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352916	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	352654	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352652	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352653	1	20	5.0	5.0	✓
ORP by Electrode	E125	355391	1	20	5.0	5.0	✓
pH by Meter	E108	352503	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352649	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	354284	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353476	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	354085	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353477	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352836	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352688	1	10	10.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	354279	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	352593	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	352509	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	352505	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
BC PHCs - EPH by GC-FID	E601A	354442	1	2	50.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352650	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352651	1	20	5.0	5.0	✓
Conductivity in Water	E100	352504	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353202	2	19	10.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	356547	2	13	15.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353203	2	19	10.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352835	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352916	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	352654	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352652	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352653	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352649	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	354284	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353476	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	354085	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353477	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352836	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352688	1	10	10.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	354279	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
Method Blanks (MB) - Continued							
Turbidity by Nephelometry	E121	352593	1	20	5.0	5.0	✓
<i>Matrix Spikes (MS)</i>							
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	352650	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	352651	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353202	2	19	10.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	356547	2	13	15.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353203	3	19	15.7	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352835	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352916	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	352654	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	352652	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	352653	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	352649	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	353476	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	354085	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	353477	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352836	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352688	1	10	10.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
BC PHCs - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
	Vancouver - Environmental			
PHCs and PAHs Hexane Extraction	EP601	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
	Calgary - Environmental			

## QUALITY CONTROL REPORT

**Work Order** : **CG2105941**

**Page** : 1 of 23

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : LC GW 20211123  
**Sampler** : S.Fossen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 24-Nov-2021 08:41  
**Date Analysis Commenced** : 25-Nov-2021  
**Issue Date** : 10-Dec-2021 08:33

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
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Erin Sanchez		Inorganics, Calgary, Alberta
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Owen Cheng		Metals, Burnaby, British Columbia
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Ruifang Zheng  
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Analyst

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 352503)</b>											
CG2105918-001	Anonymous	pH	----	E108	0.10	pH units	8.31	8.32	0.120%	4%	----
<b>Physical Tests (QC Lot: 352504)</b>											
CG2105918-001	Anonymous	conductivity	----	E100	2.0	µS/cm	344	335	2.65%	10%	----
<b>Physical Tests (QC Lot: 352505)</b>											
CG2105918-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	123	126	2.41%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	1.6	0.6	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	123	128	3.67%	20%	----
<b>Physical Tests (QC Lot: 352509)</b>											
CG2105918-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352593)</b>											
CG2105941-001	LC_PIZP1101_WG_Q4-20 21_N	turbidity	----	E121	0.10	NTU	3110	3100	0.271%	15%	----
<b>Physical Tests (QC Lot: 354284)</b>											
CG2105941-001	LC_PIZP1101_WG_Q4-20 21_N	solids, total dissolved [TDS]	----	E162	20	mg/L	533	556	4.13%	20%	----
<b>Physical Tests (QC Lot: 355391)</b>											
CG2105939-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	465	476	2.46%	15%	----
<b>Anions and Nutrients (QC Lot: 352649)</b>											
CG2105918-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	63.7	63.6	0.210%	20%	----
<b>Anions and Nutrients (QC Lot: 352650)</b>											
CG2105918-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352651)</b>											
CG2105918-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.25	0.24	0.01	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352652)</b>											
CG2105918-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.190	0.190	0.105%	20%	----
<b>Anions and Nutrients (QC Lot: 352653)</b>											
CG2105918-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0023	0.0022	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352654)</b>											
CG2105918-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.316	0.315	0.348%	20%	----
<b>Anions and Nutrients (QC Lot: 352688)</b>											
CG2105941-001	LC_PIZP1101_WG_Q4-20 21_N	phosphorus, total	7723-14-0	E372-U	0.0400	mg/L	1.89	1.88	0.296%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 352916)</b>											
CG2105761-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0200	mg/L	1.66	1.64	0.680%	20%	----
<b>Anions and Nutrients (QC Lot: 354675)</b>											
CG2105941-001	LC_PIZP1101_WG_Q4-20 21_N	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.0848	0.0927	0.0079	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354833)</b>											
CG2105939-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352835)</b>											
CG2105941-001	LC_PIZP1101_WG_Q4-20 21_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352836)</b>											
CG2105941-001	LC_PIZP1101_WG_Q4-20 21_N	carbon, total organic [TOC]	----	E355-L	5.00	mg/L	9.88	10.8	0.94	Diff <2x LOR	----
<b>Total Metals (QC Lot: 353476)</b>											
CG2105941-001	LC_PIZP1101_WG_Q4-20 21_N	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	0.0383	0.0385	0.679%	20%	----
<b>Total Metals (QC Lot: 353477)</b>											
CG2105941-001	LC_PIZP1101_WG_Q4-20 21_N	aluminum, total	7429-90-5	E420	0.0060	mg/L	23.3	23.8	1.78%	20%	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00051	0.00051	0.000003	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00937	0.00940	0.361%	20%	----
		barium, total	7440-39-3	E420	0.00020	mg/L	1.19	1.24	4.02%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	1.50 µg/L	0.00151	0.815%	20%	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	0.000490	0.000508	0.000018	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.045	0.046	0.001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	4.14 µg/L	0.00423	2.11%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	187	188	0.852%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	16.2 µg/L	0.0165	2.24%	20%	----
		copper, total	7440-50-8	E420	0.00100	mg/L	0.119	0.124	4.00%	20%	----
		iron, total	7439-89-6	E420	0.020	mg/L	35.5	35.9	1.24%	20%	----
		lead, total	7439-92-1	E420	0.000100	mg/L	0.0233	0.0237	1.62%	20%	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.0421	0.0447	6.05%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	41.9	42.3	1.03%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	1.78	1.81	1.53%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00736	0.00715	2.88%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.0622	0.0642	3.09%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	6.55	6.61	0.848%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	8.38 µg/L	0.00838	0.0222%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	34.9	34.1	2.42%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 353477) - continued</b>											
CG2105941-001	LC_PIZP1101_WG_Q4-20 21_N	silver, total	7440-22-4	E420	0.000020	mg/L	0.00158	0.00165	4.53%	20%	----
		sodium, total	17341-25-2	E420	0.100	mg/L	19.5	20.4	4.59%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.426	0.429	0.706%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	1.08	1.14	0.06	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.00152	0.00152	0.334%	20%	----
		tin, total	7440-31-5	E420	0.00020	mg/L	0.00065	0.00066	0.00001	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	0.0442	0.0444	0.296%	20%	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.00448	0.00452	0.808%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	0.0605	0.0615	1.51%	20%	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.274	0.283	3.08%	20%	----
<b>Total Metals (QC Lot: 354085)</b>											
CG2105941-001	LC_PIZP1101_WG_Q4-20 21_N	mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000111	0.0000148	0.0000037	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353202)</b>											
CG2105937-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353203)</b>											
CG2105937-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00052	0.00052	0.000008	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00046	0.00045	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0515	0.0528	2.45%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.020	0.020	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0108 µg/L	0.0000106	0.0000002	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	251	247	1.41%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	1.65 µg/L	0.00166	0.577%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.024	0.024	0.0002	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0575	0.0570	0.891%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	154	153	0.811%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0363	0.0362	0.234%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00304	0.00315	3.40%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0167	0.0167	0.118%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.80	3.85	1.22%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 353203) - continued</b>											
CG2105937-008	Anonymous	selenium, dissolved	7782-49-2	E421	0.050	mg/L	166 µg/L	0.167	0.479%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.48	3.51	1.06%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.74	4.74	0.0599%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.352	0.362	2.83%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	264	264	0.0428%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000011	0.000012	0.0000007	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00929	0.00904	2.74%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0043	0.0028	0.0016	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 356547)</b>											
CG2105941-002	WG_Q4-2021_011_MT2	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 358470)</b>											
CG2105941-001	LC_PIZP1101_WG_Q4-2021_N	molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0127	0.0128	0.594%	20%	----
CG2105941-001	LC_PIZP1101_WG_Q4-2021_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0046	0.0047	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00055	0.00056	0.00001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00077	0.00077	0.000003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.618	0.612	1.06%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.023	0.023	0.0004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0366 µg/L	0.0000310	0.0000056	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	25.7	26.3	2.38%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.22 µg/L	0.00021	0.000008	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00048	0.00049	0.000009	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0092	0.0096	0.0004	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	13.7	13.7	0.0536%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.198	0.198	0.417%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00118	0.00113	0.00005	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.942	0.948	0.669%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 358470) - continued</b>											
CG2105941-001	LC_PIZP1101_WG_Q4-20 21_N	selenium, dissolved	7782-49-2	E421	0.050	mg/L	1.60 µg/L	0.00165	2.63%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.37	3.30	1.94%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	21.3	21.5	0.797%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.201	0.209	3.94%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.45	1.08	0.37	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000032	0.000034	0.000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00243	0.00254	4.32%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00128	0.00130	0.00002	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 358471)</b>											
CG2105941-001	LC_PIZP1101_WG_Q4-20 21_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 362952)</b>											
VA21C6415-007	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 352504)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 352505)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 352509)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	2.1	----
<b>Physical Tests (QCLot: 352593)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 354279)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 354284)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 352649)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 352650)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 352651)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 352652)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 352653)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 352654)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 352688)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 352916)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 354675)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 354833)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 354833) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 352835)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 352836)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 353476)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 353477)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 353477) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 354085)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 353202)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 353203)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 353203) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 356547)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 358470)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 358470) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 358471)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 362952)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Hydrocarbons (QCLot: 354442)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 352503)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 352504)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	97.7	90.0	110	----
<b>Physical Tests (QCLot: 352505)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	112	85.0	115	----
<b>Physical Tests (QCLot: 352509)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	107	85.0	115	----
<b>Physical Tests (QCLot: 352593)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	99.9	85.0	115	----
<b>Physical Tests (QCLot: 354279)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	101	85.0	115	----
<b>Physical Tests (QCLot: 354284)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	97.4	85.0	115	----
<b>Physical Tests (QCLot: 355391)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	102	95.4	104	----
<b>Anions and Nutrients (QCLot: 352649)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 352650)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.0	85.0	115	----
<b>Anions and Nutrients (QCLot: 352651)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 352652)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 352653)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.0	90.0	110	----
<b>Anions and Nutrients (QCLot: 352654)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 352688)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	104	80.0	120	----
<b>Anions and Nutrients (QCLot: 352916)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	100	80.0	120	----
<b>Anions and Nutrients (QCLot: 354675)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 354675) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Anions and Nutrients (QCLot: 354833)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 352835)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	114	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 352836)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	118	80.0	120	----
<b>Total Metals (QCLot: 353476)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.6	80.0	120	----
<b>Total Metals (QCLot: 353477)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.3	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	95.9	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.0	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	93.8	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	90.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	96.9	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	95.6	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.1	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	96.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	96.4	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	94.4	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	95.0	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	96.3	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.7	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	95.8	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	91.2	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	87.3	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	98.8	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.1	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	87.9	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 353477) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	98.8	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	92.3	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.0	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	97.8	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	98.4	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	93.3	80.0	120	----
<b>Total Metals (QCLot: 354085)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	97.9	80.0	120	----
<b>Dissolved Metals (QCLot: 353202)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
<b>Dissolved Metals (QCLot: 353203)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	111	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	111	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	114	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	106	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	108	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	106	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	110	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	106	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.9	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	113	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 353203) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	109	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 358470)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.7	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.2	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.0	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.6	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.9	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.5	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	95.9	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	100	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.9	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.9	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	94.7	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 358470) - continued</b>									
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.2	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	106	80.0	120	----
<b>Dissolved Metals (QCLot: 358471)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	95.6	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.3	80.0	120	----
<b>Hydrocarbons (QCLot: 354442)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	7719.3 µg/L	99.2	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3536.8 µg/L	101	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	10414 µg/L	100	70.0	130	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 352649)</b>										
CG2105918-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	96.2 mg/L	100 mg/L	96.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 352650)</b>										
CG2105918-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.482 mg/L	0.5 mg/L	96.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 352651)</b>										
CG2105918-006	Anonymous	chloride	16887-00-6	E235.Cl-L	98.0 mg/L	100 mg/L	98.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 352652)</b>										
CG2105918-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.44 mg/L	2.5 mg/L	97.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 352653)</b>										
CG2105918-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.488 mg/L	0.5 mg/L	97.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 352654)</b>										
CG2105918-006	Anonymous	fluoride	16984-48-8	E235.F	0.960 mg/L	1 mg/L	96.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 352688)</b>										
CG2105941-002	WG_Q4-2021_011_MT2	phosphorus, total	7723-14-0	E372-U	0.0540 mg/L	0.0676 mg/L	79.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 352916)</b>										
CG2105918-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0547 mg/L	0.05 mg/L	109	70.0	130	----
<b>Anions and Nutrients (QCLot: 354675)</b>										
CG2105941-002	WG_Q4-2021_011_MT2	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 354833)</b>										
CG2105939-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.12 mg/L	2.5 mg/L	84.6	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352835)</b>										
CG2105941-001	LC_PIZP1101_WG_Q4-2021_N	carbon, dissolved organic [DOC]	----	E358-L	26.5 mg/L	23.9 mg/L	111	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352836)</b>										
CG2105941-001	LC_PIZP1101_WG_Q4-2021_N	carbon, total organic [TOC]	----	E355-L	20.4 mg/L	23.9 mg/L	85.3	70.0	130	----
<b>Total Metals (QCLot: 353476)</b>										
CG2105941-002	WG_Q4-2021_011_MT2	chromium, total	7440-47-3	E420.Cr-L	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
<b>Total Metals (QCLot: 353477)</b>										
CG2105941-002	WG_Q4-2021_011_MT2	aluminum, total	7429-90-5	E420	0.185 mg/L	0.2 mg/L	92.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 353477) - continued</b>										
CG2105941-002	WG_Q4-2021_011_MT2	antimony, total	7440-36-0	E420	0.0184 mg/L	0.02 mg/L	92.1	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		barium, total	7440-39-3	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0371 mg/L	0.04 mg/L	92.7	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00972 mg/L	0.01 mg/L	97.2	70.0	130	----
		boron, total	7440-42-8	E420	0.089 mg/L	0.1 mg/L	88.9	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00381 mg/L	0.004 mg/L	95.2	70.0	130	----
		calcium, total	7440-70-2	E420	3.80 mg/L	4 mg/L	94.9	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		copper, total	7440-50-8	E420	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		lithium, total	7439-93-2	E420	0.0931 mg/L	0.1 mg/L	93.1	70.0	130	----
		magnesium, total	7439-95-4	E420	0.925 mg/L	1 mg/L	92.5	70.0	130	----
		manganese, total	7439-96-5	E420	0.0192 mg/L	0.02 mg/L	96.3	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		nickel, total	7440-02-0	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		potassium, total	7440-09-7	E420	3.85 mg/L	4 mg/L	96.2	70.0	130	----
		selenium, total	7782-49-2	E420	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		silicon, total	7440-21-3	E420	8.85 mg/L	10 mg/L	88.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00376 mg/L	0.004 mg/L	94.1	70.0	130	----
		sodium, total	17341-25-2	E420	1.97 mg/L	2 mg/L	98.4	70.0	130	----
		strontium, total	7440-24-6	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		sulfur, total	7704-34-9	E420	18.1 mg/L	20 mg/L	90.5	70.0	130	----
		thallium, total	7440-28-0	E420	0.00360 mg/L	0.004 mg/L	90.1	70.0	130	----
		tin, total	7440-31-5	E420	0.0184 mg/L	0.02 mg/L	92.1	70.0	130	----
		titanium, total	7440-32-6	E420	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		uranium, total	7440-61-1	E420	0.00386 mg/L	0.004 mg/L	96.5	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0946 mg/L	0.1 mg/L	94.6	70.0	130	----
		zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	96.0	70.0	130	----
<b>Total Metals (QCLot: 354085)</b>										
CG2105941-002	WG_Q4-2021_011_MT2	mercury, total	7439-97-6	E508	0.0000996 mg/L	0.0001 mg/L	99.6	70.0	130	----
<b>Dissolved Metals (QCLot: 353202)</b>										
CG2105937-009	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
<b>Dissolved Metals (QCLot: 353203)</b>										
CG2105937-009	Anonymous	aluminum, dissolved	7429-90-5	E421	0.206 mg/L	0.2 mg/L	103	70.0	130	----





Sub-Matrix: Water

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 353203) - continued</b>										
CG2105937-009	Anonymous	antimony, dissolved	7440-36-0	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0215 mg/L	0.02 mg/L	108	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0180 mg/L	0.02 mg/L	90.0	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00835 mg/L	0.01 mg/L	83.5	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.091 mg/L	0.1 mg/L	91.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0181 mg/L	0.02 mg/L	90.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0181 mg/L	0.02 mg/L	90.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	94.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0953 mg/L	0.1 mg/L	95.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0452 mg/L	0.04 mg/L	113	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.31 mg/L	10 mg/L	93.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00366 mg/L	0.004 mg/L	91.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00367 mg/L	0.004 mg/L	91.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.358 mg/L	0.4 mg/L	89.6	70.0	130	----
<b>Dissolved Metals (QCLot: 356547)</b>										
VA21C6096-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000983 mg/L	0.0001 mg/L	98.3	70.0	130	----
<b>Dissolved Metals (QCLot: 358470)</b>										
CG2105941-003	WG_Q4-2021_010_CC3	molybdenum, dissolved	7439-98-7	E421	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00720 mg/L	0.008 mg/L	90.0	70.0	130	----
CG2105941-003	WG_Q4-2021_010_CC3	aluminum, dissolved	7429-90-5	E421	0.201 mg/L	0.2 mg/L	101	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 358470) - continued</b>										
CG2105941-003	WG_Q4-2021_010_CC3	antimony, dissolved	7440-36-0	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00963 mg/L	0.01 mg/L	96.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00409 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0186 mg/L	0.02 mg/L	93.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.85 mg/L	2 mg/L	92.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0988 mg/L	0.1 mg/L	98.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.86 mg/L	4 mg/L	96.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.05 mg/L	10 mg/L	90.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.8 mg/L	20 mg/L	104	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00377 mg/L	0.004 mg/L	94.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00385 mg/L	0.004 mg/L	96.2	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0992 mg/L	0.1 mg/L	99.2	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.397 mg/L	0.4 mg/L	99.2	70.0	130	----
<b>Dissolved Metals (QCLot: 358471)</b>										
CG2105941-003	WG_Q4-2021_010_CC3	chromium, dissolved	7440-47-3	E421.Cr-L	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
<b>Dissolved Metals (QCLot: 362952)</b>										
CG2105941-003	WG_Q4-2021_010_CC3	mercury, dissolved	7439-97-6	E509	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----



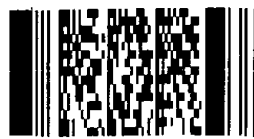
<b>COC ID:</b>	<b>LC GW 20211123</b>	<b>TURNAROUND TIME:</b>		<b>RUSH:</b>	
<b>PROJECT/CLIENT INFO</b>			<b>LABORATORY</b>		<b>OTHER INFO</b>
Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary		Report Format / Distribution
Project Manager	Tom Jeffery	Lab Contact	Lyudmyla Shvets		Excel
Email	tom.jeffery@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com		PDF
Address	Box 2003	Address	2559 29 Street NE		EDD
	15km North Hwy 43				
City	Sparwood	City	Calgary	Province	AB
Postal Code	V0B 2G0	Postal Code	T1Y 7B5	Country	Canada
Phone Number	250-425-8478	Phone Number	403 407 1794	PO number	VPO00739930

SAMPLE DETAILS								ANALYSIS REQUESTED								Filtered - F: Field, L: Lab, FL: Field & Lab, N: None					
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FILE	N	N	N	N	N	N	N	N	N				
								ANALYSIS													
								ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA						
LC_PIZP1101_WG_Q4-2021_N	LC_PIZP1101	WG	N	11/23/2021	13:55	G	9	1	2	1	1	1	1	1	1						
WG_Q4-2021_011_MT2	LC_PIZP1101	WG	N	11/23/2021	13:55	G	7	1		1	1	1	1	1	1						
WG_Q4-2021_010_CC3	LC_PIZP1101	WG	N	11/23/2021	13:55	G	7	1		1	1	1	1	1	1						

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
	S. Fossen	Nov 23	<i>[Signature]</i>	Nov 24 2021 6:41 2:0

<input type="checkbox"/> SERVICE REQUEST (rush - subject to availability) <input checked="" type="checkbox"/> Regular (default) X				<b>Sampler's Name</b> S. Fossen	<b>Mobile #</b> 
<b>Priority (2-3 business days) - 50% surcharge</b> <b>Emergency (1 Business Day) - 100% surcharge</b> For Emergency <1 Day, ASAP or Weekend - Contact ALS		<b>Sampler's Signature</b> <i>[Signature]</i>	<b>Date/Time</b> November 23, 2021		

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2105941**





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2106008**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : LC GW 20211124  
**Sampler** : S FOSSEN  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 25-Nov-2021 09:20  
**Date Analysis Commenced** : 25-Nov-2021  
**Issue Date** : 07-Dec-2021 11:37

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID	CP SPO SHALLOW	CP SPO DEEP	----	----	----
(Matrix: Water)					Client sampling date / time	24-Nov-2021 12:15	24-Nov-2021 13:25	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106008-001 Result	CG2106008-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	4.7	2.5	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	222	200	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	271	244	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	222	200	----	----	----	
conductivity	----	E100	2.0	µS/cm	646	559	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	324	272	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	285	432	----	----	----	
pH	----	E108	0.10	pH units	7.73	7.79	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	438	392	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	2.0	----	----	----	
turbidity	----	E121	0.10	NTU	<0.10	2.31	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.299	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	24.0	1.13	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.245	0.294	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.201	0.310	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.95	2.44	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.141	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0029	0.0028	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0058	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	114	119	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.12 <small>DTC, RRV</small>	<0.50	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50 <small>DTC, RRV</small>	<0.50	----	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CP SPO SHALLOW	CP SPO DEEP	----	----	----
Client sampling date / time					24-Nov-2021 12:15	24-Nov-2021 13:25	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106008-001	CG2106008-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	7.64	6.70	----	----	----	
cation sum	----	EC101	0.10	meq/L	6.70	5.86	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	87.7	87.5	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	6.56	6.69	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0048	0.0752	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	0.00016	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	0.00026	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.106	0.0361	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.031	0.039	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0167	0.0207	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	85.3	73.5	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00028	0.00020	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	0.22	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.057	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000053	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0182	0.0197	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	29.0	27.5	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00014	0.0570	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00121	0.00133	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00130	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.02	1.60	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	39.1	49.6	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	3.63	4.02	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	4.52	9.02	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.414	0.435	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	38.7	41.0	----	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CP SPO SHALLOW	CP SPO DEEP	----	----	----
Client sampling date / time					24-Nov-2021 12:15	24-Nov-2021 13:25	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106008-001	CG2106008-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	0.000014	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	0.00035	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	0.00111	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00146	0.00207	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	0.0034	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	0.0033	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00013	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00019	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.118	0.0322	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.032	0.039	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0136	0.0136	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	84.2	68.2	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00025	0.00012	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.19	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00021	0.00038	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0181	0.0183	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	27.7	24.8	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00010	0.0512	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00122	0.00126	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00103	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.990	1.53	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	41.2	52.2	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.47	3.74	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CP SPO SHALLOW	CP SPO DEEP	----	----	----
Client sampling date / time					24-Nov-2021 12:15	24-Nov-2021 13:25	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106008-001	CG2106008-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.58	8.57	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.408	0.412	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	38.5	39.7	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000012	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	0.00031	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00130	0.00182	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0024	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106008</b>	Page	: 1 of 14
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 25-Nov-2021 09:20
PO	: VPO00739930	Issue Date	: 07-Dec-2021 11:37
C-O-C number	: LC GW 20211124		
Sampler	: S FOSSEN		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.300 % TKND	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

**Result Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> CP SPO DEEP	E298	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> CP SPO SHALLOW	E298	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> CP SPO DEEP	E235.Br-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> CP SPO SHALLOW	E235.Br-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> CP SPO DEEP	E235.Cl-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> CP SPO SHALLOW	E235.Cl-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> CP SPO DEEP	E378-U	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CP SPO SHALLOW	E378-U	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CP SPO DEEP	E235.F	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CP SPO SHALLOW	E235.F	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CP SPO DEEP	E235.NO3-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CP SPO SHALLOW	E235.NO3-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CP SPO DEEP	E235.NO2-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CP SPO SHALLOW	E235.NO2-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CP SPO DEEP	E235.SO4	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CP SPO SHALLOW	E235.SO4	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CP SPO DEEP	E318	24-Nov-2021	30-Nov-2021	----	----		01-Dec-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CP SPO SHALLOW	E318	24-Nov-2021	30-Nov-2021	----	----		01-Dec-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CP SPO DEEP	E372-U	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CP SPO SHALLOW	E372-U	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CP SPO DEEP	E421.Cr-L	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CP SPO SHALLOW	E421.Cr-L	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CP SPO DEEP	E509	24-Nov-2021	02-Dec-2021	----	----		02-Dec-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CP SPO SHALLOW	E509	24-Nov-2021	02-Dec-2021	----	----		02-Dec-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CP SPO DEEP	E421	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	180 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CP SPO SHALLOW	E421	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	180 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CP SPO DEEP	E358-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CP SPO SHALLOW	E358-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CP SPO DEEP	E355-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CP SPO SHALLOW	E355-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CP SPO DEEP	E283	24-Nov-2021	----	----	----		26-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CP SPO SHALLOW	E283	24-Nov-2021	----	----	----		26-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CP SPO DEEP	E290	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CP SPO SHALLOW	E290	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE CP SPO DEEP	E100	24-Nov-2021	----	----	----		29-Nov-2021	28 days	5 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE CP SPO SHALLOW	E100	24-Nov-2021	----	----	----		29-Nov-2021	28 days	5 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE CP SPO DEEP	E125	24-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	145 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CP SPO SHALLOW	E125	24-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	146 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CP SPO DEEP	E108	24-Nov-2021	----	----	----		29-Nov-2021	0.25 hrs	119 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CP SPO SHALLOW	E108	24-Nov-2021	----	----	----		29-Nov-2021	0.25 hrs	120 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CP SPO DEEP	E162	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days		✓
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CP SPO SHALLOW	E162	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days		✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CP SPO DEEP	E160-L	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days		✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE</b> CP SPO SHALLOW	E160-L	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CP SPO DEEP	E121	24-Nov-2021	----	----	----		27-Nov-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CP SPO SHALLOW	E121	24-Nov-2021	----	----	----		27-Nov-2021	3 days	3 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> CP SPO DEEP	E420.Cr-L	24-Nov-2021	----	----	----		28-Nov-2021	180 days	4 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> CP SPO SHALLOW	E420.Cr-L	24-Nov-2021	----	----	----		28-Nov-2021	180 days	4 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> CP SPO DEEP	E420	24-Nov-2021	----	----	----		28-Nov-2021	180 days	4 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> CP SPO SHALLOW	E420	24-Nov-2021	----	----	----		28-Nov-2021	180 days	4 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	353689	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355090	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	355070	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353518	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353519	1	20	5.0	5.0	✓
Conductivity in Water	E100	355091	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	354712	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357472	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	354713	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352871	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352920	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	353516	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353520	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353521	1	20	5.0	5.0	✓
ORP by Electrode	E125	356179	1	20	5.0	5.0	✓
pH by Meter	E108	355092	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	353517	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	354286	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	354048	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	355620	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	354047	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352872	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352802	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	354140	2	33	6.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	353689	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355090	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	355070	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353518	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353519	1	20	5.0	5.0	✓
Conductivity in Water	E100	355091	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	354712	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357472	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	354713	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352871	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352920	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	353516	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	353520	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353521	1	20	5.0	5.0	✓
ORP by Electrode	E125	356179	1	20	5.0	5.0	✓
pH by Meter	E108	355092	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	353517	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	354286	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	354048	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	355620	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	354047	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352872	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352802	1	9	11.1	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	354281	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	354140	2	33	6.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	353689	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355090	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	355070	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353518	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353519	1	20	5.0	5.0	✓
Conductivity in Water	E100	355091	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	354712	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357472	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	354713	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352871	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352920	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	353516	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353520	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353521	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	353517	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	354286	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	354048	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	355620	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	354047	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352872	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352802	1	9	11.1	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	354281	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	354140	2	33	6.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	355070	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353518	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	353519	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	354712	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357472	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	354713	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352871	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352920	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	353516	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353520	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353521	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	353517	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	354048	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	355620	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	354047	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352872	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352802	1	9	11.1	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2106008**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : LC GW 20211124  
**Sampler** : S FOSSEN  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 25-Nov-2021 09:20  
**Date Analysis Commenced** : 25-Nov-2021  
**Issue Date** : 07-Dec-2021 11:37

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2106008  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 353689)</b>											
CG2106008-001	CP SPO SHALLOW	acidity (as CaCO3)	----	E283	2.0	mg/L	4.7	4.0	0.7	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 354140)</b>											
CG2105991-008	Anonymous	turbidity	----	E121	0.10	NTU	0.37	0.38	0.008	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 354193)</b>											
CG2105987-016	Anonymous	turbidity	----	E121	0.10	NTU	1.75	1.75	0.229%	15%	----
<b>Physical Tests (QC Lot: 354286)</b>											
CG2105991-006	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1780	1830	2.89%	20%	----
<b>Physical Tests (QC Lot: 355090)</b>											
CG2105999-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	394	387	1.79%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	394	387	1.79%	20%	----
<b>Physical Tests (QC Lot: 355091)</b>											
CG2105999-002	Anonymous	conductivity	----	E100	2.0	µS/cm	1170	1170	0.0856%	10%	----
<b>Physical Tests (QC Lot: 355092)</b>											
CG2105999-002	Anonymous	pH	----	E108	0.10	pH units	7.15	7.16	0.140%	4%	----
<b>Physical Tests (QC Lot: 356179)</b>											
CG2105991-009	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	422	421	0.0712%	15%	----
<b>Anions and Nutrients (QC Lot: 352802)</b>											
CG2106008-001	CP SPO SHALLOW	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352920)</b>											
CG2106000-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353516)</b>											
CG2105992-003	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.104	0.138	0.034	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353517)</b>											
CG2105992-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	371	387	4.37%	20%	----
<b>Anions and Nutrients (QC Lot: 353518)</b>											
CG2105992-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353519)</b>											
CG2105992-003	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	2.83	2.60	0.23	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353520)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 353520) - continued</b>											
CG2105992-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	2.91	3.03	4.10%	20%	----
<b>Anions and Nutrients (QC Lot: 353521)</b>											
CG2105992-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0200	0.0188	0.0012	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 355070)</b>											
CG2105999-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0053	<0.0050	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 355620)</b>											
CG2105995-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	# 0.350	0.300	Diff <2x LOR	TKND
<b>Organic / Inorganic Carbon (QC Lot: 352871)</b>											
CG2106008-001	CP SPO SHALLOW	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.12	0.92	0.20	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352872)</b>											
CG2106008-001	CP SPO SHALLOW	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 354047)</b>											
CG2105991-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0114	0.0120	0.0006	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00284	0.00280	1.46%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00019	0.00018	0.000009	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0165	0.0157	4.69%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.086	0.085	0.0010	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	2.17 µg/L	0.00203	6.51%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	276	272	1.33%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	34.3 µg/L	0.0330	3.86%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00146	0.00137	0.00009	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.209	0.197	5.83%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000060	0.000063	0.000003	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.247	0.242	2.20%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	145	138	4.67%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.415	0.394	5.05%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00529	0.00519	1.86%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.148	0.142	3.92%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	7.23	6.87	5.20%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	8.79 µg/L	0.00847	3.71%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.02	2.93	3.10%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	34.1	33.0	3.14%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 354047) - continued</b>											
CG2105991-001	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	0.755	0.748	0.990%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	240	236	1.66%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000224	0.000232	3.16%	20%	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.0137	0.0137	0.319%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.242	0.232	3.98%	20%	----
<b>Total Metals (QC Lot: 354048)</b>											
CG2105991-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00011	<0.00010	0.000010	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 354712)</b>											
CG2105999-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 354713)</b>											
CG2105999-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0024	<0.0020	0.0004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00052	0.00054	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	9.11	8.84	3.07%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.059	0.060	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	<0.0100 µg/L	<0.0000100	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	101	100	0.348%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00081	0.00077	0.00004	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	1.14	1.14	0.189%	20%	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.0988	0.102	3.60%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	34.1	33.6	1.52%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.112	0.111	0.813%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.000224	0.000216	0.000008	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	4.50	4.50	0.0229%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	3.59	3.66	1.83%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 354713) - continued</b>											
CG2105999-001	Anonymous	sodium, dissolved	17341-25-2	E421	0.100	mg/L	19.7	19.5	0.910%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	1.70	1.64	3.02%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.000182	0.000180	0.000002	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0041	0.0045	0.0004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 357472)</b>											
CG2105999-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 353689)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 354140)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 354193)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 354281)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 354286)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 355090)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 355091)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 352802)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 352920)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 353516)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 353517)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 353518)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 353519)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 353520)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 353521)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 355070)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 355070) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 355620)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 352871)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 352872)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 354047)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 354047) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 354048)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 354712)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 354713)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Page : 10 of 17  
 Work Order : CG2106008  
 Client : Teck Coal Limited  
 Project : LINE CREEK OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 354713) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 357472)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 353689)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	108	85.0	115	---
<b>Physical Tests (QCLot: 354140)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.5	85.0	115	---
<b>Physical Tests (QCLot: 354193)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.5	85.0	115	---
<b>Physical Tests (QCLot: 354281)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 354286)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 355090)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 355091)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.2	90.0	110	---
<b>Physical Tests (QCLot: 355092)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 356179)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 352802)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	107	80.0	120	---
<b>Anions and Nutrients (QCLot: 352920)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	96.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 353516)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 353517)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 353518)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.9	85.0	115	---
<b>Anions and Nutrients (QCLot: 353519)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 353520)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 353521)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 353521) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.8	90.0	110	----
<b>Anions and Nutrients (QCLot: 355070)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	104	85.0	115	----
<b>Anions and Nutrients (QCLot: 355620)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	99.3	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 352871)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	117	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 352872)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	96.7	80.0	120	----
<b>Total Metals (QCLot: 354047)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	112	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	112	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	93.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	111	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	111	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	110	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	113	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	111	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	113	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	110	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	108	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.9	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	113	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	109	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	111	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 354047) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	105	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	110	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	113	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	113	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	111	80.0	120	----
<b>Total Metals (QCLot: 354048)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
<b>Dissolved Metals (QCLot: 354712)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
<b>Dissolved Metals (QCLot: 354713)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.8	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.2	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.9	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.9	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.9	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.6	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.4	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	93.3	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	91.0	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 354713) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.7	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.8	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 352802)</b>										
CG2106008-002	CP SPO DEEP	phosphorus, total	7723-14-0	E372-U	0.0543 mg/L	0.0676 mg/L	80.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 352920)</b>										
CG2106003-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0536 mg/L	0.05 mg/L	107	70.0	130	----
<b>Anions and Nutrients (QCLot: 353516)</b>										
CG2105992-004	Anonymous	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 353517)</b>										
CG2105992-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 353518)</b>										
CG2105992-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.490 mg/L	0.5 mg/L	98.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 353519)</b>										
CG2105992-004	Anonymous	chloride	16887-00-6	E235.Cl-L	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 353520)</b>										
CG2105992-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 353521)</b>										
CG2105992-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.426 mg/L	0.5 mg/L	85.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 355070)</b>										
CG2106000-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 355620)</b>										
CG2105995-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.51 mg/L	2.5 mg/L	100	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352871)</b>										
CG2106008-001	CP SPO SHALLOW	carbon, dissolved organic [DOC]	----	E358-L	26.6 mg/L	23.9 mg/L	111	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352872)</b>										
CG2106008-001	CP SPO SHALLOW	carbon, total organic [TOC]	----	E355-L	27.7 mg/L	23.9 mg/L	116	70.0	130	----
<b>Total Metals (QCLot: 354047)</b>										
CG2105991-002	Anonymous	aluminum, total	7429-90-5	E420	0.375 mg/L	0.4 mg/L	93.7	70.0	130	----
		antimony, total	7440-36-0	E420	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	----
		barium, total	7440-39-3	E420	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 354047) - continued</b>										
CG2105991-002	Anonymous	beryllium, total	7440-41-7	E420	0.0739 mg/L	0.08 mg/L	92.4	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0177 mg/L	0.02 mg/L	88.5	70.0	130	----
		boron, total	7440-42-8	E420	0.156 mg/L	0.2 mg/L	78.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00760 mg/L	0.008 mg/L	95.0	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, total	7440-50-8	E420	0.0367 mg/L	0.04 mg/L	91.7	70.0	130	----
		iron, total	7439-89-6	E420	3.84 mg/L	4 mg/L	96.0	70.0	130	----
		lead, total	7439-92-1	E420	0.0358 mg/L	0.04 mg/L	89.6	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0856 mg/L	0.08 mg/L	107	70.0	130	----
		silicon, total	7440-21-3	E420	18.5 mg/L	20 mg/L	92.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00745 mg/L	0.008 mg/L	93.2	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00716 mg/L	0.008 mg/L	89.5	70.0	130	----
		tin, total	7440-31-5	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		titanium, total	7440-32-6	E420	0.0807 mg/L	0.08 mg/L	101	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.195 mg/L	0.2 mg/L	97.7	70.0	130	----
		zinc, total	7440-66-6	E420	0.743 mg/L	0.8 mg/L	92.8	70.0	130	----
<b>Total Metals (QCLot: 354048)</b>										
CG2105991-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0768 mg/L	0.08 mg/L	96.1	70.0	130	----
<b>Dissolved Metals (QCLot: 354712)</b>										
CG2105999-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
<b>Dissolved Metals (QCLot: 354713)</b>										
CG2105999-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.188 mg/L	0.2 mg/L	94.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----





Sub-Matrix: **Water**

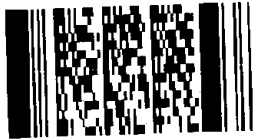
					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 354713) - continued</b>										
CG2105999-002	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0373 mg/L	0.04 mg/L	93.3	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00868 mg/L	0.01 mg/L	86.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.098 mg/L	0.1 mg/L	98.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0184 mg/L	0.02 mg/L	92.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0179 mg/L	0.02 mg/L	89.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0869 mg/L	0.1 mg/L	86.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0371 mg/L	0.04 mg/L	92.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.73 mg/L	4 mg/L	93.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0479 mg/L	0.04 mg/L	120	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.79 mg/L	10 mg/L	87.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00694 mg/L	0.008 mg/L	86.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00356 mg/L	0.004 mg/L	89.1	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00374 mg/L	0.004 mg/L	93.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0966 mg/L	0.1 mg/L	96.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.378 mg/L	0.4 mg/L	94.4	70.0	130	----
<b>Dissolved Metals (QCLot: 357472)</b>										
CG2105999-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----

# Teck

COC ID: **LC GW 20211124**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	x	x	
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.ca			x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x	
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	x	x	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	tanya.dick@teck.com	x	x	
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930			
				Phone Number	403 407 1794							

Environmental Division  
Calgary  
Work Order Reference  
**CG2106008**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PH	F	N	F	F	N	N			
								PRESERV.	ANALYSIS								
GP SPO Shallow	LC_WM_WLCB	WG	N	11/24/2021	12:15	G	6	H2SO4	ALS_Package-DOC	1	1	1	1	1			
GP SPO Deep	LC_WM_WLCA	WG	N	11/24/2021	13:25	G	6	NAHSO <sub>4</sub>	ALS_Package-EPH	1	1	1	1	1			
								H2SO4	ALS_Package-TKN/TOC	1	1	1	1	1			
								HCL	HG-D-CVAF-VA	1	1	1	1	1			
								HCL	HG-T-CVAF-VA	1	1	1	1	1			
								HNO3	TECKCOAL-MET-D-VA	1	1	1	1	1			
								HNO3	TECKCOAL-METNIG-T-CL	1	1	1	1	1			
								NONE	TECKCOAL-ROUTINE-VA	1	1	1	1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	S. Fossen	24-Nov	<i>[Signature]</i>	25/11 9:20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	S. Fossen	
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time
		November 24, 2021

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2106011**  
**Client** : **SNC-Lavalin Inc.**  
**Contact** : Kim Harrer  
**Address** : 400, 640 5th Avenue SW  
                   Calgary AB Canada T2P 3G4  
**Telephone** : ----  
**Project** : ----  
**PO** : 686625  
**C-O-C number** : ----  
**Sampler** : CS, RS  
**Site** : Line Creek Operations  
**Quote number** : TECK Coal codes  
**No. of samples received** : 7  
**No. of samples analysed** : 7

**Page** : 1 of 8  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lovepreet Kaur  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 25-Nov-2021 09:15  
**Date Analysis Commenced** : 25-Nov-2021  
**Issue Date** : 10-Dec-2021 08:49

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Daniel Ching	Lab Analyst	Metals, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Metals, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Millicent Brentnall	Laboratory Analyst	Metals, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	<i>Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.</i>
DLHC	<i>Detection Limit Raised: Dilution required due to high concentration of test analyte(s).</i>
DLM	<i>Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).</i>
RRV	<i>Reported result verified by repeat analysis.</i>
TKNI	<i>TKN result may be biased low due to Nitrate interference. Nitrate-N is &gt; 10x TKN.</i>



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_SRD2A _WG_2021_11_ 24_NP	LC_MW_SRD2B _WG_2021_11_ 24_NP	LC_MW_ERX1A _WG_2021_11_ 24_NP	LC_MW_ERX1B _WG_2021_11_ 24_NP	LC_MW_MC10 A_WG_2021_1 1_24_NP
Client sampling date / time					24-Nov-2021 09:15	24-Nov-2021 10:30	24-Nov-2021 11:45	24-Nov-2021 12:45	24-Nov-2021 09:15	
Analyte	CAS Number	Method	LOR	Unit	CG2106011-001 Result	CG2106011-002 Result	CG2106011-003 Result	CG2106011-004 Result	CG2106011-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	6.5	<2.0	<2.0	6.7	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	321	281	346	280	282	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	391	342	422	342	344	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	13.4	<2.0	<2.0	<2.0	<2.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	8.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	334	281	346	280	282	
conductivity	----	E100	2.0	µS/cm	779	1020	675	667	1020	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	43.8	558	126	255	555	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	255	341	248	332	453	
pH	----	E108	0.10	pH units	8.45	7.67	8.04	7.96	7.69	
solids, total dissolved [TDS]	----	E162	10	mg/L	690	702	450	520	716	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	111	5.2	22.0	134	4.4	
turbidity	----	E121	0.10	NTU	376	2.12	23.0	168	2.15	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.325	0.0084	0.406	0.107	0.0057	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.396	0.860	0.077	<0.050	0.958	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	101	103	0.65	6.94	104	
fluoride	16984-48-8	E235.F	0.020	mg/L	2.77	0.157	0.189	0.499	0.157	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.647	<0.050 <sup>TKNI</sup>	0.346	0.621	0.125 <sup>TKNI</sup>	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0690	4.44	0.0363	1.38	4.43	
nitrate + nitrite (as N)	----	EC235.N+N	0.0050	mg/L	0.0690	4.44	0.0363	1.39	4.43	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0010	0.0118	<0.0050 <sup>DLDS</sup>	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0047	0.0038	0.0036	0.0041	0.0035	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.414 <sup>DLHC</sup>	0.0124	0.0161	0.158 <sup>DLM</sup>	0.0114	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	3.02	157	55.1	113	156	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.716	4.44	0.382	2.01	4.56	
<b>Organic / Inorganic Carbon</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_SRD2A _WG_2021_11_ 24_NP	LC_MW_SRD2B _WG_2021_11_ 24_NP	LC_MW_ERX1A _WG_2021_11_ 24_NP	LC_MW_ERX1B _WG_2021_11_ 24_NP	LC_MW_MC10 A_WG_2021_1 1_24_NP
Client sampling date / time					24-Nov-2021 09:15	24-Nov-2021 10:30	24-Nov-2021 11:45	24-Nov-2021 12:45	24-Nov-2021 09:15	
Analyte	CAS Number	Method	LOR	Unit	CG2106011-001 Result	CG2106011-002 Result	CG2106011-003 Result	CG2106011-004 Result	CG2106011-005 Result	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.44	0.97	3.88	9.22	0.70	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	10.1	1.35	6.11	145	1.05	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.74	12.1	8.09	8.27	12.1	
cation sum	----	EC101	0.10	meq/L	8.44	11.6	8.07	8.06	11.6	
ion balance (cations/anions ratio)	----	EC101	0.010	%	86.6	95.9	99.8	97.5	95.9	
ion balance (cation-anion difference)	----	EC101	0.010	%	7.15	2.11	0.124	1.28	2.11	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0170	0.0021	0.0025	0.0025	0.0019	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00042	<0.00010	0.00056	0.00022	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00039	0.00011	0.00018	0.00020	0.00013	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.405	0.149	0.0372	0.116	0.149	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.491	0.027	0.254	0.042	0.025	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0196	0.0307	0.0088	0.283	0.0326	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	9.43	144	26.1	59.4	143	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00013	<0.00010	<0.00010	0.00012	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.12	0.76	1.01	0.12	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00052	0.00033	0.00046	0.00051	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	0.000155	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.412	0.0252	0.132	0.0313	0.0250	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.92	48.2	14.8	25.9	48.0	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0208	0.0202	0.180	0.490	0.0206	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0496	0.000832	0.00400	0.0113	0.000764	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00076	0.00100	0.00094	0.00156	0.00096	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.40	1.90	3.02	3.35	1.88	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.222	21.1	0.140	4.40	21.2	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_SRD2A _WG_2021_11_ 24_NP	LC_MW_SRD2B _WG_2021_11_ 24_NP	LC_MW_ERX1A _WG_2021_11_ 24_NP	LC_MW_ERX1B _WG_2021_11_ 24_NP	LC_MW_MC10 A_WG_2021_1 1_24_NP
Client sampling date / time					24-Nov-2021 09:15	24-Nov-2021 10:30	24-Nov-2021 11:45	24-Nov-2021 12:45	24-Nov-2021 09:15	
Analyte	CAS Number	Method	LOR	Unit	CG2106011-001 Result	CG2106011-002 Result	CG2106011-003 Result	CG2106011-004 Result	CG2106011-005 Result	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.18	4.39	4.10	4.21	4.39	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	172	10.4	125	65.6	10.3	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.266	0.428	0.486	0.277	0.429	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.25	54.7	19.9	43.2	54.6	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0.000024	0.000063	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00104	<0.00010	0.00121	0.00016	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000333	0.00164	0.000792	0.00241	0.00164	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00067	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0017	0.0035	0.0028	0.0031	0.0035	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_MC10 B_WG_2021_1 1_24_NP	LC_MW_MC10 C_WG_2021_1 1_24_NP	----	----	----
Client sampling date / time					24-Nov-2021 10:00	24-Nov-2021 10:15	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106011-006 Result	CG2106011-007 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
conductivity	----	E100	2.0	µS/cm	3.4 <sup>RRV</sup>	<2.0	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1.11	<0.50	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	516	537	----	----	----	
pH	----	E108	0.10	pH units	6.24	5.13	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	0.51 <sup>RRV</sup>	<0.10	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.18 <sup>RRV</sup>	<0.10	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0088 <sup>RRV</sup>	<0.0050	----	----	----	
nitrate + nitrite (as N)	----	EC235.N+N	0.0050	mg/L	0.0088	<0.0051	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	0.37 <sup>RRV</sup>	<0.30	----	----	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	<0.050	<0.050	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	----	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_MC10 B_WG_2021_1 1_24_NP	LC_MW_MC10 C_WG_2021_1 1_24_NP	----	----	----
Client sampling date / time					24-Nov-2021 10:00	24-Nov-2021 10:15	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106011-006 Result	CG2106011-007 Result	-----	-----	-----	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	<0.10	----	----	----	
cation sum	----	EC101	0.10	meq/L	<0.10	<0.10	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100 <sup>RRV</sup>	100 <sup>RRV</sup>	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	<0.010	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00035 <sup>RRV</sup>	0.00010 <sup>RRV</sup>	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	0.308 <sup>RRV</sup>	0.085 <sup>RRV</sup>	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00074 <sup>RRV</sup>	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	0.0822 <sup>RRV</sup>	0.0171 <sup>RRV</sup>	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00079 <sup>RRV</sup>	<0.00010	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_MW_MC10 B_WG_2021_1 1_24_NP	LC_MW_MC10 C_WG_2021_1 1_24_NP	----	----	----
Client sampling date / time					24-Nov-2021 10:00	24-Nov-2021 10:15	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106011-006 Result	CG2106011-007 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.073 <sup>RRV</sup>	<0.050	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.00119 <sup>RRV</sup>	0.00033 <sup>RRV</sup>	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0017 <sup>RRV</sup>	0.0010 <sup>RRV</sup>	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106011</b>	Page	: 1 of 26
Client	: <b>SNC-Lavalin Inc.</b>	Laboratory	: Calgary - Environmental
Contact	: Kim Harrer	Account Manager	: Lovepreet Kaur
Address	: 400, 640 5th Avenue SW Calgary AB Canada T2P 3G4	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ----	Date Samples Received	: 25-Nov-2021 09:15
PO	: 686625	Issue Date	: 10-Dec-2021 08:50
C-O-C number	: ----		
Sampler	: CS, RS		
Site	: Line Creek Operations		
Quote number	: TECK Coal codes		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ERX1A_WG_2021_11_24_NP	E298	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ERX1B_WG_2021_11_24_NP	E298	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_MC10A_WG_2021_11_24_NP	E298	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_MC10B_WG_2021_11_24_NP	E298	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_MC10C_WG_2021_11_24_NP	E298	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_SRD2A_WG_2021_11_24_NP	E298	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_SRD2B_WG_2021_11_24_NP	E298	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ERX1A_WG_2021_11_24_NP	E235.Br-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ERX1B_WG_2021_11_24_NP	E235.Br-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_MC10A_WG_2021_11_24_NP	E235.Br-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_MC10B_WG_2021_11_24_NP	E235.Br-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_MC10C_WG_2021_11_24_NP	E235.Br-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_SRD2A_WG_2021_11_24_NP	E235.Br-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_SRD2B_WG_2021_11_24_NP	E235.Br-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ERX1A_WG_2021_11_24_NP	E235.Cl-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_MW_ERX1B_WG_2021_11_24_NP	E235.Cl-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_MW_MC10A_WG_2021_11_24_NP	E235.CI-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_MW_MC10B_WG_2021_11_24_NP	E235.CI-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_MW_MC10C_WG_2021_11_24_NP	E235.CI-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_MW_SRD2A_WG_2021_11_24_NP	E235.CI-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE LC_MW_SRD2B_WG_2021_11_24_NP	E235.CI-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_MW_ERX1A_WG_2021_11_24_NP	E378-U	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_MW_ERX1B_WG_2021_11_24_NP	E378-U	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_MW_MC10A_WG_2021_11_24_NP	E378-U	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE LC_MW_MC10B_WG_2021_11_24_NP	E378-U	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_MW_MC10C_WG_2021_11_24_NP	E378-U	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_MW_SRD2A_WG_2021_11_24_NP	E378-U	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_MW_SRD2B_WG_2021_11_24_NP	E378-U	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> LC_MW_ERX1A_WG_2021_11_24_NP	E235.F	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> LC_MW_ERX1B_WG_2021_11_24_NP	E235.F	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> LC_MW_MC10A_WG_2021_11_24_NP	E235.F	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> LC_MW_MC10B_WG_2021_11_24_NP	E235.F	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> LC_MW_MC10C_WG_2021_11_24_NP	E235.F	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> LC_MW_SRD2A_WG_2021_11_24_NP	E235.F	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> LC_MW_SRD2B_WG_2021_11_24_NP	E235.F	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_MW_ERX1A_WG_2021_11_24_NP	E235.NO3-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_MW_ERX1B_WG_2021_11_24_NP	E235.NO3-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_MW_MC10A_WG_2021_11_24_NP	E235.NO3-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_MW_MC10B_WG_2021_11_24_NP	E235.NO3-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_MW_MC10C_WG_2021_11_24_NP	E235.NO3-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_MW_SRD2A_WG_2021_11_24_NP	E235.NO3-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_MW_SRD2B_WG_2021_11_24_NP	E235.NO3-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> LC_MW_ERX1A_WG_2021_11_24_NP	E235.NO2-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_MW_ERX1B_WG_2021_11_24_NP	E235.NO2-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_MW_MC10A_WG_2021_11_24_NP	E235.NO2-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_MW_MC10B_WG_2021_11_24_NP	E235.NO2-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_MW_MC10C_WG_2021_11_24_NP	E235.NO2-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_MW_SRD2A_WG_2021_11_24_NP	E235.NO2-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE LC_MW_SRD2B_WG_2021_11_24_NP	E235.NO2-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_MW_ERX1A_WG_2021_11_24_NP	E235.SO4	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_MW_ERX1B_WG_2021_11_24_NP	E235.SO4	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE LC_MW_MC10A_WG_2021_11_24_NP	E235.SO4	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> LC_MW_MC10B_WG_2021_11_24_NP	E235.SO4	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> LC_MW_MC10C_WG_2021_11_24_NP	E235.SO4	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> LC_MW_SRD2A_WG_2021_11_24_NP	E235.SO4	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> LC_MW_SRD2B_WG_2021_11_24_NP	E235.SO4	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> LC_MW_ERX1A_WG_2021_11_24_NP	E318	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> LC_MW_ERX1B_WG_2021_11_24_NP	E318	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> LC_MW_MC10A_WG_2021_11_24_NP	E318	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> LC_MW_MC10B_WG_2021_11_24_NP	E318	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> LC_MW_MC10C_WG_2021_11_24_NP	E318	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_SRD2A_WG_2021_11_24_NP	E318	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_SRD2B_WG_2021_11_24_NP	E318	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ERX1A_WG_2021_11_24_NP	E372-U	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ERX1B_WG_2021_11_24_NP	E372-U	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_MC10A_WG_2021_11_24_NP	E372-U	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_MC10B_WG_2021_11_24_NP	E372-U	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_MC10C_WG_2021_11_24_NP	E372-U	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_SRD2A_WG_2021_11_24_NP	E372-U	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_SRD2B_WG_2021_11_24_NP	E372-U	24-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times			
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ERX1A_WG_2021_11_24_NP	E421.Cr-L	24-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ERX1B_WG_2021_11_24_NP	E421.Cr-L	24-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_MC10A_WG_2021_11_24_NP	E421.Cr-L	24-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_MC10B_WG_2021_11_24_NP	E421.Cr-L	24-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_MC10C_WG_2021_11_24_NP	E421.Cr-L	24-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_SRD2A_WG_2021_11_24_NP	E421.Cr-L	24-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_SRD2B_WG_2021_11_24_NP	E421.Cr-L	24-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_ERX1A_WG_2021_11_24_NP	E509	24-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_ERX1B_WG_2021_11_24_NP	E509	24-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	1 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_MC10A_WG_2021_11_24_NP	E509	24-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_MC10B_WG_2021_11_24_NP	E509	24-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_MC10C_WG_2021_11_24_NP	E509	24-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_SRD2A_WG_2021_11_24_NP	E509	24-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_MW_SRD2B_WG_2021_11_24_NP	E509	24-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ERX1A_WG_2021_11_24_NP	E421	24-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_ERX1B_WG_2021_11_24_NP	E421	24-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_MC10A_WG_2021_11_24_NP	E421	24-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_MC10B_WG_2021_11_24_NP	E421	24-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_MC10C_WG_2021_11_24_NP	E421	24-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_SRD2A_WG_2021_11_24_NP	E421	24-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_MW_SRD2B_WG_2021_11_24_NP	E421	24-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	180 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_ERX1A_WG_2021_11_24_NP	E358-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_ERX1B_WG_2021_11_24_NP	E358-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_MC10A_WG_2021_11_24_NP	E358-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_MC10B_WG_2021_11_24_NP	E358-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_MC10C_WG_2021_11_24_NP	E358-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_SRD2A_WG_2021_11_24_NP	E358-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_MW_SRD2B_WG_2021_11_24_NP	E358-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ERX1A_WG_2021_11_24_NP	E355-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_ERX1B_WG_2021_11_24_NP	E355-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_MC10A_WG_2021_11_24_NP	E355-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_MC10B_WG_2021_11_24_NP	E355-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_MC10C_WG_2021_11_24_NP	E355-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_SRD2A_WG_2021_11_24_NP	E355-L	24-Nov-2021	25-Nov-2021	----	----		27-Nov-2021	28 days	3 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_MW_SRD2B_WG_2021_11_24_NP	E355-L	24-Nov-2021	25-Nov-2021	----	----		28-Nov-2021	28 days	4 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_MW_ERX1A_WG_2021_11_24_NP	E283	24-Nov-2021	----	----	----		26-Nov-2021	14 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE LC_MW_ERX1B_WG_2021_11_24_NP	E283	24-Nov-2021	----	----	----		26-Nov-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE LC_MW_MC10A_WG_2021_11_24_NP	E283	24-Nov-2021	----	----	----		26-Nov-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE LC_MW_MC10B_WG_2021_11_24_NP	E283	24-Nov-2021	----	----	----		26-Nov-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE LC_MW_MC10C_WG_2021_11_24_NP	E283	24-Nov-2021	----	----	----		26-Nov-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE LC_MW_SRD2A_WG_2021_11_24_NP	E283	24-Nov-2021	----	----	----		26-Nov-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE LC_MW_SRD2B_WG_2021_11_24_NP	E283	24-Nov-2021	----	----	----		26-Nov-2021	14 days	2 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_MW_ERX1A_WG_2021_11_24_NP	E290	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_MW_ERX1B_WG_2021_11_24_NP	E290	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_MW_MC10A_WG_2021_11_24_NP	E290	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_MW_MC10B_WG_2021_11_24_NP	E290	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_MW_MC10C_WG_2021_11_24_NP	E290	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_MW_SRD2A_WG_2021_11_24_NP	E290	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE LC_MW_SRD2B_WG_2021_11_24_NP	E290	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_MW_ERX1A_WG_2021_11_24_NP	E100	24-Nov-2021	----	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_MW_ERX1B_WG_2021_11_24_NP	E100	24-Nov-2021	----	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_MW_MC10A_WG_2021_11_24_NP	E100	24-Nov-2021	----	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_MW_MC10B_WG_2021_11_24_NP	E100	24-Nov-2021	----	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_MW_MC10C_WG_2021_11_24_NP	E100	24-Nov-2021	----	----	----		29-Nov-2021	28 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_MW_SRD2A_WG_2021_11_24_NP	E100	24-Nov-2021	----	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_MW_SRD2B_WG_2021_11_24_NP	E100	24-Nov-2021	----	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_MW_ERX1B_WG_2021_11_24_NP	E125	24-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	146 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_MW_ERX1A_WG_2021_11_24_NP	E125	24-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	147 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_MW_MC10B_WG_2021_11_24_NP	E125	24-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	148 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_MW_MC10C_WG_2021_11_24_NP	E125	24-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	148 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_MW_SRD2B_WG_2021_11_24_NP	E125	24-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	148 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_MW_MC10A_WG_2021_11_24_NP	E125	24-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	149 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_MW_SRD2A_WG_2021_11_24_NP	E125	24-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	149 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE LC_MW_ERX1B_WG_2021_11_24_NP	E108	24-Nov-2021	----	----	----		29-Nov-2021	0.25 hrs	120 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_MW_ERX1A_WG_2021_11_24_NP	E108	24-Nov-2021	----	----	----		29-Nov-2021	0.25 hrs	121 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_MW_MC10B_WG_2021_11_24_NP	E108	24-Nov-2021	----	----	----		29-Nov-2021	0.25 hrs	122 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_MW_MC10C_WG_2021_11_24_NP	E108	24-Nov-2021	----	----	----		29-Nov-2021	0.25 hrs	122 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_MW_SRD2B_WG_2021_11_24_NP	E108	24-Nov-2021	----	----	----		29-Nov-2021	0.25 hrs	122 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_MW_MC10A_WG_2021_11_24_NP	E108	24-Nov-2021	----	----	----		29-Nov-2021	0.25 hrs	123 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE LC_MW_SRD2A_WG_2021_11_24_NP	E108	24-Nov-2021	----	----	----		29-Nov-2021	0.25 hrs	123 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_MW_ERX1A_WG_2021_11_24_NP	E162	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_MW_ERX1B_WG_2021_11_24_NP	E162	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_MW_MC10A_WG_2021_11_24_NP	E162	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_MW_MC10B_WG_2021_11_24_NP	E162	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_MW_MC10C_WG_2021_11_24_NP	E162	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_MW_SRD2A_WG_2021_11_24_NP	E162	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> LC_MW_SRD2B_WG_2021_11_24_NP	E162	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_MW_ERX1A_WG_2021_11_24_NP	E160-L	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_MW_ERX1B_WG_2021_11_24_NP	E160-L	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_MW_MC10A_WG_2021_11_24_NP	E160-L	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> LC_MW_MC10B_WG_2021_11_24_NP	E160-L	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_MW_MC10C_WG_2021_11_24_NP	E160-L	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_MW_SRD2A_WG_2021_11_24_NP	E160-L	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_MW_SRD2B_WG_2021_11_24_NP	E160-L	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_MW_MC10A_WG_2021_11_24_NP	E121	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_MW_SRD2A_WG_2021_11_24_NP	E121	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_MW_ERX1A_WG_2021_11_24_NP	E121	24-Nov-2021	----	----	----		27-Nov-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_MW_ERX1B_WG_2021_11_24_NP	E121	24-Nov-2021	----	----	----		27-Nov-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_MW_MC10B_WG_2021_11_24_NP	E121	24-Nov-2021	----	----	----		27-Nov-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_MW_MC10C_WG_2021_11_24_NP	E121	24-Nov-2021	----	----	----		27-Nov-2021	3 days	3 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_MW_SRD2B_WG_2021_11_24_NP	E121	24-Nov-2021	----	----	----		27-Nov-2021	3 days	3 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	353689	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355090	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	355070	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353518	2	32	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353519	2	32	6.2	5.0	✓
Conductivity in Water	E100	355091	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	356806	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352804	1	14	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	356805	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352868	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352920	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	353516	2	32	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353520	2	32	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353521	2	32	6.2	5.0	✓
ORP by Electrode	E125	356179	2	38	5.2	5.0	✓
pH by Meter	E108	355092	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	353517	2	32	6.2	5.0	✓
TDS by Gravimetry	E162	354286	2	40	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353304	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352869	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352802	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	353000	4	64	6.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	353689	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355090	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	355070	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353518	2	32	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353519	2	32	6.2	5.0	✓
Conductivity in Water	E100	355091	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	356806	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352804	1	14	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	356805	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352868	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352920	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	353516	2	32	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353520	2	32	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353521	2	32	6.2	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	356179	2	38	5.2	5.0	✓
pH by Meter	E108	355092	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	353517	2	32	6.2	5.0	✓
TDS by Gravimetry	E162	354286	2	40	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353304	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352869	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352802	1	9	11.1	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	354281	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	353000	4	64	6.2	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	353689	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355090	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	355070	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353518	2	32	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353519	2	32	6.2	5.0	✓
Conductivity in Water	E100	355091	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	356806	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352804	1	14	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	356805	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352868	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352920	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	353516	2	32	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353520	2	32	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353521	2	32	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	353517	2	32	6.2	5.0	✓
TDS by Gravimetry	E162	354286	2	40	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353304	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352869	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352802	1	9	11.1	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	354281	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	353000	4	64	6.2	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	355070	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353518	2	32	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353519	2	32	6.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	356806	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352804	1	14	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	356805	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352868	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352920	1	20	5.0	5.0	✓





Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	353516	2	32	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353520	2	32	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353521	2	32	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	353517	2	32	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353304	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352869	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352802	1	9	11.1	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Calgary - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Calgary - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Calgary - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100 Calgary - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Calgary - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Calgary - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Calgary - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2106011**

**Page** : 1 of 14

**Client** : SNC-Lavalin Inc.  
**Contact** : Kim Harrer  
**Address** : 400, 640 5th Avenue SW  
                   Calgary AB Canada T2P 3G4  
**Telephone** : ----  
**Project** : ----  
**PO** : 686625  
**C-O-C number** : ----  
**Sampler** : CS, RS  
**Site** : Line Creek Operations  
**Quote number** : TECK Coal codes  
**No. of samples received** : 7  
**No. of samples analysed** : 7

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lovepreet Kaur  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 25-Nov-2021 09:15  
**Date Analysis Commenced** : 25-Nov-2021  
**Issue Date** : 10-Dec-2021 08:49

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Daniel Ching	Lab Analyst	Metals, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Metals, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Millicent Brentnall	Laboratory Analyst	Metals, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2106011  
Client : SNC-Lavalin Inc.  
Project : ----

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 353000)</b>											
CG2105987-009	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 353689)</b>											
CG2106008-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	4.7	4.0	0.7	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 354101)</b>											
CG2105987-011	Anonymous	turbidity	----	E121	0.10	NTU	2.68	2.63	1.96%	15%	----
<b>Physical Tests (QC Lot: 354140)</b>											
CG2105991-008	Anonymous	turbidity	----	E121	0.10	NTU	0.37	0.38	0.008	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 354193)</b>											
CG2105987-016	Anonymous	turbidity	----	E121	0.10	NTU	1.75	1.75	0.229%	15%	----
<b>Physical Tests (QC Lot: 354286)</b>											
CG2105991-006	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1780	1830	2.89%	20%	----
<b>Physical Tests (QC Lot: 354287)</b>											
CG2106011-002	LC_MW_SRD2B_WG_202 1_11_24_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	702	718	2.39%	20%	----
<b>Physical Tests (QC Lot: 355090)</b>											
CG2105999-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	394	387	1.79%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	394	387	1.79%	20%	----
<b>Physical Tests (QC Lot: 355091)</b>											
CG2105999-002	Anonymous	conductivity	----	E100	2.0	µS/cm	1170	1170	0.0856%	10%	----
<b>Physical Tests (QC Lot: 355092)</b>											
CG2105999-002	Anonymous	pH	----	E108	0.10	pH units	7.15	7.16	0.140%	4%	----
<b>Physical Tests (QC Lot: 356179)</b>											
CG2105991-009	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	422	421	0.0712%	15%	----
<b>Physical Tests (QC Lot: 356180)</b>											
CG2106011-005	LC_MW_MC10A_WG_202 1_11_24_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	453	458	1.27%	15%	----
<b>Anions and Nutrients (QC Lot: 352802)</b>											
CG2106008-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352920)</b>											
CG2106000-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----

Page : 4 of 14  
 Work Order : CG2106011  
 Client : SNC-Lavalin Inc.  
 Project : ----



Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 353304)</b>											
CG2106000-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.167	0.195	0.028	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353516)</b>											
CG2105992-003	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.104	0.138	0.034	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353517)</b>											
CG2105992-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	371	387	4.37%	20%	----
<b>Anions and Nutrients (QC Lot: 353518)</b>											
CG2105992-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353519)</b>											
CG2105992-003	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	2.83	2.60	0.23	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353520)</b>											
CG2105992-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	2.91	3.03	4.10%	20%	----
<b>Anions and Nutrients (QC Lot: 353521)</b>											
CG2105992-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0200	0.0188	0.0012	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353522)</b>											
CG2106011-003	LC_MW_ERX1A_WG_202 1_11_24_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.189	0.185	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353523)</b>											
CG2106011-003	LC_MW_ERX1A_WG_202 1_11_24_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	55.1	55.2	0.103%	20%	----
<b>Anions and Nutrients (QC Lot: 353524)</b>											
CG2106011-003	LC_MW_ERX1A_WG_202 1_11_24_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.077	0.090	0.013	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353525)</b>											
CG2106011-003	LC_MW_ERX1A_WG_202 1_11_24_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.65	0.63	0.02	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353526)</b>											
CG2106011-003	LC_MW_ERX1A_WG_202 1_11_24_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0363	0.0362	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353527)</b>											
CG2106011-003	LC_MW_ERX1A_WG_202 1_11_24_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 355070)</b>											
CG2105999-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0053	<0.0050	0.0003	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352868)</b>											
CG2106000-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.83	0.78	0.05	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352869)</b>											
CG2106000-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.14	1.46	0.31	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352804)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 352804) - continued</b>											
CG2106000-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 356805)</b>											
CG2106000-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	<0.0010	0.00010	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00016	0.00015	0.0000009	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00189	0.00193	1.80%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0112	0.0111	0.817%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	0.021 µg/L	0.000020	0.0000003	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.055	0.058	0.003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	117	117	0.416%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.094	0.095	0.0008	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0358	0.0368	2.63%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	63.7	64.0	0.496%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0582	0.0594	2.04%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000705	0.000698	0.974%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00050	0.000001	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.01	2.04	1.24%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.721 µg/L	0.000789	9.00%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	8.60	8.68	0.892%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	20.7	20.8	0.290%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.530	0.533	0.538%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	85.7	85.9	0.302%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000588	0.000596	1.37%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 356806)</b>											
CG2106000-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00044	0.00046	0.00003	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 353000)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 353689)</b>						
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	<2.0	---
<b>Physical Tests (QCLot: 354101)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 354140)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 354193)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 354281)</b>						
solids, total suspended [TSS]	---	E160-L	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 354282)</b>						
solids, total suspended [TSS]	---	E160-L	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 354286)</b>						
solids, total dissolved [TDS]	---	E162	10	mg/L	<10	---
<b>Physical Tests (QCLot: 354287)</b>						
solids, total dissolved [TDS]	---	E162	10	mg/L	<10	---
<b>Physical Tests (QCLot: 355090)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, carbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, hydroxide (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 355091)</b>						
conductivity	---	E100	1	µS/cm	<1.0	---
<b>Anions and Nutrients (QCLot: 352802)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 352920)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 353304)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 353516)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 353517)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 353517) - continued</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 353518)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 353519)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 353520)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 353521)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 353522)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 353523)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 353524)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 353525)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 353526)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 353527)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 355070)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 352868)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 352869)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 352804)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 356805)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 356805) - continued</b>						
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 356806)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 353000)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	102	85.0	115	----
<b>Physical Tests (QCLot: 353689)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	108	85.0	115	----
<b>Physical Tests (QCLot: 354101)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	100.0	85.0	115	----
<b>Physical Tests (QCLot: 354140)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	99.5	85.0	115	----
<b>Physical Tests (QCLot: 354193)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	99.5	85.0	115	----
<b>Physical Tests (QCLot: 354281)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	103	85.0	115	----
<b>Physical Tests (QCLot: 354282)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	105	85.0	115	----
<b>Physical Tests (QCLot: 354286)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	100	85.0	115	----
<b>Physical Tests (QCLot: 354287)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	95.8	85.0	115	----
<b>Physical Tests (QCLot: 355090)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	101	85.0	115	----
<b>Physical Tests (QCLot: 355091)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	99.2	90.0	110	----
<b>Physical Tests (QCLot: 355092)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 356179)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	102	95.4	104	----
<b>Physical Tests (QCLot: 356180)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	102	95.4	104	----
<b>Anions and Nutrients (QCLot: 352802)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	107	80.0	120	----
<b>Anions and Nutrients (QCLot: 352920)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	96.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 353304)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 353304) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	92.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 353516)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 353517)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 353518)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.9	85.0	115	----
<b>Anions and Nutrients (QCLot: 353519)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 353520)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 353521)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.8	90.0	110	----
<b>Anions and Nutrients (QCLot: 353522)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.3	90.0	110	----
<b>Anions and Nutrients (QCLot: 353523)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 353524)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.0	85.0	115	----
<b>Anions and Nutrients (QCLot: 353525)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 353526)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 353527)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 355070)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	104	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 352868)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 352869)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	106	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.9	80.0	120	----
<b>Dissolved Metals (QCLot: 356805)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	93.4	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 356805) - continued</b>									
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	92.5	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	94.9	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.8	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	93.8	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	91.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	94.4	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.1	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.6	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	95.9	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.5	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.5	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.7	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.9	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	95.8	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	91.6	80.0	120	----
<b>Dissolved Metals (QCLot: 356806)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	96.3	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 352802)</b>										
CG2106008-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0543 mg/L	0.0676 mg/L	80.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 352920)</b>										
CG2106003-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0536 mg/L	0.05 mg/L	107	70.0	130	----
<b>Anions and Nutrients (QCLot: 353304)</b>										
CG2106000-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.37 mg/L	2.5 mg/L	94.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 353516)</b>										
CG2105992-004	Anonymous	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 353517)</b>										
CG2105992-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 353518)</b>										
CG2105992-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.490 mg/L	0.5 mg/L	98.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 353519)</b>										
CG2105992-004	Anonymous	chloride	16887-00-6	E235.Cl-L	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 353520)</b>										
CG2105992-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 353521)</b>										
CG2105992-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.426 mg/L	0.5 mg/L	85.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 353522)</b>										
CG2106043-005	Anonymous	fluoride	16984-48-8	E235.F	0.958 mg/L	1 mg/L	95.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 353523)</b>										
CG2106043-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 353524)</b>										
CG2106043-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.498 mg/L	0.5 mg/L	99.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 353525)</b>										
CG2106043-005	Anonymous	chloride	16887-00-6	E235.Cl-L	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 353526)</b>										
CG2106043-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.57 mg/L	2.5 mg/L	103	75.0	125	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 353527)</b>										
CG2106043-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.500 mg/L	0.5 mg/L	100.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 355070)</b>										
CG2106000-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 352868)</b>										
CG2106000-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.0 mg/L	23.9 mg/L	96.2	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352869)</b>										
CG2106000-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.4 mg/L	23.9 mg/L	97.8	70.0	130	----
<b>Dissolved Metals (QCLot: 352804)</b>										
CG2106000-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000957 mg/L	0.0001 mg/L	95.7	70.0	130	----
<b>Dissolved Metals (QCLot: 356805)</b>										
CG2106000-002	Anonymous	aluminum, dissolved	7429-90-5	E421	1.77 mg/L	2 mg/L	88.5	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.207 mg/L	0.2 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.178 mg/L	0.2 mg/L	89.0	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.184 mg/L	0.2 mg/L	92.0	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.377 mg/L	0.4 mg/L	94.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0927 mg/L	0.1 mg/L	92.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.983 mg/L	1 mg/L	98.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.181 mg/L	0.2 mg/L	90.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.187 mg/L	0.2 mg/L	93.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	18.4 mg/L	20 mg/L	92.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.187 mg/L	0.2 mg/L	93.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.884 mg/L	1 mg/L	88.4	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.179 mg/L	0.2 mg/L	89.5	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.190 mg/L	0.2 mg/L	95.2	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.362 mg/L	0.4 mg/L	90.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	36.2 mg/L	40 mg/L	90.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.374 mg/L	0.4 mg/L	93.5	70.0	130	----
		silicon, dissolved	7440-21-3	E421	86.1 mg/L	100 mg/L	86.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0364 mg/L	0.04 mg/L	91.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	172 mg/L	200 mg/L	86.0	70.0	130	----



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 356805) - continued</b>										
CG2106000-002	Anonymous	thallium, dissolved	7440-28-0	E421	0.0380 mg/L	0.04 mg/L	95.1	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.187 mg/L	0.2 mg/L	93.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.371 mg/L	0.4 mg/L	92.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.903 mg/L	1 mg/L	90.3	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.55 mg/L	4 mg/L	88.9	70.0	130	----
<b>Dissolved Metals (QCLot: 356806)</b>										
CG2106000-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.364 mg/L	0.4 mg/L	91.1	70.0	130	----



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number:

www.alsglobal.com

Report To Contact and company name below will appear on the final report		Report Format / Distribution				Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																	
Company: SNC-Lavalin		Select Report Format: <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)				Regular [R] <input type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																	
Contact: Kim Harrer		Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO				4 day [P4-20%] <input type="checkbox"/>						1 Business day [E1 - 100%] <input type="checkbox"/>											
Phone: Tel.: (250) 426-9070 Cell.: 250-464-9108		Compare Results to Criteria on Report - provide details below if box checked				3 day [P3-25%] <input type="checkbox"/>						Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>											
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				2 day [P2-50%] <input type="checkbox"/>						EMERGENCY											
Street: 901 Industrial Road 2.		Emails: SNC - 'Kim.Harrer', 'Vicky Lipinski'				Date and Time Required for all E&P TATs:																	
City/Province: Cranbrook, BC		Kerina Cheung@snciavalin.com				For tests that can not be performed according to the service level																	
Postal Code: V1C 4C9		Teck - teckcoal@equisonline.com				Analytical																	
Invoice To: Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution				Indicate Filtered (F), Preserved (P) or Filtered																	
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				F/P P F/P																	
Company:		Emails: Kim.Harrer@snciavalin.com				DOC (C-DIS-ORG-LOW-CL)																	
Contact:		payables@snciavalin.com				TOC (C-TOT-ORG-LOW-CL)																	
Project Information		Oil and Gas Required Fields (client use)				BCMDGS D-Met.+Hg (MET-D-BCMDGS-CL)																	
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center:		PO#		Total N Calc. (N-T-CALC-CL)																	
Job #: <del>Greenhills Operations</del> Line Creek Operations		Major/Minor Code:		Routing Code:		Nitrate + Nitrite Calc. (N2NS-CALC-CL)																	
PO / AFE: <del>686625</del> 686625		Requisitioner:				Teck Routine (TECKCOAL-ROUTINE-CL)																	
LSD: LCO		Location:				TKN (TKNL-F-CL)																	
ALS Lab Work Order # (lab use only):		ALS Contact:		Sampler: <del>WQ</del> CS, AS		Bicarbonate (B(C-CL)																	
ALS Sample # (lab use only)		Sample Identification &/or Coordinates (This description will appear on the report)		Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type		Carbonate (CO3-CL)											
LC.MW.SRD2A.WG.2021.11.24.MP		LC.MW.SRD2A		LC.MW.SRD2A		24-Nov-21		09:15		GW		Hydroxide (OH)											
LC.MW.SRD2B.WG.2021.11.24.MP		LC.MW.SRD2B		LC.MW.SRD2B		24-Nov-21		10:30		GW		SAMPLES O											
LC.MW.EAX1A.WG.2021.11.24.MP		LC.MW.EAX1A		LC.MW.EAX1A		24-Nov-21		11:45		GW		Sample Is In:											
LC.MW.EAX1B.WG.2021.11.24.MP		LC.MW.EAX1B		LC.MW.EAX1B		24-Nov-21		12:45		GW		NUMBER OF CONTAINERS											
LC.MW.MC10A.WG.2021.11.24.MP		LC.MW.MC10A		LC.MW.MC10A		24-Nov-21		09:15		GW													
LC.MW.MC10B.WG.2021.11.24.MP		LC.MW.MC10B		LC.MW.MC10B		24-Nov-21		10:00		GW													
LC.MW.MC10C.WG.2021.11.24.MP		LC.MW.MC10C		LC.MW.MC10C		24-Nov-21		10:15		GW													

Environmental Division Calgary Work Order Reference CG2106011



Telephone: +1 403 407 1800

Drinking Water (DW) Samples <sup>1</sup> (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				SAMPLE CONDITION AS RECEIVED (lab use only)													
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>													
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility) LCO - Line Creek Operations				Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>													
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)				Cooling Initiated <input type="checkbox"/>													
Released by: <del>Don von Gonsch</del> Chuck Stafford		Date: 24/11/2021		Time: 17:00		Received by:		Date:		Time:		INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
Date: 24/11/2021		Time: 17:00		Date: NOV 25, 2021		Time: 9:13													



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2106102**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
 Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : LC GW 20211126  
**Sampler** : TD  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-Nov-2021 09:20  
**Date Analysis Commenced** : 28-Nov-2021  
**Issue Date** : 07-Dec-2021 16:54

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	LCA SPO Shallow	LCB SPO Deep	----	----	----
(Matrix: Water)					Client sampling date / time	26-Nov-2021 12:05	26-Nov-2021 11:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106102-001 Result	CG2106102-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	2.1	2.6	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	154	147	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	188	180	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	188	180	----	----	----	
conductivity	----	E100	2.0	µS/cm	731	605	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	364	282	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	477	474	----	----	----	
pH	----	E108	0.10	pH units	7.84	7.64	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	409	527	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	2.3	----	----	----	
turbidity	----	E121	0.10	NTU	<0.10	3.12	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0120	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	10.8	7.86	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.291	0.471	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.353 <sup>TKN</sup>	0.406	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	6.97	2.53	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0044	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0011	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0075	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	196	147	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.86	1.23	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.75	1.48	----	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LCA SPO Shallow	LCB SPO Deep	---	---	---
Client sampling date / time					26-Nov-2021 12:05	26-Nov-2021 11:00	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2106102-001	CG2106102-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	8.66	7.08	---	---	---	
cation sum	---	EC101	0.10	meq/L	7.57	6.20	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	87.4	87.6	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	6.72	6.63	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0032	0.0619	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00016	0.00050	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	0.00040	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0876	0.0471	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	0.010	0.016	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0101	0.0388	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	99.7	82.4	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00013	0.00090	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	0.00187	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.070	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000138	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0326	0.0239	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	41.2	27.6	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00025	0.00912	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00245	0.00360	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00196	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	1.00	1.22	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	28.1	11.6	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	2.03	2.65	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, total	17341-25-2	E420	0.050	mg/L	6.55	13.2	---	---	---	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.209	0.354	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	69.1	51.5	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LCA SPO Shallow	LCB SPO Deep	---	---	---
Client sampling date / time					26-Nov-2021 12:05	26-Nov-2021 11:00	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2106102-001	CG2106102-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	0.000015	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	0.00264	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	0.00167	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00311	0.00258	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	0.0089	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0013	0.0023	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00014	0.00034	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00031	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0794	0.0419	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.017	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0122	0.0234	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	83.8	71.5	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00013	0.00016	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00132	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0303	0.0230	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	37.7	25.1	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00014	0.00304	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00219	0.00350	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00156	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.937	1.15	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	32.5	12.6	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.03	2.71	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LCA SPO Shallow	LCB SPO Deep	---	---	---
Client sampling date / time					26-Nov-2021 12:05	26-Nov-2021 11:00	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2106102-001	CG2106102-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.05	12.4	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.184	0.333	---	---	---	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	64.4	48.9	---	---	---	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000013	---	---	---	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	0.00168	---	---	---	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00300	0.00250	---	---	---	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0070	---	---	---	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	---	---	---	
dissolved metals filtration location	----	EP421	-	-	Field	Field	---	---	---	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106102</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 27-Nov-2021 09:20
PO	: VPO00739930	Issue Date	: 07-Dec-2021 16:55
C-O-C number	: LC GW 20211126		
Sampler	: TD		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LCA SPO Shallow	E298	26-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	28 days	5 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> LCB SPO Deep	E298	26-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LCA SPO Shallow	E235.Br-L	26-Nov-2021	----	----	----		28-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> LCB SPO Deep	E235.Br-L	26-Nov-2021	----	----	----		28-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LCA SPO Shallow	E235.Cl-L	26-Nov-2021	----	----	----		28-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> LCB SPO Deep	E235.Cl-L	26-Nov-2021	----	----	----		28-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> LCA SPO Shallow	E378-U	26-Nov-2021	----	----	----		29-Nov-2021	3 days	3 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LCB SPO Deep	E378-U	26-Nov-2021	----	----	----		29-Nov-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LCA SPO Shallow	E235.F	26-Nov-2021	----	----	----		28-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LCB SPO Deep	E235.F	26-Nov-2021	----	----	----		28-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LCA SPO Shallow	E235.NO3-L	26-Nov-2021	----	----	----		28-Nov-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LCB SPO Deep	E235.NO3-L	26-Nov-2021	----	----	----		28-Nov-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LCA SPO Shallow	E235.NO2-L	26-Nov-2021	----	----	----		28-Nov-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LCB SPO Deep	E235.NO2-L	26-Nov-2021	----	----	----		28-Nov-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LCA SPO Shallow	E235.SO4	26-Nov-2021	----	----	----		28-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LCB SPO Deep	E235.SO4	26-Nov-2021	----	----	----		28-Nov-2021	28 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LCA SPO Shallow	E318	26-Nov-2021	02-Dec-2021	----	----		03-Dec-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LCB SPO Deep	E318	26-Nov-2021	02-Dec-2021	----	----		03-Dec-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LCA SPO Shallow	E372-U	26-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LCB SPO Deep	E372-U	26-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LCA SPO Shallow	E421.Cr-L	26-Nov-2021	02-Dec-2021	----	----		02-Dec-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LCB SPO Deep	E421.Cr-L	26-Nov-2021	02-Dec-2021	----	----		02-Dec-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LCA SPO Shallow	E509	26-Nov-2021	03-Dec-2021	----	----		03-Dec-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LCB SPO Deep	E509	26-Nov-2021	03-Dec-2021	----	----		03-Dec-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LCA SPO Shallow	E421	26-Nov-2021	02-Dec-2021	----	----		02-Dec-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LCB SPO Deep	E421	26-Nov-2021	02-Dec-2021	----	----		02-Dec-2021	180 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LCA SPO Shallow	E358-L	26-Nov-2021	29-Nov-2021	----	----		01-Dec-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LCB SPO Deep	E358-L	26-Nov-2021	29-Nov-2021	----	----		01-Dec-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LCA SPO Shallow	E355-L	26-Nov-2021	29-Nov-2021	----	----		01-Dec-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LCB SPO Deep	E355-L	26-Nov-2021	29-Nov-2021	----	----		01-Dec-2021	28 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LCA SPO Shallow	E283	26-Nov-2021	----	----	----		30-Nov-2021	14 days	4 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LCB SPO Deep	E283	26-Nov-2021	----	----	----		30-Nov-2021	14 days	4 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LCA SPO Shallow	E290	26-Nov-2021	----	----	----		01-Dec-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LCB SPO Deep	E290	26-Nov-2021	----	----	----		01-Dec-2021	14 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Conductivity in Water</b>										
HDPE LCA SPO Shallow	E100	26-Nov-2021	----	----	----		01-Dec-2021	28 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE LCB SPO Deep	E100	26-Nov-2021	----	----	----		01-Dec-2021	28 days	5 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE LCA SPO Shallow	E125	26-Nov-2021	----	----	----		05-Dec-2021	0.25 hrs	217 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE LCB SPO Deep	E125	26-Nov-2021	----	----	----		05-Dec-2021	0.25 hrs	218 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LCA SPO Shallow	E108	26-Nov-2021	----	----	----		01-Dec-2021	0.25 hrs	118 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE LCB SPO Deep	E108	26-Nov-2021	----	----	----		01-Dec-2021	0.25 hrs	119 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LCA SPO Shallow	E162	26-Nov-2021	----	----	----		01-Dec-2021	7 days	5 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE LCB SPO Deep	E162	26-Nov-2021	----	----	----		01-Dec-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] LCA SPO Shallow	E160-L	26-Nov-2021	----	----	----		01-Dec-2021	7 days	5 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation			Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LCB SPO Deep	E160-L	26-Nov-2021	----	----	----		01-Dec-2021	7 days	5 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LCA SPO Shallow	E121	26-Nov-2021	----	----	----		28-Nov-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LCB SPO Deep	E121	26-Nov-2021	----	----	----		28-Nov-2021	3 days	2 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LCA SPO Shallow	E420.Cr-L	26-Nov-2021	----	----	----		02-Dec-2021	180 days	6 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LCB SPO Deep	E420.Cr-L	26-Nov-2021	----	----	----		02-Dec-2021	180 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LCA SPO Shallow	E420	26-Nov-2021	----	----	----		02-Dec-2021	180 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LCB SPO Deep	E420	26-Nov-2021	----	----	----		02-Dec-2021	180 days	6 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	356242	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	356753	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	356856	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354697	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354698	1	9	11.1	5.0	✓
Conductivity in Water	E100	356752	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	357508	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	358804	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	357509	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	355459	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	354847	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	354695	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354699	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354700	1	9	11.1	5.0	✓
ORP by Electrode	E125	359166	1	20	5.0	5.0	✓
pH by Meter	E108	356751	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	354696	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	356182	1	13	7.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	357478	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357637	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	357479	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	355460	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	355116	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	354666	1	11	9.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	356242	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	356753	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	356856	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354697	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354698	1	9	11.1	5.0	✓
Conductivity in Water	E100	356752	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	357508	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	358804	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	357509	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	355459	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	354847	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	354695	1	9	11.1	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	354699	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354700	1	9	11.1	5.0	✓
ORP by Electrode	E125	359166	1	20	5.0	5.0	✓
pH by Meter	E108	356751	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	354696	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	356182	1	13	7.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	357478	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357637	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	357479	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	355460	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	355116	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	356185	1	13	7.6	5.0	✓
Turbidity by Nephelometry	E121	354666	1	11	9.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	356242	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	356753	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	356856	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354697	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354698	1	9	11.1	5.0	✓
Conductivity in Water	E100	356752	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	357508	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	358804	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	357509	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	355459	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	354847	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	354695	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354699	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354700	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	354696	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	356182	1	13	7.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	357478	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357637	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	357479	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	355460	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	355116	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	356185	1	13	7.6	5.0	✓
Turbidity by Nephelometry	E121	354666	1	11	9.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	356856	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354697	1	9	11.1	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	354698	1	9	11.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	357508	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	358804	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	357509	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	355459	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	354847	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	354695	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354699	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354700	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	354696	1	9	11.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	357478	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357637	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	357479	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	355460	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	355116	1	19	5.2	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2106102**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : LC GW 20211126  
**Sampler** : TD  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-Nov-2021 09:20  
**Date Analysis Commenced** : 28-Nov-2021  
**Issue Date** : 07-Dec-2021 16:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2106102  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 354666)</b>											
CG2106098-004	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 356182)</b>											
CG2106092-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	396	394	0.506%	20%	----
<b>Physical Tests (QC Lot: 356242)</b>											
CG2106092-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 356751)</b>											
CG2106092-001	Anonymous	pH	----	E108	0.10	pH units	7.81	7.84	0.383%	4%	----
<b>Physical Tests (QC Lot: 356752)</b>											
CG2106092-001	Anonymous	conductivity	----	E100	2.0	µS/cm	578	582	0.690%	10%	----
<b>Physical Tests (QC Lot: 356753)</b>											
CG2106092-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	121	113	6.78%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	148	138	6.78%	20%	----
<b>Physical Tests (QC Lot: 359166)</b>											
CG2106090-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	491	498	1.48%	15%	----
<b>Anions and Nutrients (QC Lot: 354695)</b>											
CG2106099-002	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.177	0.177	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354696)</b>											
CG2106099-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	721	715	0.793%	20%	----
<b>Anions and Nutrients (QC Lot: 354697)</b>											
CG2106099-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354698)</b>											
CG2106099-002	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.78	1.79	0.008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354699)</b>											
CG2106099-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	94.1	93.3	0.880%	20%	----
<b>Anions and Nutrients (QC Lot: 354700)</b>											
CG2106099-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354847)</b>											
CG2106099-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0020	0.0020	0.00001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 355116)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 355116) - continued</b>											
CG2106090-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0085	0.0081	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 356856)</b>											
CG2106099-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0122	0.0124	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357637)</b>											
CG2106092-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.500	mg/L	3.45	3.47	0.019	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 355459)</b>											
CG2106098-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.95	1.98	0.03	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 355460)</b>											
CG2106098-001	Anonymous	carbon, total organic [TOC]	----	E355-L	5.00	mg/L	10.3	12.2	1.91	Diff <2x LOR	----
<b>Total Metals (QC Lot: 357478)</b>											
CG2106090-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00024	0.00026	0.00002	Diff <2x LOR	----
<b>Total Metals (QC Lot: 357479)</b>											
CG2106090-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0594	0.0618	4.01%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00011	0.00010	0.000009	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00021	0.00021	0.000005	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0804	0.0806	0.341%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0232 µg/L	0.0000223	0.0000008	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	56.0	56.5	0.832%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.16 µg/L	0.00016	0.000001	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00072	0.00075	0.00003	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.047	0.052	0.005	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000054	0.000060	0.000006	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0069	0.0069	0.000006	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	21.1	20.9	0.942%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00322	0.00322	0.0975%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00134	0.00131	1.82%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00200	0.00200	0.000001	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.718	0.724	0.936%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	3.58 µg/L	0.00358	0.104%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.26	2.34	3.21%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	3.73	3.54	5.25%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 357479) - continued</b>											
CG2106090-001	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	0.144	0.137	4.65%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	28.1	28.7	2.23%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00101	0.00133	0.00032	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00109	0.00109	0.210%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0040	0.0060	0.0020	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 357508)</b>											
CG2106090-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00015	0.00014	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 357509)</b>											
CG2106090-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0032	0.0036	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00018	0.00018	0.000002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0768	0.0788	2.55%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0156 µg/L	0.0000167	0.0000011	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	50.8	50.4	0.775%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.12 µg/L	0.00013	0.00001	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00025	0.00026	0.000008	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0067	0.0067	0.000009	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	19.8	19.4	1.69%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00192	0.00190	1.19%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00129	0.00130	0.817%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00185	0.00185	0.000003	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.700	0.697	0.407%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	3.88 µg/L	0.00366	5.80%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.43	2.32	4.52%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.63	3.59	0.997%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.130	0.130	0.230%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 357509) - continued</b>											
CG2106090-001	Anonymous	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	26.7	26.4	1.36%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00105	0.00107	2.67%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0014	0.0016	0.0003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 358804)</b>											
CG2106102-001	LCA SPO Shallow	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 354666)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 356182)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 356185)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 356242)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	2.0	----
<b>Physical Tests (QCLot: 356752)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 356753)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 354695)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 354696)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 354697)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 354698)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 354699)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 354700)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 354847)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 355116)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 356856)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 357637)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 357637) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 355459)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 355460)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 357478)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 357479)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 357479) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 357508)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 357509)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 357509) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 358804)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 354666)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 356182)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.1	85.0	115	---
<b>Physical Tests (QCLot: 356185)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 356242)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 356751)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 356752)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	---
<b>Physical Tests (QCLot: 356753)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 359166)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 354695)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 354696)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 354697)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.5	85.0	115	---
<b>Anions and Nutrients (QCLot: 354698)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 354699)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 354700)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 354847)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	97.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 355116)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	90.6	80.0	120	---
<b>Anions and Nutrients (QCLot: 356856)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 356856) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Anions and Nutrients (QCLot: 357637)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	96.9	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 355459)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.1	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 355460)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Total Metals (QCLot: 357478)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
<b>Total Metals (QCLot: 357479)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	109	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	96.1	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	97.2	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.8	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	96.8	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	99.2	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	91.0	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 357479) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	92.6	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	105	80.0	120	----
<b>Dissolved Metals (QCLot: 357508)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	95.0	80.0	120	----
<b>Dissolved Metals (QCLot: 357509)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.0	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	112	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	93.1	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.7	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.1	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	95.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.3	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.9	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	110	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	94.2	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	98.4	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	106	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.4	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 357509) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.0	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	96.1	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.1	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 354695)</b>										
CG2106099-003	Anonymous	fluoride	16984-48-8	E235.F	1.08 mg/L	1 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 354696)</b>										
CG2106099-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 354697)</b>										
CG2106099-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.541 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 354698)</b>										
CG2106099-003	Anonymous	chloride	16887-00-6	E235.Cl-L	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 354699)</b>										
CG2106099-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.76 mg/L	2.5 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 354700)</b>										
CG2106099-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.539 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 354847)</b>										
CG2106099-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0510 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 355116)</b>										
CG2106090-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0562 mg/L	0.0676 mg/L	83.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 356856)</b>										
CG2106099-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 357637)</b>										
CG2106099-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.51 mg/L	2.5 mg/L	100	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 355459)</b>										
CG2106098-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.5 mg/L	23.9 mg/L	94.0	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 355460)</b>										
CG2106098-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.8 mg/L	23.9 mg/L	95.2	70.0	130	----
<b>Total Metals (QCLot: 357478)</b>										
CG2106090-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
<b>Total Metals (QCLot: 357479)</b>										
CG2106090-002	Anonymous	aluminum, total	7429-90-5	E420	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		antimony, total	7440-36-0	E420	0.0214 mg/L	0.02 mg/L	107	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 357479) - continued</b>										
CG2106090-002	Anonymous	arsenic, total	7440-38-2	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00970 mg/L	0.01 mg/L	97.0	70.0	130	----
		boron, total	7440-42-8	E420	0.095 mg/L	0.1 mg/L	95.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00400 mg/L	0.004 mg/L	99.9	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		iron, total	7439-89-6	E420	1.94 mg/L	2 mg/L	97.0	70.0	130	----
		lead, total	7439-92-1	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.121 mg/L	0.1 mg/L	121	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, total	7440-02-0	E420	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		potassium, total	7440-09-7	E420	3.97 mg/L	4 mg/L	99.3	70.0	130	----
		selenium, total	7782-49-2	E420	0.0425 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, total	7440-21-3	E420	9.16 mg/L	10 mg/L	91.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00417 mg/L	0.004 mg/L	104	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, total	7440-32-6	E420	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		uranium, total	7440-61-1	E420	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		vanadium, total	7440-62-2	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, total	7440-66-6	E420	0.389 mg/L	0.4 mg/L	97.3	70.0	130	----
<b>Dissolved Metals (QCLot: 357508)</b>										
CG2106090-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
<b>Dissolved Metals (QCLot: 357509)</b>										
CG2106090-002	Anonymous	zinc, dissolved	7440-66-6	E421	0.383 mg/L	0.4 mg/L	95.7	70.0	130	----
CG2106090-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.195 mg/L	0.2 mg/L	97.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 357509) - continued</b>										
CG2106090-002	Anonymous	barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00807 mg/L	0.01 mg/L	80.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.111 mg/L	0.1 mg/L	111	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00395 mg/L	0.004 mg/L	98.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0185 mg/L	0.02 mg/L	92.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.93 mg/L	2 mg/L	96.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0955 mg/L	0.1 mg/L	95.5	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0376 mg/L	0.04 mg/L	94.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.82 mg/L	4 mg/L	95.5	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0441 mg/L	0.04 mg/L	110	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.60 mg/L	10 mg/L	86.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00384 mg/L	0.004 mg/L	95.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00369 mg/L	0.004 mg/L	92.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00376 mg/L	0.004 mg/L	94.1	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0958 mg/L	0.1 mg/L	95.8	70.0	130	----
<b>Dissolved Metals (QCLot: 358804)</b>										
CG2106102-002	LCB SPO Deep	mercury, dissolved	7439-97-6	E509	0.0000974 mg/L	0.0001 mg/L	97.4	70.0	130	----



# Teck

COC ID: LC GW 20211126

TURNAROUND TIME:

RUSH:

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery	Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	x	x
Email	tom.jeffery@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	x	x
Address	Box 2003	Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x
	15km North Hwy 43					Email 4:	Shanise.fossen@teck.com	x	x
	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	tanya.dick@teck.com
	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930
				Phone Number	403 407 1794				

Environmental Division  
Calgary  
Work Order Reference  
**CG2106102**



Telephone : +1 403 407 1800

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED									
								FIL	F	N	F	F	N	N			
								PRESERV.	H2SO4	NAHSO4	H2SO4	HCL	HCL	HNO3	HNO3	NONE	
								ANALYSIS	ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	
LCA SPO Shallow	RG_MW_LCA	WG	N	11/26/2021	12:05	G	6		1		1	1		1	1	1	
LCB SPO Deep	RG_MW_LCB	WG	N	11/26/2021	11:00	G	6		1		1	1		1	1	1	

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

	T. Dick	26-Nov	<i>[Signature]</i>	11/27/21 9:20 AM
--	---------	--------	--------------------	---------------------

**SERVICE REQUEST (rush - subject to availability)**

Regular (default)	X	Sampler's Name	T. Dick	Mobile #	
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time	November 26, 2021
Emergency (1 Business Day) - 100% surcharge					
For Emergency < 1 Day, ASAP or Weekend - Contact ALS					

GTC





## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2106215**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : DC GW 20211130  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 01-Dec-2021 08:50  
**Date Analysis Commenced** : 01-Dec-2021  
**Issue Date** : 20-Dec-2021 10:37

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID	LC_DC1A_WG_ Q4-2021_NP	LC_DC1B_WG_ Q4-2021_NP	----	----	----
(Matrix: Water)					Client sampling date / time	30-Nov-2021 12:15	30-Nov-2021 12:35	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106215-001 Result	CG2106215-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	217	217	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	265	265	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	265	265	----	----	----	
conductivity	----	E100	2.0	µS/cm	435	423	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	238	225	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	409	409	----	----	----	
pH	----	E108	0.10	pH units	7.97	7.87	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	247	236	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	4.4	1.5	----	----	----	
turbidity	----	E121	0.10	NTU	14.7	28.8	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.103	0.107	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050 <sup>RRV</sup>	<0.050 <sup>RRV</sup>	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.19 <sup>RRV</sup>	0.18 <sup>RRV</sup>	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.323 <sup>RRV</sup>	0.341 <sup>RRV</sup>	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.137	0.136	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050 <sup>RRV</sup>	<0.0050 <sup>RRV</sup>	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010 <sup>RRV</sup>	<0.0010 <sup>RRV</sup>	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0075	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	2.07 <sup>RRV</sup>	2.84 <sup>RRV</sup>	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.84	1.36	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.68	1.12	----	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_DC1A_WG_ Q4-2021_NP	LC_DC1B_WG_ Q4-2021_NP	---	---	---
Client sampling date / time					30-Nov-2021 12:15	30-Nov-2021 12:35	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2106215-001	CG2106215-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	5.36	5.38	---	---	---	
cation sum	---	EC101	0.10	meq/L	5.02	4.79	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	93.6	89.0	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	3.28	5.80	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0360	<0.0030	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00219	0.00268	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.433	0.476	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	0.027	0.025	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0288	<0.0050	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	63.9	60.2	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.87	0.89	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	1.48	2.11	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000123	<0.000050	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0122	0.0160	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	24.8	24.8	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0768	0.0627	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00693	0.00649	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00135	0.00125	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	2.44	2.64	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	<0.050	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	5.24	4.98	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, total	7440-23-5	E420	0.050	mg/L	3.79	3.60	---	---	---	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.152	0.126	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	0.89	1.17	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_DC1A_WG_ Q4-2021_NP	LC_DC1B_WG_ Q4-2021_NP	----	----	----
Client sampling date / time					30-Nov-2021 12:15	30-Nov-2021 12:35	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2106215-001 Result	CG2106215-002 Result	-----	-----	-----	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000016	0.000020	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00060 <sup>DLM</sup>	<0.00030	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000237	0.000138	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0013	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00215	0.00269	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.427	0.490	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.024	0.026	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	54.4	50.9	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.83	0.89	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00219 <sup>DTC</sup>	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	1.37	1.93	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0125	0.0163	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	24.7	23.8	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0741	0.0605	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00598	0.00562	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00165	0.00178	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.56	2.75	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.03	4.96	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	LC_DC1A_WG_ Q4-2021_NP	LC_DC1B_WG_ Q4-2021_NP	----	----	----
Client sampling date / time					30-Nov-2021 12:15	30-Nov-2021 12:35	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106215-001	CG2106215-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	7440-23-5	E421	0.050	mg/L	3.43	3.25	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.136	0.118	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.71	0.97	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	0.000017	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000187	0.000108	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0010	0.0043 <sup>DTC</sup>	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106215</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 01-Dec-2021 08:50
PO	: VPO00739930	Issue Date	: 20-Dec-2021 10:38
C-O-C number	: DC GW 20211130		
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_DC1A_WG_Q4-2021_NP	E298	30-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> LC_DC1B_WG_Q4-2021_NP	E298	30-Nov-2021	01-Dec-2021	----	----		01-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_DC1A_WG_Q4-2021_NP	E235.Br-L	30-Nov-2021	----	----	----		01-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_DC1B_WG_Q4-2021_NP	E235.Br-L	30-Nov-2021	----	----	----		01-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_DC1A_WG_Q4-2021_NP	E235.Cl-L	30-Nov-2021	----	----	----		01-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> LC_DC1B_WG_Q4-2021_NP	E235.Cl-L	30-Nov-2021	----	----	----		01-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> LC_DC1A_WG_Q4-2021_NP	E378-U	30-Nov-2021	----	----	----		01-Dec-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE LC_DC1B_WG_Q4-2021_NP	E378-U	30-Nov-2021	----	----	----		01-Dec-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_DC1A_WG_Q4-2021_NP	E235.F	30-Nov-2021	----	----	----		01-Dec-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE LC_DC1B_WG_Q4-2021_NP	E235.F	30-Nov-2021	----	----	----		01-Dec-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_DC1A_WG_Q4-2021_NP	E235.NO3-L	30-Nov-2021	----	----	----		01-Dec-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE LC_DC1B_WG_Q4-2021_NP	E235.NO3-L	30-Nov-2021	----	----	----		01-Dec-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_DC1A_WG_Q4-2021_NP	E235.NO2-L	30-Nov-2021	----	----	----		01-Dec-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE LC_DC1B_WG_Q4-2021_NP	E235.NO2-L	30-Nov-2021	----	----	----		01-Dec-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_DC1A_WG_Q4-2021_NP	E235.SO4	30-Nov-2021	----	----	----		01-Dec-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE LC_DC1B_WG_Q4-2021_NP	E235.SO4	30-Nov-2021	----	----	----		01-Dec-2021	28 days	1 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_DC1A_WG_Q4-2021_NP	E318	30-Nov-2021	03-Dec-2021	----	----		06-Dec-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_DC1B_WG_Q4-2021_NP	E318	30-Nov-2021	03-Dec-2021	----	----		06-Dec-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_DC1A_WG_Q4-2021_NP	E372-U	30-Nov-2021	07-Dec-2021	----	----		07-Dec-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_DC1B_WG_Q4-2021_NP	E372-U	30-Nov-2021	07-Dec-2021	----	----		07-Dec-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_DC1A_WG_Q4-2021_NP	E421.Cr-L	30-Nov-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> LC_DC1B_WG_Q4-2021_NP	E421.Cr-L	30-Nov-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_DC1A_WG_Q4-2021_NP	E509	30-Nov-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> LC_DC1B_WG_Q4-2021_NP	E509	30-Nov-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_DC1A_WG_Q4-2021_NP	E421	30-Nov-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> LC_DC1B_WG_Q4-2021_NP	E421	30-Nov-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_DC1A_WG_Q4-2021_NP	E358-L	30-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> LC_DC1B_WG_Q4-2021_NP	E358-L	30-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_DC1A_WG_Q4-2021_NP	E355-L	30-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> LC_DC1B_WG_Q4-2021_NP	E355-L	30-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	28 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_DC1A_WG_Q4-2021_NP	E283	30-Nov-2021	----	----	----		01-Dec-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> LC_DC1B_WG_Q4-2021_NP	E283	30-Nov-2021	----	----	----		01-Dec-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_DC1A_WG_Q4-2021_NP	E290	30-Nov-2021	----	----	----		02-Dec-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> LC_DC1B_WG_Q4-2021_NP	E290	30-Nov-2021	----	----	----		02-Dec-2021	14 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_DC1A_WG_Q4-2021_NP	E100	30-Nov-2021	----	----	----		02-Dec-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE LC_DC1B_WG_Q4-2021_NP	E100	30-Nov-2021	----	----	----		02-Dec-2021	28 days	2 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_DC1B_WG_Q4-2021_NP	E125	30-Nov-2021	----	----	----		08-Dec-2021	0.25 hrs	189 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE LC_DC1A_WG_Q4-2021_NP	E125	30-Nov-2021	----	----	----		08-Dec-2021	0.25 hrs	190 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_DC1A_WG_Q4-2021_NP	E108	30-Nov-2021	----	----	----		02-Dec-2021	0.25 hrs	46 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE LC_DC1B_WG_Q4-2021_NP	E108	30-Nov-2021	----	----	----		02-Dec-2021	0.25 hrs	46 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_DC1A_WG_Q4-2021_NP	E162	30-Nov-2021	----	----	----		05-Dec-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE LC_DC1B_WG_Q4-2021_NP	E162	30-Nov-2021	----	----	----		05-Dec-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] LC_DC1A_WG_Q4-2021_NP	E160-L	30-Nov-2021	----	----	----		05-Dec-2021	7 days	5 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation			Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> LC_DC1B_WG_Q4-2021_NP	E160-L	30-Nov-2021	----	----	----		05-Dec-2021	7 days	5 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_DC1A_WG_Q4-2021_NP	E121	30-Nov-2021	----	----	----		02-Dec-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> LC_DC1B_WG_Q4-2021_NP	E121	30-Nov-2021	----	----	----		02-Dec-2021	3 days	2 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_DC1A_WG_Q4-2021_NP	E420.Cr-L	30-Nov-2021	----	----	----		06-Dec-2021	180 days	6 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> LC_DC1B_WG_Q4-2021_NP	E420.Cr-L	30-Nov-2021	----	----	----		06-Dec-2021	180 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_DC1A_WG_Q4-2021_NP	E420	30-Nov-2021	----	----	----		06-Dec-2021	180 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> LC_DC1B_WG_Q4-2021_NP	E420	30-Nov-2021	----	----	----		06-Dec-2021	180 days	6 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	357171	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	357731	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	357265	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	357296	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	357297	1	18	5.5	5.0	✓
Conductivity in Water	E100	357730	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	360897	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	362773	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	360898	2	19	10.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	357111	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	356961	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	357295	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	357298	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	357299	1	18	5.5	5.0	✓
ORP by Electrode	E125	361155	1	20	5.0	5.0	✓
pH by Meter	E108	357729	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	357300	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	358038	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	360293	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	359296	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	360292	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	357112	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	357023	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	357734	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	357171	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	357731	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	357265	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	357296	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	357297	1	18	5.5	5.0	✓
Conductivity in Water	E100	357730	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	360897	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	362773	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	360898	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	357111	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	356961	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	357295	1	18	5.5	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	357298	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	357299	1	18	5.5	5.0	✓
ORP by Electrode	E125	361155	1	20	5.0	5.0	✓
pH by Meter	E108	357729	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	357300	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	358038	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	360293	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	359296	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	360292	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	357112	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	357023	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	358034	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	357734	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	357171	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	357731	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	357265	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	357296	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	357297	1	18	5.5	5.0	✓
Conductivity in Water	E100	357730	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	360897	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	362773	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	360898	2	19	10.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	357111	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	356961	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	357295	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	357298	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	357299	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	357300	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	358038	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	360293	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	359296	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	360292	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	357112	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	357023	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	358034	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	357734	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	357265	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	357296	1	18	5.5	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	357297	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	360897	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	362773	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	360898	2	19	10.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	357111	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	356961	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	357295	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	357298	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	357299	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	357300	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	360293	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	359296	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	360292	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	357112	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	357023	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2106215**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : DC GW 20211130  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 01-Dec-2021 08:50  
**Date Analysis Commenced** : 01-Dec-2021  
**Issue Date** : 20-Dec-2021 10:37

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
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Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 17  
Work Order : CG2106215  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 357171)</b>											
CG2106210-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	8.4	6.7	1.6	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 357729)</b>											
CG2106210-001	Anonymous	pH	----	E108	0.10	pH units	7.76	7.72	0.517%	4%	----
<b>Physical Tests (QC Lot: 357730)</b>											
CG2106210-004	Anonymous	conductivity	----	E100	2.0	µS/cm	1460	1470	0.821%	10%	----
<b>Physical Tests (QC Lot: 357731)</b>											
CG2106210-004	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	272	275	1.29%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	332	336	1.29%	20%	----
<b>Physical Tests (QC Lot: 357734)</b>											
CG2106186-001	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 358038)</b>											
CG2106210-005	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1150	1230	6.55%	20%	----
<b>Physical Tests (QC Lot: 361155)</b>											
CG2106210-005	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	447	445	0.493%	15%	----
<b>Anions and Nutrients (QC Lot: 356961)</b>											
CG2106208-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0036	0.0033	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357023)</b>											
CG2106210-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0265	0.0294	10.4%	20%	----
<b>Anions and Nutrients (QC Lot: 357265)</b>											
CG2106205-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0097	<0.0050	0.0047	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357295)</b>											
CG2106208-002	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.189	0.182	0.006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357296)</b>											
CG2106208-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357297)</b>											
CG2106208-002	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	3.47	3.38	0.10	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357298)</b>											
CG2106208-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	3.54	3.46	2.24%	20%	----
<b>Anions and Nutrients (QC Lot: 357299)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 357299) - continued</b>											
CG2106208-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0568	0.0577	1.57%	20%	----
<b>Anions and Nutrients (QC Lot: 357300)</b>											
CG2106208-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	426	419	1.69%	20%	----
<b>Anions and Nutrients (QC Lot: 359296)</b>											
CG2106184-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 357111)</b>											
CG2106210-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.81	0.70	0.10	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 357112)</b>											
CG2106210-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.46	2.82	0.35	Diff <2x LOR	----
<b>Total Metals (QC Lot: 360292)</b>											
CG2106210-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.454	0.492	7.99%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00062	0.00058	0.00004	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00066	0.00070	0.00005	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0495	0.0494	0.218%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	0.043 µg/L	0.000053	0.000010	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	0.000081	0.000031	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.025	0.027	0.002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.182 µg/L	0.000181	0.554%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	86.6	91.5	5.46%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.45 µg/L	0.00045	0.000005	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00273	0.00274	0.00001	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.394	0.404	2.51%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000833	0.000836	0.418%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0086	0.0090	0.0004	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	45.3	44.5	1.59%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.253	0.250	1.18%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00339	0.00343	1.42%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00174	0.00165	0.00009	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.25	1.26	0.393%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	16.3 µg/L	0.0170	4.21%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	5.20	5.25	0.983%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000018	0.000011	0.000007	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	5.72	5.58	2.40%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.288	0.290	0.345%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	59.3	58.0	2.26%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 360292) - continued</b>											
CG2106210-001	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	0.000033	0.000034	0.0000005	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.000010	mg/L	0.00025	0.00028	0.00003	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00659	0.00669	1.48%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00276	0.00279	0.962%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00099	0.00104	0.00005	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0061	0.0060	0.00010	Diff <2x LOR	----
<b>Total Metals (QC Lot: 360293)</b>											
CG2106210-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00062	0.00063	0.000003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 360897)</b>											
CG2106213-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00018	0.00018	0.000003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 360898)</b>											
CG2106213-001	Anonymous	copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
CG2106213-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0019	0.0018	0.00004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	0.00010	0.000003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0586	0.0578	1.34%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0057 µg/L	0.0000054	0.0000003	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	40.3	40.5	0.461%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0029	0.0029	0.00005	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	11.8	11.6	2.02%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00062	0.00061	0.000004	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000504	0.000491	0.000013	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.365	0.354	0.010	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.563 µg/L	0.000563	0.0647%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.04	2.04	0.510%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	1.27	1.22	4.34%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0976	0.0968	0.838%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 360898) - continued</b>											
CG2106213-001	Anonymous	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	5.42	5.46	0.654%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000458	0.000464	1.19%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 362773)</b>											
CG2106210-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 357171)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	2.1	----
<b>Physical Tests (QCLot: 357730)</b>						
conductivity	----	E100	1	µS/cm	1.1	----
<b>Physical Tests (QCLot: 357731)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 357734)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 358034)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 358038)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 356961)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 357023)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 357265)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 357295)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 357296)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 357297)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 357298)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 357299)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 357300)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 359296)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 359296) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 357111)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 357112)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 360292)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 360292) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 360293)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 360897)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	MBRR
<b>Dissolved Metals (QCLot: 360898)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	MBRR
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 360898) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 362773)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

**Qualifiers**

Qualifier	Description
MBRR	Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 357171)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	108	85.0	115	---
<b>Physical Tests (QCLot: 357729)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 357730)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.4	90.0	110	---
<b>Physical Tests (QCLot: 357731)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 357734)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	105	85.0	115	---
<b>Physical Tests (QCLot: 358034)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	95.8	85.0	115	---
<b>Physical Tests (QCLot: 358038)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	91.7	85.0	115	---
<b>Physical Tests (QCLot: 361155)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 356961)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	93.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 357023)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	94.6	80.0	120	---
<b>Anions and Nutrients (QCLot: 357265)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	85.0	85.0	115	---
<b>Anions and Nutrients (QCLot: 357295)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.7	90.0	110	---
<b>Anions and Nutrients (QCLot: 357296)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	91.9	85.0	115	---
<b>Anions and Nutrients (QCLot: 357297)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 357298)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 357299)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 357300)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 357300) - continued</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 359296)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	122	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 357111)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	92.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 357112)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	98.7	80.0	120	----
<b>Total Metals (QCLot: 360292)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	96.7	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	94.2	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	94.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.5	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	97.7	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.4	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	94.6	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	88.8	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.2	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	99.8	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	98.6	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.2	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	97.0	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	89.1	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.9	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 360292) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	98.3	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	110	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.6	80.0	120	----
<b>Total Metals (QCLot: 360293)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
<b>Dissolved Metals (QCLot: 360897)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
<b>Dissolved Metals (QCLot: 360898)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.9	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.8	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.5	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.1	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	93.1	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.8	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.5	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	92.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.6	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	86.6	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	94.4	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.6	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	93.0	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.1	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.6	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 360898) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	93.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.1	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.0	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 356961)</b>										
CG2106210-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0504 mg/L	0.05 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 357023)</b>										
CG2106210-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0674 mg/L	0.0676 mg/L	99.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 357265)</b>										
CG2106205-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 357295)</b>										
CG2106210-006	Anonymous	fluoride	16984-48-8	E235.F	0.959 mg/L	1 mg/L	95.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 357296)</b>										
CG2106210-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.412 mg/L	0.5 mg/L	82.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 357297)</b>										
CG2106210-006	Anonymous	chloride	16887-00-6	E235.Cl-L	96.7 mg/L	100 mg/L	96.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 357298)</b>										
CG2106210-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.41 mg/L	2.5 mg/L	96.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 357299)</b>										
CG2106210-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.469 mg/L	0.5 mg/L	93.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 357300)</b>										
CG2106210-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	94.7 mg/L	100 mg/L	94.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 359296)</b>										
CG2106184-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.61 mg/L	2.5 mg/L	104	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 357111)</b>										
CG2106210-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.9 mg/L	23.9 mg/L	100	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 357112)</b>										
CG2106210-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.3 mg/L	23.9 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 360292)</b>										
CG2106210-002	Anonymous	aluminum, total	7429-90-5	E420	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		antimony, total	7440-36-0	E420	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 360292) - continued</b>										
CG2106210-002	Anonymous	beryllium, total	7440-41-7	E420	0.0380 mg/L	0.04 mg/L	95.0	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00952 mg/L	0.01 mg/L	95.2	70.0	130	----
		boron, total	7440-42-8	E420	0.097 mg/L	0.1 mg/L	97.1	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00400 mg/L	0.004 mg/L	99.9	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		copper, total	7440-50-8	E420	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		iron, total	7439-89-6	E420	1.99 mg/L	2 mg/L	99.4	70.0	130	----
		lead, total	7439-92-1	E420	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	----
		lithium, total	7439-93-2	E420	0.0915 mg/L	0.1 mg/L	91.5	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		nickel, total	7440-02-0	E420	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----
		potassium, total	7440-09-7	E420	4.07 mg/L	4 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.14 mg/L	10 mg/L	91.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00367 mg/L	0.004 mg/L	91.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, total	7440-66-6	E420	0.392 mg/L	0.4 mg/L	97.9	70.0	130	----
<b>Total Metals (QCLot: 360293)</b>										
CG2106210-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 360897)</b>										
CG2106215-002	LC_DC1B_WG_Q4-2021_N P	chromium, dissolved	7440-47-3	E421.Cr-L	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
<b>Dissolved Metals (QCLot: 360898)</b>										
CG2106215-002	LC_DC1B_WG_Q4-2021_N P	copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	92.3	70.0	130	----
CG2106215-002	LC_DC1B_WG_Q4-2021_N P	aluminum, dissolved	7429-90-5	E421	0.192 mg/L	0.2 mg/L	96.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----



Sub-Matrix: **Water**

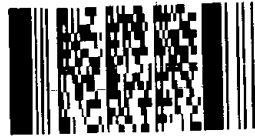
					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 360898) - continued</b>										
CG2106215-002	LC_DC1B_WG_Q4-2021_N P	arsenic, dissolved	7440-38-2	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00829 mg/L	0.01 mg/L	82.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.098 mg/L	0.1 mg/L	97.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00391 mg/L	0.004 mg/L	97.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0188 mg/L	0.02 mg/L	94.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.82 mg/L	2 mg/L	91.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0177 mg/L	0.02 mg/L	88.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0936 mg/L	0.1 mg/L	93.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0176 mg/L	0.02 mg/L	88.2	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0364 mg/L	0.04 mg/L	91.1	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.54 mg/L	4 mg/L	88.5	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0410 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.16 mg/L	10 mg/L	91.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00349 mg/L	0.004 mg/L	87.2	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
sulfur, dissolved	7704-34-9	E421	21.6 mg/L	20 mg/L	108	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00343 mg/L	0.004 mg/L	85.7	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0174 mg/L	0.02 mg/L	87.1	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00359 mg/L	0.004 mg/L	89.8	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.0997 mg/L	0.1 mg/L	99.7	70.0	130	----		
<b>Dissolved Metals (QCLot: 362773)</b>										
CG2106210-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----

COC ID: **DC GW 20211130**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	x	x
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.c		x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.co	x	x
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	x	x
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	tanya.dick@teck.com	x	x
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930		
Phone Number	250-425-8478			Phone Number	403 407 1794						

**Environmental Division**

Calgary  
Work Order Reference  
**CG2106215**



Telephone : - 1 403 407 1800

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED									
								ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET/HG-T-CL	TECKCOAL-ROUTINE-VA		
EC_DC1A WG_Q4-2021_NP	RG_MW_DC1A	WG	N	11/30/2021	12:15	G	6	1	1	1	1	1	1	1	1		
EC_DC1B WG_Q4-2021_NP	RG_MW_DC1B	WG	N	11/30/2021	12:35	G	6	1	1	1	1	1	1	1	1		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS      RELINQUISHED BY/AFFILIATION      DATE/TIME      ACCEPTED BY/AFFILIATION      DATE/TIME

	S. Fossen	30-Nov	<i>[Signature]</i>	12/1 8:50
--	-----------	--------	--------------------	-----------

**SERVICE REQUEST (rush - subject to availability)**

Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	S. Fossen	Mobile #	
				Sampler's Signature	<i>[Signature]</i>	Date/Time	November 30, 2021



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2106275**  
**Client** : **Teck Coal Limited**  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
 Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : LC GW 20211201  
**Sampler** : S.FOSSEN  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 02-Dec-2021 09:04  
**Date Analysis Commenced** : 02-Dec-2021  
**Issue Date** : 14-Dec-2021 18:21

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.





## Analytical Results

Sub-Matrix: Water					Client sample ID	CCR SPO SHALLOW	CCR SPO DEEP	----	----	----
(Matrix: Water)					Client sampling date / time	01-Dec-2021 14:15	01-Dec-2021 13:15	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106275-001 Result	CG2106275-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	3.9	3.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	238	222	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	290	271	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	238	222	----	----	----	
conductivity	----	E100	2.0	µS/cm	805	773	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	407	399	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	452	429	----	----	----	
pH	----	E108	0.10	pH units	7.87	7.88	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	528	501	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	19.5	4.1	----	----	----	
turbidity	----	E121	0.10	NTU	28.0	3.65	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0269	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.56	4.24	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.196	0.200	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.311 <sup>TKNI</sup>	0.140 <sup>TKNI</sup>	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	10.3 <sup>TKNI</sup>	10.1 <sup>TKNI</sup>	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0023	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0021	0.0014	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0161	0.0098	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	195	189	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	0.69	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.53	1.06	----	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CCR SPO SHALLOW	CCR SPO DEEP	----	----	----
Client sampling date / time					01-Dec-2021 14:15	01-Dec-2021 13:15	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106275-001	CG2106275-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.69	9.22	----	----	----	
cation sum	----	EC101	0.10	meq/L	8.32	8.16	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	85.9	88.5	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	7.61	6.10	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.182	0.0398	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	0.00011	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00019	<0.00010	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0947	0.0998	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.012	0.011	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0521	0.0222	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	108	97.2	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00206	0.00026	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	0.16	<0.10	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00058	0.00085	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.162	0.041	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000118	0.000062	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0226	0.0213	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	41.7	40.5	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0123	0.00817	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00398	0.00106	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00107	0.00055	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	1.20	1.13	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	39.8	39.4	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	3.02	2.57	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, total	7440-23-5	E420	0.050	mg/L	3.37	3.40	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.199	0.192	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	69.0	68.7	----	----	----	



## Analytical Results

Sub-Matrix: Water					Client sample ID	CCR SPO SHALLOW	CCR SPO DEEP	----	----	----
(Matrix: Water)					Client sampling date / time	01-Dec-2021 14:15	01-Dec-2021 13:15	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106275-001	CG2106275-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	0.00021	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00563	0.00136	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00196	0.00194	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00082	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0032	0.0023	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0935	0.103	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.010	0.012	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0132	0.0148	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	95.0	92.8	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00157	0.00014	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00030	0.00064	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0201	0.0203	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	41.2	40.6	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00064	0.00495	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00200	0.00105	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00065	<0.00050	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.10	1.14	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	43.2	43.2	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.41	2.36	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CCR SPO SHALLOW	CCR SPO DEEP	----	----	----
Client sampling date / time					01-Dec-2021 14:15	01-Dec-2021 13:15	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106275-001	CG2106275-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	7440-23-5	E421	0.050	mg/L	3.70	3.61	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.191	0.189	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	67.6	65.9	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00187	0.00190	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0012	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106275</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Tom Jeffery	Account Manager	: Lyudmyla Shvets
Address	: PO BOX 2003 15km North Hwy 43 Sparwood BC Canada	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250-433-8467	Telephone	: +1 403 407 1800
Project	: LINE CREEK OPERATION	Date Samples Received	: 02-Dec-2021 09:04
PO	: VPO00739930	Issue Date	: 14-Dec-2021 18:21
C-O-C number	: LC GW 20211201		
Sampler	: S.FOSSEN		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CCR SPO DEEP	E298	01-Dec-2021	03-Dec-2021	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CCR SPO SHALLOW	E298	01-Dec-2021	03-Dec-2021	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CCR SPO DEEP	E235.Br-L	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CCR SPO SHALLOW	E235.Br-L	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CCR SPO DEEP	E235.Cl-L	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CCR SPO SHALLOW	E235.Cl-L	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> CCR SPO DEEP	E378-U	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CCR SPO SHALLOW	E378-U	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CCR SPO DEEP	E235.F	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CCR SPO SHALLOW	E235.F	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CCR SPO DEEP	E235.NO3-L	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CCR SPO SHALLOW	E235.NO3-L	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CCR SPO DEEP	E235.NO2-L	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CCR SPO SHALLOW	E235.NO2-L	01-Dec-2021	----	----	----		02-Dec-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CCR SPO DEEP	E235.SO4	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CCR SPO SHALLOW	E235.SO4	01-Dec-2021	----	----	----		02-Dec-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CCR SPO DEEP	E318	01-Dec-2021	06-Dec-2021	----	----		10-Dec-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CCR SPO SHALLOW	E318	01-Dec-2021	06-Dec-2021	----	----		10-Dec-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CCR SPO DEEP	E372-U	01-Dec-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CCR SPO SHALLOW	E372-U	01-Dec-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CCR SPO DEEP	E421.Cr-L	01-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CCR SPO SHALLOW	E421.Cr-L	01-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CCR SPO DEEP	E509	01-Dec-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CCR SPO SHALLOW	E509	01-Dec-2021	08-Dec-2021	----	----		08-Dec-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CCR SPO DEEP	E421	01-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	6 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CCR SPO SHALLOW	E421	01-Dec-2021	07-Dec-2021	----	----		07-Dec-2021	180 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CCR SPO DEEP	E358-L	01-Dec-2021	02-Dec-2021	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CCR SPO SHALLOW	E358-L	01-Dec-2021	02-Dec-2021	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CCR SPO DEEP	E355-L	01-Dec-2021	02-Dec-2021	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CCR SPO SHALLOW	E355-L	01-Dec-2021	02-Dec-2021	----	----		03-Dec-2021	28 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CCR SPO DEEP	E283	01-Dec-2021	----	----	----		03-Dec-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CCR SPO SHALLOW	E283	01-Dec-2021	----	----	----		03-Dec-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CCR SPO DEEP	E290	01-Dec-2021	----	----	----		03-Dec-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CCR SPO SHALLOW	E290	01-Dec-2021	----	----	----		03-Dec-2021	14 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Conductivity in Water</b>										
HDPE CCR SPO DEEP	E100	01-Dec-2021	----	----	----		03-Dec-2021	28 days	2 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE CCR SPO SHALLOW	E100	01-Dec-2021	----	----	----		03-Dec-2021	28 days	2 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE CCR SPO SHALLOW	E125	01-Dec-2021	----	----	----		07-Dec-2021	0.25 hrs	147 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE CCR SPO DEEP	E125	01-Dec-2021	----	----	----		07-Dec-2021	0.25 hrs	148 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CCR SPO SHALLOW	E108	01-Dec-2021	----	----	----		03-Dec-2021	0.25 hrs	49 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CCR SPO DEEP	E108	01-Dec-2021	----	----	----		03-Dec-2021	0.25 hrs	50 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CCR SPO DEEP	E162	01-Dec-2021	----	----	----		07-Dec-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CCR SPO SHALLOW	E162	01-Dec-2021	----	----	----		07-Dec-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] CCR SPO DEEP	E160-L	01-Dec-2021	----	----	----		06-Dec-2021	7 days	5 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
	Rec	Actual		Rec	Actual					
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> CCR SPO SHALLOW	E160-L	01-Dec-2021	----	----	----		06-Dec-2021	7 days	5 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CCR SPO DEEP	E121	01-Dec-2021	----	----	----		04-Dec-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CCR SPO SHALLOW	E121	01-Dec-2021	----	----	----		04-Dec-2021	3 days	3 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> CCR SPO DEEP	E420.Cr-L	01-Dec-2021	----	----	----		07-Dec-2021	180 days	6 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> CCR SPO SHALLOW	E420.Cr-L	01-Dec-2021	----	----	----		07-Dec-2021	180 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> CCR SPO DEEP	E420	01-Dec-2021	----	----	----		07-Dec-2021	180 days	6 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> CCR SPO SHALLOW	E420	01-Dec-2021	----	----	----		07-Dec-2021	180 days	6 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	358734	1	9	11.1	5.0	✓
Alkalinity Species by Titration	E290	359053	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	358752	1	11	9.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	358265	1	7	14.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	358266	1	7	14.2	5.0	✓
Conductivity in Water	E100	359054	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	360640	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	362773	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	360641	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	358028	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	357940	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	358269	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	358267	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	358268	1	7	14.2	5.0	✓
ORP by Electrode	E125	361759	1	20	5.0	5.0	✓
pH by Meter	E108	359055	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	358264	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	360084	1	16	6.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	360694	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	360751	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	360695	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	358029	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	357949	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	359452	2	29	6.9	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	358734	1	9	11.1	5.0	✓
Alkalinity Species by Titration	E290	359053	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	358752	1	11	9.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	358265	1	7	14.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	358266	1	7	14.2	5.0	✓
Conductivity in Water	E100	359054	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	360640	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	362773	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	360641	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	358028	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	357940	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	358269	1	7	14.2	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	358267	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	358268	1	7	14.2	5.0	✓
ORP by Electrode	E125	361759	1	20	5.0	5.0	✓
pH by Meter	E108	359055	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	358264	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	360084	1	16	6.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	360694	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	360751	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	360695	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	358029	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	357949	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	360081	1	18	5.5	5.0	✓
Turbidity by Nephelometry	E121	359452	2	29	6.9	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	358734	1	9	11.1	5.0	✓
Alkalinity Species by Titration	E290	359053	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	358752	1	11	9.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	358265	1	7	14.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	358266	1	7	14.2	5.0	✓
Conductivity in Water	E100	359054	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	360640	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	362773	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	360641	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	358028	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	357940	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	358269	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	358267	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	358268	1	7	14.2	5.0	✓
Sulfate in Water by IC	E235.SO4	358264	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	360084	1	16	6.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	360694	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	360751	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	360695	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	358029	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	357949	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	360081	1	18	5.5	5.0	✓
Turbidity by Nephelometry	E121	359452	2	29	6.9	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	358752	1	11	9.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	358265	1	7	14.2	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride in Water by IC (Low Level)	E235.Cl-L	358266	1	7	14.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	360640	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	362773	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	360641	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	358028	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	357940	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	358269	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	358267	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	358268	1	7	14.2	5.0	✓
Sulfate in Water by IC	E235.SO4	358264	1	7	14.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	360694	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	360751	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	360695	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	358029	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	357949	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2106275**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Tom Jeffery  
**Address** : PO BOX 2003 15km North Hwy 43  
                   Sparwood BC Canada  
**Telephone** : 250-433-8467  
**Project** : LINE CREEK OPERATION  
**PO** : VPO00739930  
**C-O-C number** : LC GW 20211201  
**Sampler** : S.FOSSEN  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 02-Dec-2021 09:04  
**Date Analysis Commenced** : 02-Dec-2021  
**Issue Date** : 14-Dec-2021 18:21

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 17  
Work Order : CG2106275  
Client : Teck Coal Limited  
Project : LINE CREEK OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 358734)</b>											
CG2106271-003	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 359053)</b>											
CG2106269-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	481	476	0.940%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	481	476	0.940%	20%	----
<b>Physical Tests (QC Lot: 359054)</b>											
CG2106270-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2600	2620	0.766%	10%	----
<b>Physical Tests (QC Lot: 359055)</b>											
CG2106270-001	Anonymous	pH	----	E108	0.10	pH units	7.92	7.93	0.126%	4%	----
<b>Physical Tests (QC Lot: 359452)</b>											
CG2106275-002	CCR SPO DEEP	turbidity	----	E121	0.10	NTU	3.65	3.73	2.22%	15%	----
<b>Physical Tests (QC Lot: 359470)</b>											
CG2106265-017	Anonymous	turbidity	----	E121	0.10	NTU	8.14	8.07	0.864%	15%	----
<b>Physical Tests (QC Lot: 360084)</b>											
CG2106271-003	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	720	735	1.99%	20%	----
<b>Physical Tests (QC Lot: 361759)</b>											
CG2106266-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	434	441	1.60%	15%	----
<b>Anions and Nutrients (QC Lot: 357940)</b>											
CG2106274-010	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0081	0.0081	0.0000003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357949)</b>											
CG2106266-005	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 358264)</b>											
CG2106275-001	CCR SPO SHALLOW	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	195	196	0.0467%	20%	----
<b>Anions and Nutrients (QC Lot: 358265)</b>											
CG2106275-001	CCR SPO SHALLOW	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 358266)</b>											
CG2106275-001	CCR SPO SHALLOW	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.56	4.54	0.560%	20%	----
<b>Anions and Nutrients (QC Lot: 358267)</b>											
CG2106275-001	CCR SPO SHALLOW	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	10.3	10.4	0.170%	20%	----
<b>Anions and Nutrients (QC Lot: 358268)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 358268) - continued</b>											
CG2106275-001	CCR SPO SHALLOW	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 358269)</b>											
CG2106275-001	CCR SPO SHALLOW	fluoride	16984-48-8	E235.F	0.020	mg/L	0.196	0.193	0.003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 358752)</b>											
CG2106275-001	CCR SPO SHALLOW	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 360751)</b>											
CG2106269-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 358028)</b>											
CG2106269-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.72	0.71	0.009	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 358029)</b>											
CG2106269-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.58	0.57	0.01	Diff <2x LOR	----
<b>Total Metals (QC Lot: 360694)</b>											
CG2106269-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 360695)</b>											
CG2106269-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00056	0.00054	0.00001	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0494	0.0491	0.633%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.033	0.032	0.0004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	0.702 µg/L	0.000727	3.45%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	343	338	1.36%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.182	0.175	3.61%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	159	161	1.22%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00165	0.00161	2.58%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.0312	0.0314	0.837%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	5.42	5.41	0.173%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	274 µg/L	0.276	0.983%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	2.29	2.29	0.0296%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 360695) - continued</b>											
CG2106269-001	Anonymous	silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.100	mg/L	7.47	7.61	1.79%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.320	0.311	2.74%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	257	262	1.65%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0132	0.0131	1.07%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.0138	0.0134	0.0004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 360640)</b>											
CG2106269-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 360641)</b>											
CG2106269-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00050	0.00049	0.00001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0459	0.0481	4.67%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.032	0.031	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.684 µg/L	0.000676	1.18%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	321	318	1.05%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.163	0.157	3.47%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	153	153	0.185%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00156	0.00151	3.26%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.0303	0.0308	1.68%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	5.40	5.43	0.562%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	280 µg/L	0.289	3.05%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.14	2.17	1.44%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 360641) - continued</b>											
CG2106269-001	Anonymous	sodium, dissolved	7440-23-5	E421	0.100	mg/L	7.57	7.76	2.50%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.311	0.304	2.31%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	257	257	0.00980%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0131	0.0136	3.65%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0130	0.0133	0.0004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 362773)</b>											
CG2106210-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 358734)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	2.1	----
<b>Physical Tests (QCLot: 359053)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 359054)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 359452)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 359470)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 360081)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 360084)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 357940)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 357949)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 358264)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 358265)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 358266)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 358267)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 358268)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 358269)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 358752)</b>						





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 358752) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 360751)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 358028)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 358029)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 360694)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 360695)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 360695) - continued</b>						
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 360640)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 360641)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Page : 10 of 17  
 Work Order : CG2106275  
 Client : Teck Coal Limited  
 Project : LINE CREEK OPERATION



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 360641) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 362773)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 358734)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	102	85.0	115	----
<b>Physical Tests (QCLot: 359053)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	108	85.0	115	----
<b>Physical Tests (QCLot: 359054)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	----
<b>Physical Tests (QCLot: 359055)</b>									
pH	----	E108	----	pH units	7 pH units	99.0	98.6	101	----
<b>Physical Tests (QCLot: 359452)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	104	85.0	115	----
<b>Physical Tests (QCLot: 359470)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	102	85.0	115	----
<b>Physical Tests (QCLot: 360081)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	93.9	85.0	115	----
<b>Physical Tests (QCLot: 360084)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	90.8	85.0	115	----
<b>Physical Tests (QCLot: 361759)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----
<b>Anions and Nutrients (QCLot: 357940)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	98.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 357949)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	97.3	80.0	120	----
<b>Anions and Nutrients (QCLot: 358264)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 358265)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	96.6	85.0	115	----
<b>Anions and Nutrients (QCLot: 358266)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 358267)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 358268)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 358269)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 358269) - continued</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 358752)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.2	85.0	115	----
<b>Anions and Nutrients (QCLot: 360751)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 358028)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	94.0	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 358029)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Total Metals (QCLot: 360694)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
<b>Total Metals (QCLot: 360695)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	110	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	113	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	111	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	109	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.6	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	106	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	109	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	109	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	110	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	108	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 360695) - continued</b>									
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	111	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	93.0	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	106	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	108	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	120	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	107	80.0	120	----
<b>Dissolved Metals (QCLot: 360640)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
<b>Dissolved Metals (QCLot: 360641)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.9	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.3	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.7	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.2	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.9	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.4	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.8	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 360641) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.0	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 357940)</b>										
CG2106275-001	CCR SPO SHALLOW	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0531 mg/L	0.05 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 357949)</b>										
CG2106266-006	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0530 mg/L	0.0676 mg/L	78.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 358264)</b>										
CG2106275-002	CCR SPO DEEP	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 358265)</b>										
CG2106275-002	CCR SPO DEEP	bromide	24959-67-9	E235.Br-L	0.456 mg/L	0.5 mg/L	91.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 358266)</b>										
CG2106275-002	CCR SPO DEEP	chloride	16887-00-6	E235.Cl-L	97.2 mg/L	100 mg/L	97.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 358267)</b>										
CG2106275-002	CCR SPO DEEP	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 358268)</b>										
CG2106275-002	CCR SPO DEEP	nitrite (as N)	14797-65-0	E235.NO2-L	0.482 mg/L	0.5 mg/L	96.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 358269)</b>										
CG2106275-002	CCR SPO DEEP	fluoride	16984-48-8	E235.F	0.946 mg/L	1 mg/L	94.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 358752)</b>										
CG2106275-002	CCR SPO DEEP	ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 360751)</b>										
CG2106269-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.63 mg/L	2.5 mg/L	105	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 358028)</b>										
CG2106269-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.9 mg/L	23.9 mg/L	99.9	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 358029)</b>										
CG2106269-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.3 mg/L	23.9 mg/L	106	70.0	130	----
<b>Total Metals (QCLot: 360694)</b>										
CG2106269-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0773 mg/L	0.08 mg/L	96.6	70.0	130	----
<b>Total Metals (QCLot: 360695)</b>										
CG2106269-002	Anonymous	aluminum, total	7429-90-5	E420	0.393 mg/L	0.4 mg/L	98.4	70.0	130	----
		antimony, total	7440-36-0	E420	0.0419 mg/L	0.04 mg/L	105	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 360695) - continued</b>										
CG2106269-002	Anonymous	arsenic, total	7440-38-2	E420	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0806 mg/L	0.08 mg/L	101	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0186 mg/L	0.02 mg/L	92.8	70.0	130	----
		boron, total	7440-42-8	E420	0.198 mg/L	0.2 mg/L	99.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00770 mg/L	0.008 mg/L	96.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0368 mg/L	0.04 mg/L	92.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0353 mg/L	0.04 mg/L	88.3	70.0	130	----
		iron, total	7439-89-6	E420	3.99 mg/L	4 mg/L	99.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0368 mg/L	0.04 mg/L	92.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0711 mg/L	0.08 mg/L	88.9	70.0	130	----
		potassium, total	7440-09-7	E420	7.93 mg/L	8 mg/L	99.1	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	19.7 mg/L	20 mg/L	98.7	70.0	130	----
		silver, total	7440-22-4	E420	0.00769 mg/L	0.008 mg/L	96.1	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00744 mg/L	0.008 mg/L	93.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0395 mg/L	0.04 mg/L	98.9	70.0	130	----
		titanium, total	7440-32-6	E420	0.0779 mg/L	0.08 mg/L	97.4	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.727 mg/L	0.8 mg/L	90.8	70.0	130	----
<b>Dissolved Metals (QCLot: 360640)</b>										
CG2106269-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0804 mg/L	0.08 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 360641)</b>										
CG2106269-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.390 mg/L	0.4 mg/L	97.4	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 360641) - continued</b>										
CG2106269-002	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0779 mg/L	0.08 mg/L	97.4	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.188 mg/L	0.2 mg/L	94.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00790 mg/L	0.008 mg/L	98.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.76 mg/L	4 mg/L	94.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0761 mg/L	0.08 mg/L	95.2	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	17.8 mg/L	20 mg/L	88.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00794 mg/L	0.008 mg/L	99.3	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00754 mg/L	0.008 mg/L	94.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0370 mg/L	0.04 mg/L	92.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0777 mg/L	0.08 mg/L	97.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.205 mg/L	0.2 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.767 mg/L	0.8 mg/L	95.8	70.0	130	----
<b>Dissolved Metals (QCLot: 362773)</b>										
CG2106210-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----

# Teck

COC ID: LC GW 20211201

TURNAROUND TIME:

RUSH

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	x	x
Email	tom.jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	x	x
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	tanya.dick@teck.com	x	x
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00739930		
Phone Number	250-425-8478			Phone Number	403 407 1794						

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PRESERV.	ANALYSIS REQUESTED											
									ALS_Package-DOC	ALS_Package-EPH	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	F	N	N	
CCR SPO Shallow	LC_MW_SRDB	WG	N	12/1/2021	14:15	G	6	H2SO4	NAHSO4	H2SO4	HCL	HCL	HNO3	HNO3	NONE					
CCR SPO Deep	LC_MW_SRDA	WG	N	12/1/2021	13:15	G	6													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

	S. Fossen	1-Dec	<i>[Signature]</i>	Dec 01 2021 9:04am
--	-----------	-------	--------------------	-----------------------

SERVICE REQUEST (rush - subject to availability)

Sampler's Name

S. Fossen

Mobile #

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Signature

Date/Time

December 1, 2021

Environmental Division  
Calgary

Work Order Reference

CG2106275





SNC-Lavalin  
ATTN: Kim Harrer  
4500 Mennie Road  
Cranbrook BC V1C 4J6

Date Received: 20-AUG-21  
Report Date: 07-DEC-21 15:34 (MT)  
Version: FINAL REV. 4

Client Phone: 250-421-9408

## Certificate of Analysis

Lab Work Order #: L2629493  
Project P.O. #: 683032  
Job Reference: 683032  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2629493-1 WG 19-AUG-21 11:40 RG_MW_LC4A_W G_2021_08_19_NP	L2629493-2 WG 19-AUG-21 11:45 RG_MW_LC4B_W G_2021_08_19_NP	L2629493-3 WG 19-AUG-21 14:50 LC_MW_SRDB_W G_2021_08_19_NP	L2629493-4 WG 19-AUG-21 14:50 RG_MW_MC11A_ WG_2021_08_19_ NP	L2629493-5 WG 19-AUG-21 17:00 RG_MW_MC11B_ WG_2021_08_19_ NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	577	671	628	628	<2.0
	Hardness (as CaCO3) (mg/L)	302	357	322	330	<0.50
	pH (pH)	7.67	7.77	7.78	7.78	4.29
	ORP (mV)	430	458	377	455	465
	Total Suspended Solids (mg/L)	4.4	7.8	60.9	62.2	<1.0
	Total Dissolved Solids (mg/L)	406	493	447	457	<10
	Turbidity (NTU)	4.93	12.2	29.3	29.3	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.2	<1.0	1.7	1.7	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	169	204	198	199	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	169	204	198	199	<1.0
	Ammonia as N (mg/L)	0.0058	<0.0050	<0.0050	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	206	249	241	242	<5.0
	Bromide (Br) (mg/L)	0.051	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	6.66	7.69	2.35	2.35	<0.10
	Fluoride (F) (mg/L)	0.358	0.200	0.145	0.141	<0.020
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	92.4	90.8	86.7	88.9	0.0
	Nitrate and Nitrite (as N) (mg/L)	2.10	5.23	8.04	8.00	<0.0051
	Nitrate (as N) (mg/L)	2.10	5.23	8.04	8.00	<0.0050
	Nitrite (as N) (mg/L)	0.0020	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.282	0.334 <sup>TKNI</sup>	0.372 <sup>TKNI</sup>	0.336 <sup>TKNI</sup>	0.089
	Total Nitrogen (mg/L)	2.38	5.56	8.41	8.33	0.089
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0093	0.0228	0.0313	0.0298	<0.0020
	Sulfate (SO4) (mg/L)	147	166	143	142	<0.30
	Anion Sum (meq/L)	6.79	8.14	7.58	7.58	<0.10
	Cation Sum (meq/L)	6.27	7.39	6.57	6.73	<0.10
	Cation - Anion Balance (%)	-4.0	-4.8	-7.1	-5.9	0.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.79	0.91	0.67	0.55	<0.50
	Total Organic Carbon (mg/L)	0.93	0.67 <sup>DTC</sup>	0.63	0.67	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0015	0.0022	0.0039	0.0044	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

07-DEC-21 15:34 (MT)

Version: FINAL REV. 4

Sample ID Description Sampled Date Sampled Time Client ID	L2629493-1 WG 19-AUG-21 11:40 RG_MW_LC4A_W G_2021_08_19_NP	L2629493-2 WG 19-AUG-21 11:45 RG_MW_LC4B_W G_2021_08_19_NP	L2629493-3 WG 19-AUG-21 14:50 LC_MW_SRDB_W G_2021_08_19_NP	L2629493-4 WG 19-AUG-21 14:50 RG_MW_MC11A_ WG_2021_08_19_ NP	L2629493-5 WG 19-AUG-21 17:00 RG_MW_MC11B_ WG_2021_08_19_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00018	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00029	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0550	0.0901	0.0686	<0.00010
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.012	0.013	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000140	0.0000220	0.0000113	0.0000131
	Calcium (Ca)-Dissolved (mg/L)	76.0	82.9	74.4	78.1
	Chromium (Cr)-Dissolved (mg/L)	0.00015	0.00013	0.00022	0.00019
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00030	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0215	0.0317	0.0140	0.0146
	Magnesium (Mg)-Dissolved (mg/L)	27.3	36.4	33.1	32.8
	Manganese (Mn)-Dissolved (mg/L)	0.00465	0.00451	0.00258	0.00261
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00166	0.00142	0.000721	0.000718
	Nickel (Ni)-Dissolved (mg/L)	0.00084	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.83	1.08	0.90	0.90
	Selenium (Se)-Dissolved (mg/L)	0.00982	0.0236	0.0322	0.0323
	Silicon (Si)-Dissolved (mg/L)	2.40	2.51	1.98	2.02
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	4.85	5.48	2.62	2.60
	Strontium (Sr)-Dissolved (mg/L)	0.347	0.178	0.131	0.136
	Sulfur (S)-Dissolved (mg/L)	51.1	56.7	47.5	47.2
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.00206	0.00219	0.00134	0.00139
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0012	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2629493-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2629493-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2629493-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2629493-1, -2, -3, -4, -5
Duplicate	Total Kjeldahl Nitrogen	TKND	L2629493-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**P04-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**S04-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C



## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-F-VA** Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 1 of 16

Client: SNC-Lavalin  
 4500 Mennie Road  
 Cranbrook BC V1C 4J6

Contact: Kim Harrer

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571198</b>							
<b>WG3606515-3</b>	<b>DUP</b>	<b>L2629493-1</b>						
Acidity (as CaCO3)		1.2	<1.0	RPD-NA	mg/L	N/A	20	26-AUG-21
<b>WG3606515-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.3		%		85-115	26-AUG-21
<b>WG3606515-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	26-AUG-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5570604</b>							
<b>WG3605703-3</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			107.4		%		85-115	25-AUG-21
<b>WG3605703-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	25-AUG-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-12</b>	<b>DUP</b>	<b>L2629493-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	26-AUG-21
<b>WG3605286-4</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.0		%		80-120	26-AUG-21
<b>WG3605286-5</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			106.3		%		80-120	26-AUG-21
<b>WG3605286-6</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			100.6		%		80-120	26-AUG-21
<b>WG3605286-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-AUG-21
<b>WG3605286-2</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-AUG-21
<b>WG3605286-3</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-AUG-21
<b>WG3605286-11</b>	<b>MS</b>	<b>L2629493-2</b>						
Beryllium (Be)-Dissolved			105.7		%		70-130	26-AUG-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5570604</b>							
<b>WG3605703-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	25-AUG-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 2 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5571119</b>							
<b>WG3606375-3</b>	<b>DUP</b>	<b>L2629493-5</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	19-AUG-21
<b>WG3606375-2</b>	<b>LCS</b>							
Bromide (Br)			98.7		%		85-115	20-AUG-21
<b>WG3606375-6</b>	<b>LCS</b>							
Bromide (Br)			102.5		%		85-115	20-AUG-21
<b>WG3606375-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	20-AUG-21
<b>WG3606375-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	20-AUG-21
<b>WG3606375-4</b>	<b>MS</b>	<b>L2629493-5</b>						
Bromide (Br)			107.2		%		75-125	19-AUG-21
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5567896</b>							
<b>WG3603790-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			93.5		%		80-120	23-AUG-21
<b>WG3603790-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-AUG-21
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5567896</b>							
<b>WG3603790-2</b>	<b>LCS</b>							
Total Organic Carbon			94.8		%		80-120	23-AUG-21
<b>WG3603790-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	23-AUG-21
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5571119</b>							
<b>WG3606375-3</b>	<b>DUP</b>	<b>L2629493-5</b>						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	19-AUG-21
<b>WG3606375-2</b>	<b>LCS</b>							
Chloride (Cl)			99.3		%		85-115	20-AUG-21
<b>WG3606375-6</b>	<b>LCS</b>							
Chloride (Cl)			99.1		%		85-115	20-AUG-21
<b>WG3606375-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	20-AUG-21
<b>WG3606375-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	20-AUG-21
<b>WG3606375-4</b>	<b>MS</b>	<b>L2629493-5</b>						
Chloride (Cl)			103.7		%		75-125	19-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 3 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CO3-CL</b>								
<b>Water</b>								
Batch R5570604								
WG3605703-1 MB								
Carbonate (CO3)								
			<5.0		mg/L		5	25-AUG-21
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch R5570604								
WG3605703-3 LCS								
Conductivity (@ 25C)								
			100.1		%		90-110	25-AUG-21
WG3605703-1 MB								
Conductivity (@ 25C)								
			<2.0		uS/cm		2	25-AUG-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch R5571119								
WG3606375-3 DUP								
Fluoride (F)								
		L2629493-5	<0.020	RPD-NA	mg/L	N/A	20	19-AUG-21
WG3606375-2 LCS								
Fluoride (F)								
			96.2		%		90-110	20-AUG-21
WG3606375-6 LCS								
Fluoride (F)								
			95.3		%		90-110	20-AUG-21
WG3606375-1 MB								
Fluoride (F)								
			<0.020		mg/L		0.02	20-AUG-21
WG3606375-5 MB								
Fluoride (F)								
			<0.020		mg/L		0.02	20-AUG-21
WG3606375-4 MS								
Fluoride (F)								
		L2629493-5	100.8		%		75-125	19-AUG-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
Batch R5571289								
WG3606261-2 LCS								
Mercury (Hg)-Dissolved								
			89.9		%		80-120	28-AUG-21
WG3606261-1 MB								
Mercury (Hg)-Dissolved								
			<0.000005C		mg/L		0.000005	28-AUG-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
Batch R5571167								
WG3605286-12 DUP								
Aluminum (Al)-Dissolved								
		L2629493-1	0.0015		mg/L	16	20	26-AUG-21
Antimony (Sb)-Dissolved								
			<0.00010	RPD-NA	mg/L	N/A	20	26-AUG-21
Arsenic (As)-Dissolved								
			0.00029		mg/L	5.8	20	26-AUG-21
Barium (Ba)-Dissolved								
			0.0550		mg/L	3.7	20	26-AUG-21
Bismuth (Bi)-Dissolved								
			<0.000050	RPD-NA	mg/L	N/A	20	26-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 4 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-12 DUP</b>		<b>L2629493-1</b>						
Boron (B)-Dissolved		0.012	0.010		mg/L	12	20	26-AUG-21
Cadmium (Cd)-Dissolved		0.0000140	0.0000096	J	mg/L	0.000004	0.00001	26-AUG-21
Calcium (Ca)-Dissolved		76.0	66.7		mg/L	13	20	26-AUG-21
Chromium (Cr)-Dissolved		0.00015	0.00013		mg/L	17	20	26-AUG-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-AUG-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	26-AUG-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-AUG-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-AUG-21
Lithium (Li)-Dissolved		0.0215	0.0189		mg/L	13	20	26-AUG-21
Magnesium (Mg)-Dissolved		27.3	26.4		mg/L	3.5	20	26-AUG-21
Manganese (Mn)-Dissolved		0.00465	0.00433		mg/L	7.2	20	26-AUG-21
Molybdenum (Mo)-Dissolved		0.00166	0.00151		mg/L	9.3	20	26-AUG-21
Nickel (Ni)-Dissolved		0.00084	0.00082		mg/L	1.6	20	26-AUG-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	26-AUG-21
Potassium (K)-Dissolved		0.83	0.81		mg/L	3.0	20	26-AUG-21
Selenium (Se)-Dissolved		0.00982	0.00942		mg/L	4.1	20	26-AUG-21
Silicon (Si)-Dissolved		2.40	2.20		mg/L	8.7	20	26-AUG-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-AUG-21
Sodium (Na)-Dissolved		4.85	4.70		mg/L	3.2	20	26-AUG-21
Strontium (Sr)-Dissolved		0.347	0.305		mg/L	13	20	26-AUG-21
Sulfur (S)-Dissolved		51.1	46.6		mg/L	9.2	20	26-AUG-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-AUG-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-AUG-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	26-AUG-21
Uranium (U)-Dissolved		0.00206	0.00190		mg/L	8.0	20	26-AUG-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	26-AUG-21
Zinc (Zn)-Dissolved		0.0012	0.0011		mg/L	7.2	20	26-AUG-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	26-AUG-21
<b>WG3605286-4 LCS</b>								
Aluminum (Al)-Dissolved			97.0		%		80-120	26-AUG-21
Antimony (Sb)-Dissolved			101.7		%		80-120	26-AUG-21
Arsenic (As)-Dissolved			98.1		%		80-120	26-AUG-21
Barium (Ba)-Dissolved			100.4		%		80-120	26-AUG-21
Bismuth (Bi)-Dissolved			87.8		%		80-120	26-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 5 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-4</b>	<b>LCS</b>							
Boron (B)-Dissolved			91.3		%		80-120	26-AUG-21
Cadmium (Cd)-Dissolved			98.7		%		80-120	26-AUG-21
Calcium (Ca)-Dissolved			91.8		%		80-120	26-AUG-21
Chromium (Cr)-Dissolved			92.1		%		80-120	26-AUG-21
Cobalt (Co)-Dissolved			97.1		%		80-120	26-AUG-21
Copper (Cu)-Dissolved			95.1		%		80-120	26-AUG-21
Iron (Fe)-Dissolved			95.0		%		80-120	26-AUG-21
Lead (Pb)-Dissolved			91.9		%		80-120	26-AUG-21
Lithium (Li)-Dissolved			97.0		%		80-120	26-AUG-21
Magnesium (Mg)-Dissolved			101.0		%		80-120	26-AUG-21
Manganese (Mn)-Dissolved			91.3		%		80-120	26-AUG-21
Molybdenum (Mo)-Dissolved			93.6		%		80-120	26-AUG-21
Nickel (Ni)-Dissolved			95.2		%		80-120	26-AUG-21
Phosphorus (P)-Dissolved			95.5		%		70-130	26-AUG-21
Potassium (K)-Dissolved			98.7		%		80-120	26-AUG-21
Selenium (Se)-Dissolved			94.7		%		80-120	26-AUG-21
Silicon (Si)-Dissolved			96.0		%		60-140	26-AUG-21
Silver (Ag)-Dissolved			100.9		%		80-120	26-AUG-21
Sodium (Na)-Dissolved			99.3		%		80-120	26-AUG-21
Strontium (Sr)-Dissolved			91.6		%		80-120	26-AUG-21
Sulfur (S)-Dissolved			102.3		%		80-120	26-AUG-21
Thallium (Tl)-Dissolved			91.7		%		80-120	26-AUG-21
Tin (Sn)-Dissolved			97.8		%		80-120	26-AUG-21
Titanium (Ti)-Dissolved			94.3		%		80-120	26-AUG-21
Uranium (U)-Dissolved			94.8		%		80-120	26-AUG-21
Vanadium (V)-Dissolved			98.4		%		80-120	26-AUG-21
Zinc (Zn)-Dissolved			99.0		%		80-120	26-AUG-21
Zirconium (Zr)-Dissolved			95.3		%		80-120	26-AUG-21
<b>WG3605286-5</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.3		%		80-120	26-AUG-21
Antimony (Sb)-Dissolved			108.6		%		80-120	26-AUG-21
Arsenic (As)-Dissolved			99.7		%		80-120	26-AUG-21
Barium (Ba)-Dissolved			101.5		%		80-120	26-AUG-21
Bismuth (Bi)-Dissolved			100.9		%		80-120	26-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 6 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-5</b>	<b>LCS</b>							
Boron (B)-Dissolved			93.1		%		80-120	26-AUG-21
Cadmium (Cd)-Dissolved			98.6		%		80-120	26-AUG-21
Calcium (Ca)-Dissolved			100.7		%		80-120	26-AUG-21
Chromium (Cr)-Dissolved			95.7		%		80-120	26-AUG-21
Cobalt (Co)-Dissolved			99.5		%		80-120	26-AUG-21
Copper (Cu)-Dissolved			95.9		%		80-120	26-AUG-21
Iron (Fe)-Dissolved			99.7		%		80-120	26-AUG-21
Lead (Pb)-Dissolved			102.0		%		80-120	26-AUG-21
Lithium (Li)-Dissolved			106.3		%		80-120	26-AUG-21
Magnesium (Mg)-Dissolved			100.7		%		80-120	26-AUG-21
Manganese (Mn)-Dissolved			97.3		%		80-120	26-AUG-21
Molybdenum (Mo)-Dissolved			101.7		%		80-120	26-AUG-21
Nickel (Ni)-Dissolved			97.2		%		80-120	26-AUG-21
Phosphorus (P)-Dissolved			93.8		%		70-130	26-AUG-21
Potassium (K)-Dissolved			101.4		%		80-120	26-AUG-21
Selenium (Se)-Dissolved			98.6		%		80-120	26-AUG-21
Silicon (Si)-Dissolved			99.4		%		60-140	26-AUG-21
Silver (Ag)-Dissolved			105.5		%		80-120	26-AUG-21
Sodium (Na)-Dissolved			100.2		%		80-120	26-AUG-21
Strontium (Sr)-Dissolved			100.7		%		80-120	26-AUG-21
Sulfur (S)-Dissolved			103.2		%		80-120	26-AUG-21
Thallium (Tl)-Dissolved			100.7		%		80-120	26-AUG-21
Tin (Sn)-Dissolved			100.8		%		80-120	26-AUG-21
Titanium (Ti)-Dissolved			102.2		%		80-120	26-AUG-21
Uranium (U)-Dissolved			105.2		%		80-120	26-AUG-21
Vanadium (V)-Dissolved			100.5		%		80-120	26-AUG-21
Zinc (Zn)-Dissolved			94.7		%		80-120	26-AUG-21
Zirconium (Zr)-Dissolved			102.7		%		80-120	26-AUG-21
<b>WG3605286-6</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.7		%		80-120	26-AUG-21
Antimony (Sb)-Dissolved			103.7		%		80-120	26-AUG-21
Arsenic (As)-Dissolved			95.4		%		80-120	26-AUG-21
Barium (Ba)-Dissolved			97.7		%		80-120	26-AUG-21
Bismuth (Bi)-Dissolved			95.8		%		80-120	26-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 7 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-6</b>	<b>LCS</b>							
Boron (B)-Dissolved			89.6		%		80-120	26-AUG-21
Cadmium (Cd)-Dissolved			93.3		%		80-120	26-AUG-21
Calcium (Ca)-Dissolved			95.2		%		80-120	26-AUG-21
Chromium (Cr)-Dissolved			93.3		%		80-120	26-AUG-21
Cobalt (Co)-Dissolved			96.5		%		80-120	26-AUG-21
Copper (Cu)-Dissolved			93.6		%		80-120	26-AUG-21
Iron (Fe)-Dissolved			97.4		%		80-120	26-AUG-21
Lead (Pb)-Dissolved			94.6		%		80-120	26-AUG-21
Lithium (Li)-Dissolved			98.8		%		80-120	26-AUG-21
Magnesium (Mg)-Dissolved			95.1		%		80-120	26-AUG-21
Manganese (Mn)-Dissolved			96.1		%		80-120	26-AUG-21
Molybdenum (Mo)-Dissolved			98.2		%		80-120	26-AUG-21
Nickel (Ni)-Dissolved			94.9		%		80-120	26-AUG-21
Phosphorus (P)-Dissolved			99.6		%		70-130	26-AUG-21
Potassium (K)-Dissolved			97.5		%		80-120	26-AUG-21
Selenium (Se)-Dissolved			93.8		%		80-120	26-AUG-21
Silicon (Si)-Dissolved			97.4		%		60-140	26-AUG-21
Silver (Ag)-Dissolved			99.9		%		80-120	26-AUG-21
Sodium (Na)-Dissolved			96.4		%		80-120	26-AUG-21
Strontium (Sr)-Dissolved			95.3		%		80-120	26-AUG-21
Sulfur (S)-Dissolved			91.4		%		80-120	26-AUG-21
Thallium (Tl)-Dissolved			93.9		%		80-120	26-AUG-21
Tin (Sn)-Dissolved			95.0		%		80-120	26-AUG-21
Titanium (Ti)-Dissolved			93.3		%		80-120	26-AUG-21
Uranium (U)-Dissolved			99.0		%		80-120	26-AUG-21
Vanadium (V)-Dissolved			97.1		%		80-120	26-AUG-21
Zinc (Zn)-Dissolved			92.7		%		80-120	26-AUG-21
Zirconium (Zr)-Dissolved			97.7		%		80-120	26-AUG-21
<b>WG3605286-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21





## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 8 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-1 MB</b>								
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-AUG-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-AUG-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-AUG-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-AUG-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	26-AUG-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-AUG-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
<b>WG3605286-2 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 9 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-2 MB</b>								
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-AUG-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-AUG-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-AUG-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-AUG-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	26-AUG-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-AUG-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
<b>WG3605286-3 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 10 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-3</b>	<b>MB</b>							
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-AUG-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-AUG-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-AUG-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-AUG-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-AUG-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	26-AUG-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-AUG-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-AUG-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-21
<b>WG3605286-11</b>	<b>MS</b>	<b>L2629493-2</b>						
Aluminum (Al)-Dissolved			102.9		%		70-130	26-AUG-21
Antimony (Sb)-Dissolved			113.6		%		70-130	26-AUG-21
Arsenic (As)-Dissolved			105.7		%		70-130	26-AUG-21
Barium (Ba)-Dissolved			108.7		%		70-130	26-AUG-21
Bismuth (Bi)-Dissolved			83.7		%		70-130	26-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 11 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5571167</b>							
<b>WG3605286-11 MS</b>		<b>L2629493-2</b>						
Boron (B)-Dissolved			105.0		%		70-130	26-AUG-21
Cadmium (Cd)-Dissolved			109.3		%		70-130	26-AUG-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	26-AUG-21
Chromium (Cr)-Dissolved			98.0		%		70-130	26-AUG-21
Cobalt (Co)-Dissolved			104.6		%		70-130	26-AUG-21
Copper (Cu)-Dissolved			105.6		%		70-130	26-AUG-21
Iron (Fe)-Dissolved			102.5		%		70-130	26-AUG-21
Lead (Pb)-Dissolved			103.3		%		70-130	26-AUG-21
Lithium (Li)-Dissolved			105.7		%		70-130	26-AUG-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	26-AUG-21
Manganese (Mn)-Dissolved			101.0		%		70-130	26-AUG-21
Molybdenum (Mo)-Dissolved			105.5		%		70-130	26-AUG-21
Nickel (Ni)-Dissolved			103.7		%		70-130	26-AUG-21
Phosphorus (P)-Dissolved			101.5		%		70-130	26-AUG-21
Potassium (K)-Dissolved			105.2		%		70-130	26-AUG-21
Selenium (Se)-Dissolved			111.6		%		70-130	26-AUG-21
Silicon (Si)-Dissolved			99.6		%		70-130	26-AUG-21
Silver (Ag)-Dissolved			108.9		%		70-130	26-AUG-21
Sodium (Na)-Dissolved			104.4		%		70-130	26-AUG-21
Strontium (Sr)-Dissolved			110.0		%		70-130	26-AUG-21
Thallium (Tl)-Dissolved			104.8		%		70-130	26-AUG-21
Tin (Sn)-Dissolved			108.5		%		70-130	26-AUG-21
Titanium (Ti)-Dissolved			103.9		%		70-130	26-AUG-21
Uranium (U)-Dissolved			108.7		%		70-130	26-AUG-21
Vanadium (V)-Dissolved			103.1		%		70-130	26-AUG-21
Zinc (Zn)-Dissolved			107.3		%		70-130	26-AUG-21
Zirconium (Zr)-Dissolved			107.3		%		70-130	26-AUG-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5567958</b>							
<b>WG3602941-2 DUP</b>		<b>L2629493-5</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	23-AUG-21
<b>WG3602941-3 LCS</b>								
Ammonia as N			107.7		%		85-115	23-AUG-21
<b>WG3602941-1 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	23-AUG-21



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 12 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch R5567958								
WG3602941-4	MS	L2629493-5	110.3		%		75-125	23-AUG-21
Ammonia as N								
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch R5571119								
WG3606375-3	DUP	L2629493-5	<0.0010	RPD-NA	mg/L	N/A	20	19-AUG-21
Nitrite (as N)								
WG3606375-2	LCS		99.6		%		90-110	20-AUG-21
Nitrite (as N)								
WG3606375-6	LCS		99.4		%		90-110	20-AUG-21
Nitrite (as N)								
WG3606375-1	MB		<0.0010		mg/L		0.001	20-AUG-21
Nitrite (as N)								
WG3606375-5	MB		<0.0010		mg/L		0.001	20-AUG-21
Nitrite (as N)								
WG3606375-4	MS	L2629493-5	104.6		%		75-125	19-AUG-21
Nitrite (as N)								
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch R5571119								
WG3606375-3	DUP	L2629493-5	<0.0050	RPD-NA	mg/L	N/A	20	19-AUG-21
Nitrate (as N)								
WG3606375-2	LCS		99.9		%		90-110	20-AUG-21
Nitrate (as N)								
WG3606375-6	LCS		100.1		%		90-110	20-AUG-21
Nitrate (as N)								
WG3606375-1	MB		<0.0050		mg/L		0.005	20-AUG-21
Nitrate (as N)								
WG3606375-5	MB		<0.0050		mg/L		0.005	20-AUG-21
Nitrate (as N)								
WG3606375-4	MS	L2629493-5	104.5		%		75-125	19-AUG-21
Nitrate (as N)								
<b>OH-CL</b>								
<b>Water</b>								
Batch R5570604								
WG3605703-1	MB		<5.0		mg/L		5	25-AUG-21
Hydroxide (OH)								
<b>ORP-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 13 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5569631							
WG3604577-1	CRM	CL-ORP						
ORP			220		mV		210-230	25-AUG-21
WG3604577-2	DUP	L2629493-1						
ORP		430	436	J	mV	5.4	15	25-AUG-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5570460							
WG3605568-2	LCS							
Phosphorus (P)-Total			99.8		%		80-120	26-AUG-21
WG3605568-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	26-AUG-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5570604							
WG3605703-3	LCS							
pH			6.99		pH		6.9-7.1	25-AUG-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5562817							
WG3601572-3	LCS							
Orthophosphate-Dissolved (as P)			99.7		%		80-120	20-AUG-21
WG3601572-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-AUG-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5571119							
WG3606375-3	DUP	L2629493-5						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	19-AUG-21
WG3606375-2	LCS							
Sulfate (SO4)			101.5		%		90-110	20-AUG-21
WG3606375-6	LCS							
Sulfate (SO4)			101.2		%		90-110	20-AUG-21
WG3606375-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	20-AUG-21
WG3606375-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	20-AUG-21
WG3606375-4	MS	L2629493-5						
Sulfate (SO4)			105.4		%		75-125	19-AUG-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 14 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
Batch	R5570196							
<b>WG3603088-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.5		%		85-115	24-AUG-21
<b>WG3603088-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	24-AUG-21
<b>TKN-F-VA</b>								
	<b>Water</b>							
Batch	R5604859							
<b>WG3621729-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.7		%		75-125	29-SEP-21
<b>WG3621729-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-SEP-21
<b>WG3621729-4</b>	<b>MS</b>	<b>L2629493-1</b>						
Total Kjeldahl Nitrogen			101.1		%		70-130	29-SEP-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
Batch	R5570251							
<b>WG3604049-2</b>	<b>LCS</b>							
Total Suspended Solids			88.8		%		85-115	25-AUG-21
<b>WG3604049-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	25-AUG-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
Batch	R5563420							
<b>WG3601921-3</b>	<b>DUP</b>	<b>L2629493-1</b>						
Turbidity		4.93	4.90		NTU	0.5	15	21-AUG-21
<b>WG3601921-2</b>	<b>LCS</b>							
Turbidity			97.2		%		85-115	21-AUG-21
<b>WG3601921-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	21-AUG-21

# Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 15 of 16

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2629493

Report Date: 07-DEC-21

Page 16 of 16

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	19-AUG-21 11:40	25-AUG-21 13:11	0.25	145	hours	EHTR-FM
	2	19-AUG-21 11:45	25-AUG-21 13:11	0.25	145	hours	EHTR-FM
	3	19-AUG-21 14:50	25-AUG-21 13:11	0.25	142	hours	EHTR-FM
	4	19-AUG-21 14:50	25-AUG-21 13:11	0.25	142	hours	EHTR-FM
	5	19-AUG-21 17:00	25-AUG-21 13:11	0.25	140	hours	EHTR-FM
pH							
	1	19-AUG-21 11:40	25-AUG-21 13:00	0.25	145	hours	EHTR-FM
	2	19-AUG-21 11:45	25-AUG-21 13:00	0.25	145	hours	EHTR-FM
	3	19-AUG-21 14:50	25-AUG-21 13:00	0.25	142	hours	EHTR-FM
	4	19-AUG-21 14:50	25-AUG-21 13:00	0.25	142	hours	EHTR-FM
	5	19-AUG-21 17:00	25-AUG-21 13:00	0.25	140	hours	EHTR-FM
<b>Anions and Nutrients</b>							
TKN in Water by Fluorescence							
	1	19-AUG-21 11:40	28-SEP-21 19:54	28	40	days	EHT
	2	19-AUG-21 11:45	28-SEP-21 19:54	28	40	days	EHT
	3	19-AUG-21 14:50	28-SEP-21 19:54	28	40	days	EHT
	4	19-AUG-21 14:50	28-SEP-21 19:54	28	40	days	EHT
	5	19-AUG-21 17:00	28-SEP-21 19:54	28	40	days	EHT

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2629493 were received on 20-AUG-21 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2629493-COFC



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 21 -

Page 1 of 2

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																			
Company: SNC-Lavalin		Select Report Format: <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)		<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply						<b>4 Business day [E1 - 100%]</b> <input type="checkbox"/>													
Contact: Kim Harrer		Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		<b>4 day [P4-20%]</b> <input type="checkbox"/>			<b>3 day [P3-25%]</b> <input type="checkbox"/>			<b>2 day [P2-50%]</b> <input type="checkbox"/>			<b>Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]</b> <input type="checkbox"/>										
Phone: 250-464-9108		Compare Results to Criteria on Report - provide details below if box checked <input type="checkbox"/>		Date and Time Required for all E&P TATs:																			
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		For tests that can not be performed according to the service level selected, you will be contacted.																			
Street: 4500 Mennie Rd		Emails: SNC - 'Kim.Harrer' Erika.McCulloch'		<b>Analysis Request</b>																			
City/Province: Cranbrook, BC		Vicky.Lipinski@snc-lavalin.com		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																			
Postal Code: V1C 4J6		Teck - "Bilal.Butt@teck.com"		F/P P F/P P																			
Invoice To: Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		DOC (C-DIS-ORGL-LOW-CL)																			
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		TOC (C-TOT-ORGL-LOW-CL)																			
Company:		Emails: Kim.Harrer@snc-lavalin.com		BC MDG D-Met + Hg (MET-D-BOMDGG-CL)																			
Contact:		payables@snc-lavalin.com		Total N Calc. (MT-CALC-CL)																			
Project Information		Oil and Gas Required Fields (client use)		Nitrate + Nitrite Calc. (N2H-CALC-CL)																			
ALS Account # / Quote #:		AFE/Cost Center:		Teck Routine (TECKCOAL-ROUTINE-CL)																			
Job #:		Major/Minor Code:		TKN (TKN-LF-CL)																			
PO / AFE:		Routing Code:		Bicarbonate (BC-CL)																			
LSD:		Requisitioner:		Carbonate (CO3-CL)																			
ALS Lab Work Order # (lab use only):		ALS Contact: Opeyemi Adetola 403-407-1792		Hydroxide (OH-CL)																			
		Sampler:		SAMPLES ON HOLD																			
ALS Sample # (lab use only)		Sample Identification &lor Coordinates (This description will appear on the report)		Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mm-yy)		Time (hh:mm)		Sample Type		SAMPLE IS HAZARDOUS (please provide further details)											
		RG-MW-LCA-WG-2021-08-19-NP		RG-MW-LCA		19-08-21		1140		WG		NUMBER OF CONTAINERS											
		RG-MW-LCB-WG-2021-08-19-NP		RG-MW-LCB		19-08-21		1145		WG		5											
		RG-MW-FAXB-WG-2021-08-19-NP		RG-MW-FAXB		19-08-21		1450		WG		5											
		RG-MW-MC10A-WG-2021-08-19-NP		RG-MW-MC10A		19-08-21		1450		WG		5											
		RG-MW-MC10B-WG-2021-08-19-NP		RG-MW-MC10B		19-08-21		1700		WG		5											
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)																			
Are samples taken from a Regulated DW System? <input type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																			
Are samples for human consumption/ use? <input type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																			
		Line Creek Operations		Cooling Initiated <input type="checkbox"/>																			
		RPA-Regional Educta Program		INITIAL COOLER TEMPERATURES °C																			
		FRO-FORDING RIVER OPERATION		FINAL COOLER TEMPERATURES °C																			
		EVO-ELKVIEW OPERATIONS		SHIPMENT RELEASE (client use)																			
		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)																			
Released by: Joshua Gidem		Date: 2021/08/19		Time: 1630		Received by:		Date:		Time:													

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION. FAILURE TO COMPLETE ALL PORTIONS OF THIS FORM MAY DELAY ANALYSIS. PLEASE FILL IN THIS FORM LEGIBLY. BY THE USE OF THIS FORM THE USER ACKNOWLEDGES AND AGREES WITH THE TERMS AND CONDITIONS AS SPECIFIED ON THE BACK PAGE OF THE WHITE - REPORT COPY. 1. IF ANY WATER SAMPLES ARE TAKEN FROM A REGULATED DRINKING WATER (DW) SYSTEM, PLEASE SUBMIT USING AN AUTHORIZED DW COC FORM.



SNC-Lavalin  
ATTN: Kim Harrer  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 02-SEP-21  
Report Date: 06-DEC-21 12:49 (MT)  
Version: FINAL REV. 2

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2635121  
Project P.O. #: 683032  
Job Reference: LINE CREEK OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2635121-1 WG 01-SEP-21 10:10 LC_MW_CP1A_W G_2021_09_01_NP	L2635121-2 WG 01-SEP-21 09:45 LC_MW_CP1B_W G_2021_09_01_NP	L2635121-3 WG 01-SEP-21 10:10 LC_MW_MC10A_ WG_2021_09_01_ NP	L2635121-4 WG 01-SEP-21 12:00 LC_MW_MC10B_ WG_2021_09_01_ NP	L2635121-5 WG 01-SEP-21 12:00 LC_MW_MC10C_ WG_2021_09_01_ NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	600		608		
	Hardness (as CaCO3) (mg/L)	280	335	278	<0.50	<0.50
	pH (pH)	8.18		8.21		
	ORP (mV)	454	438	408	474	489
	Total Suspended Solids (mg/L)	10.4	<1.0	10.6	<1.0	<1.0
	Total Dissolved Solids (mg/L)	421	391	414	<10	<10
	Turbidity (NTU)	6.11	1.48	5.94	<0.10	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.5	<1.0	4.6	2.0	2.2
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	200		201		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0		<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0		<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	200		201		
	Ammonia as N (mg/L)	0.0401	<0.0050	0.0153	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	244		246		
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0		<5.0		
	Chloride (Cl) (mg/L)	3.65	10.8	3.49	<0.10	<0.10
	Fluoride (F) (mg/L)	0.287	0.254	0.315	<0.020	<0.020
	Hydroxide (OH) (mg/L)	<5.0		<5.0		
	Ion Balance (%)	98.1		97.3		
	Nitrate and Nitrite (as N) (mg/L)	2.74	1.75	2.72	<0.0051	<0.0051
	Nitrate (as N) (mg/L)	2.74	1.75	2.72	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.234 <sup>TKNI</sup>	0.204	0.210 <sup>TKNI</sup>	<0.050	<0.050
	Total Nitrogen (mg/L)	2.97	1.96	2.92	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0037	0.0027	0.0037	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0115	0.0025	0.0113	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	125	103	124	<0.30	<0.30
	Anion Sum (meq/L)	6.91		6.92		
	Cation Sum (meq/L)	6.78		6.73		
Cation - Anion Balance (%)	-1.0		-1.4			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.35	1.34	<0.50	2.24	1.91
	Total Organic Carbon (mg/L)	1.59	2.44	2.63	1.98	1.87
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0021	<0.0010	0.0024	<0.0010	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2635121-1 WG 01-SEP-21 10:10 LC_MW_CP1A_W G_2021_09_01_NP	L2635121-2 WG 01-SEP-21 09:45 LC_MW_CP1B_W G_2021_09_01_NP	L2635121-3 WG 01-SEP-21 10:10 LC_MW_MC10A_ WG_2021_09_01_ NP	L2635121-4 WG 01-SEP-21 12:00 LC_MW_MC10B_ WG_2021_09_01_ NP	L2635121-5 WG 01-SEP-21 12:00 LC_MW_MC10C_ WG_2021_09_01_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>					
Antimony (Sb)-Dissolved (mg/L)	0.00014	<0.00010	0.00013	<0.00010	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00018	<0.00010	0.00020	<0.00010	<0.00010
Barium (Ba)-Dissolved (mg/L)	0.0407	0.102	0.0393	<0.00010	<0.00010
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	0.041	0.036	0.040	<0.010	<0.010
Cadmium (Cd)-Dissolved (mg/L)	0.0000116	0.0000291	0.0000077	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved (mg/L)	71.2	87.8	71.1	<0.050	<0.050
Chromium (Cr)-Dissolved (mg/L)	0.00020	0.00025	0.00017	<0.00010	<0.00010
Cobalt (Co)-Dissolved (mg/L)	0.00028	0.00012	0.00027	<0.00010	<0.00010
Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	0.0208	0.0213	0.0205	<0.0010	<0.0010
Magnesium (Mg)-Dissolved (mg/L)	24.9	28.2	24.3	<0.0050	<0.0050
Manganese (Mn)-Dissolved (mg/L)	0.0355	0.0234	0.0351	<0.00010	<0.00010
Mercury (Hg)-Dissolved (mg/L)	0.0000052 <sup>RRV</sup>	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.00176	0.00160	0.00174	<0.000050	<0.000050
Nickel (Ni)-Dissolved (mg/L)	0.00096	<0.00050	0.00092	<0.00050	<0.00050
Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved (mg/L)	1.63	1.04	1.60	<0.10	<0.10
Selenium (Se)-Dissolved (mg/L)	0.0538	0.0363	0.0528	<0.000050	<0.000050
Silicon (Si)-Dissolved (mg/L)	3.91	3.78	3.79	<0.050	<0.050
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	26.2	5.05	26.2	<0.050	<0.050
Strontium (Sr)-Dissolved (mg/L)	0.454	0.434	0.445	<0.00020	<0.00020
Sulfur (S)-Dissolved (mg/L)	49.5	41.3	49.0	<0.50	<0.50
Thallium (Tl)-Dissolved (mg/L)	0.000016	<0.000010	0.000012	<0.000010	<0.000010
Tin (Sn)-Dissolved (mg/L)	0.00022	<0.00010	0.00023	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Uranium (U)-Dissolved (mg/L)	0.00302	0.00148	0.00302	<0.000010	<0.000010
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.0015	<0.0010	0.0017	<0.0010	<0.0010
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L2635121-2	LC_MW_CP1B_WG_2021_0	NDIS	No Data: Insufficient Sample - Not enough sample to run BIC, CO3, EC, OH, pH, and Ion Balance
L2635121-4	LC_MW_MC10B_WG_2021_	NDIS	No Data: Insufficient Sample - Not enough sample to run BIC, CO3, EC, OH, pH, and Ion Balance
L2635121-5	LC_MW_MC10C_WG_2021_	NDIS	No Data: Insufficient Sample - Not enough sample to run BIC, CO3, EC, OH, pH, and Ion Balance

### QC Samples with Qualifiers & Comments:

QC Type	Description	Parameter	Qualifier	Applies to Sample Number(s)
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### Qualifiers for Individual Parameters Listed:

Qualifier	Description
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**P04-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**S04-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-F-VA**      Water      TKN in Water by Fluorescence      APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**      Water      Total Suspended Solids      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 1 of 10

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Kim Harrer

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R5582141							
<b>WG3614925-3</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.7		%		85-115	08-SEP-21
<b>WG3614925-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	08-SEP-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R5584113							
<b>WG3617159-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.5		%		85-115	11-SEP-21
<b>WG3617159-2</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-SEP-21
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
Batch	R5584121							
<b>WG3617214-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			99.7		%		80-120	14-SEP-21
<b>WG3617214-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-SEP-21
<b>WG3617214-4</b>	<b>MS</b>	<b>L2635121-5</b>						
Beryllium (Be)-Dissolved			97.2		%		70-130	14-SEP-21
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R5584113							
<b>WG3617159-2</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	11-SEP-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R5583266							
<b>WG3616149-2</b>	<b>LCS</b>							
Bromide (Br)			101.6		%		85-115	03-SEP-21
<b>WG3616149-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	03-SEP-21
<b>WG3616149-4</b>	<b>MS</b>	<b>L2635121-5</b>						
Bromide (Br)			104.4		%		75-125	03-SEP-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R5582766							
<b>WG3615601-11</b>	<b>DUP</b>	<b>L2635121-1</b>						
Dissolved Organic Carbon		1.35	1.38		mg/L	1.7	20	10-SEP-21
<b>WG3615601-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			108.2		%		80-120	10-SEP-21



## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>									
Batch      R5582766									
<b>WG3615601-9 MB</b>									
Dissolved Organic Carbon			<0.50		mg/L		0.5	10-SEP-21	
<b>WG3615601-12 MS</b> <b>L2635121-1</b>									
Dissolved Organic Carbon			96.1		%		70-130	10-SEP-21	
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>									
Batch      R5582766									
<b>WG3615601-11 DUP</b> <b>L2635121-1</b>									
Total Organic Carbon			1.59	2.00	J	mg/L	0.40	1	10-SEP-21
<b>WG3615601-10 LCS</b>									
Total Organic Carbon			111.9		%		80-120	10-SEP-21	
<b>WG3615601-9 MB</b>									
Total Organic Carbon			<0.50		mg/L		0.5	10-SEP-21	
<b>WG3615601-12 MS</b> <b>L2635121-1</b>									
Total Organic Carbon			108.2		%		70-130	10-SEP-21	
<b>CL-L-IC-N-CL</b> <b>Water</b>									
Batch      R5583266									
<b>WG3616149-2 LCS</b>									
Chloride (Cl)			97.7		%		85-115	03-SEP-21	
<b>WG3616149-1 MB</b>									
Chloride (Cl)			<0.10		mg/L		0.1	03-SEP-21	
<b>WG3616149-4 MS</b> <b>L2635121-5</b>									
Chloride (Cl)			109.9		%		75-125	03-SEP-21	
<b>CO3-CL</b> <b>Water</b>									
Batch      R5584113									
<b>WG3617159-2 MB</b>									
Carbonate (CO3)			<5.0		mg/L		5	11-SEP-21	
<b>EC-L-PCT-CL</b> <b>Water</b>									
Batch      R5584113									
<b>WG3617159-5 LCS</b>									
Conductivity (@ 25C)			96.0		%		90-110	11-SEP-21	
<b>WG3617159-2 MB</b>									
Conductivity (@ 25C)			<2.0		uS/cm		2	11-SEP-21	
<b>F-IC-N-CL</b> <b>Water</b>									



## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5583266</b>							
<b>WG3616149-2</b>	<b>LCS</b>							
Fluoride (F)			98.9		%		90-110	03-SEP-21
<b>WG3616149-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	03-SEP-21
<b>WG3616149-4</b>	<b>MS</b>	<b>L2635121-5</b>						
Fluoride (F)			90.9		%		75-125	03-SEP-21
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582796</b>							
<b>WG3615619-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.4		%		80-120	11-SEP-21
<b>WG3615619-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	11-SEP-21
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584121</b>							
<b>WG3617214-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			103.8		%		80-120	14-SEP-21
Antimony (Sb)-Dissolved			102.0		%		80-120	14-SEP-21
Arsenic (As)-Dissolved			101.8		%		80-120	14-SEP-21
Barium (Ba)-Dissolved			101.8		%		80-120	14-SEP-21
Bismuth (Bi)-Dissolved			100.6		%		80-120	14-SEP-21
Boron (B)-Dissolved			90.5		%		80-120	14-SEP-21
Cadmium (Cd)-Dissolved			98.9		%		80-120	14-SEP-21
Calcium (Ca)-Dissolved			98.4		%		80-120	14-SEP-21
Chromium (Cr)-Dissolved			104.4		%		80-120	14-SEP-21
Cobalt (Co)-Dissolved			102.9		%		80-120	14-SEP-21
Copper (Cu)-Dissolved			100.4		%		80-120	14-SEP-21
Iron (Fe)-Dissolved			113.4		%		80-120	14-SEP-21
Lead (Pb)-Dissolved			101.9		%		80-120	14-SEP-21
Lithium (Li)-Dissolved			97.1		%		80-120	14-SEP-21
Magnesium (Mg)-Dissolved			106.6		%		80-120	14-SEP-21
Manganese (Mn)-Dissolved			101.1		%		80-120	14-SEP-21
Molybdenum (Mo)-Dissolved			101.7		%		80-120	14-SEP-21
Nickel (Ni)-Dissolved			102.3		%		80-120	14-SEP-21
Phosphorus (P)-Dissolved			108.8		%		70-130	14-SEP-21
Potassium (K)-Dissolved			101.5		%		80-120	14-SEP-21
Selenium (Se)-Dissolved			96.5		%		80-120	14-SEP-21



## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584121</b>							
<b>WG3617214-2</b>	<b>LCS</b>	<b>TMRM</b>						
Silicon (Si)-Dissolved			101.4		%		60-140	14-SEP-21
Silver (Ag)-Dissolved			98.0		%		80-120	14-SEP-21
Sodium (Na)-Dissolved			104.5		%		80-120	14-SEP-21
Strontium (Sr)-Dissolved			104.2		%		80-120	14-SEP-21
Sulfur (S)-Dissolved			96.2		%		80-120	14-SEP-21
Thallium (Tl)-Dissolved			100.9		%		80-120	14-SEP-21
Tin (Sn)-Dissolved			102.2		%		80-120	14-SEP-21
Titanium (Ti)-Dissolved			102.2		%		80-120	14-SEP-21
Uranium (U)-Dissolved			95.1		%		80-120	14-SEP-21
Vanadium (V)-Dissolved			104.0		%		80-120	14-SEP-21
Zinc (Zn)-Dissolved			94.3		%		80-120	14-SEP-21
Zirconium (Zr)-Dissolved			100.1		%		80-120	14-SEP-21
<b>WG3617214-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	14-SEP-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-SEP-21



## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584121</b>							
<b>WG3617214-1</b>	<b>MB</b>							
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	14-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-SEP-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-SEP-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-SEP-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-SEP-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-SEP-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	14-SEP-21
<b>WG3617214-4</b>	<b>MS</b>	<b>L2635121-5</b>						
Aluminum (Al)-Dissolved			95.7		%		70-130	14-SEP-21
Antimony (Sb)-Dissolved			93.3		%		70-130	14-SEP-21
Arsenic (As)-Dissolved			98.0		%		70-130	14-SEP-21
Barium (Ba)-Dissolved			98.9		%		70-130	14-SEP-21
Bismuth (Bi)-Dissolved			97.5		%		70-130	14-SEP-21
Boron (B)-Dissolved			96.5		%		70-130	14-SEP-21
Cadmium (Cd)-Dissolved			96.1		%		70-130	14-SEP-21
Calcium (Ca)-Dissolved			96.0		%		70-130	14-SEP-21
Chromium (Cr)-Dissolved			96.7		%		70-130	14-SEP-21
Cobalt (Co)-Dissolved			98.4		%		70-130	14-SEP-21
Copper (Cu)-Dissolved			97.5		%		70-130	14-SEP-21
Iron (Fe)-Dissolved			96.8		%		70-130	14-SEP-21
Lead (Pb)-Dissolved			94.1		%		70-130	14-SEP-21
Lithium (Li)-Dissolved			92.3		%		70-130	14-SEP-21
Magnesium (Mg)-Dissolved			95.3		%		70-130	14-SEP-21
Manganese (Mn)-Dissolved			98.2		%		70-130	14-SEP-21
Molybdenum (Mo)-Dissolved			98.9		%		70-130	14-SEP-21
Nickel (Ni)-Dissolved			96.8		%		70-130	14-SEP-21
Phosphorus (P)-Dissolved			95.2		%		70-130	14-SEP-21
Potassium (K)-Dissolved			95.8		%		70-130	14-SEP-21
Selenium (Se)-Dissolved			94.4		%		70-130	14-SEP-21



## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584121</b>							
<b>WG3617214-4</b>	<b>MS</b>	<b>L2635121-5</b>						
Silicon (Si)-Dissolved			93.3		%		70-130	14-SEP-21
Silver (Ag)-Dissolved			97.3		%		70-130	14-SEP-21
Sodium (Na)-Dissolved			94.0		%		70-130	14-SEP-21
Strontium (Sr)-Dissolved			94.2		%		70-130	14-SEP-21
Thallium (Tl)-Dissolved			93.4		%		70-130	14-SEP-21
Tin (Sn)-Dissolved			98.4		%		70-130	14-SEP-21
Titanium (Ti)-Dissolved			91.7		%		70-130	14-SEP-21
Uranium (U)-Dissolved			104.4		%		70-130	14-SEP-21
Vanadium (V)-Dissolved			95.1		%		70-130	14-SEP-21
Zinc (Zn)-Dissolved			96.5		%		70-130	14-SEP-21
Zirconium (Zr)-Dissolved			100.3		%		70-130	14-SEP-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584589</b>							
<b>WG3617062-7</b>	<b>DUP</b>	<b>L2635121-1</b>						
Ammonia as N		0.0401	0.0334		mg/L	18	20	14-SEP-21
<b>WG3617062-6</b>	<b>LCS</b>							
Ammonia as N			98.0		%		85-115	14-SEP-21
<b>WG3617062-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	14-SEP-21
<b>WG3617062-8</b>	<b>MS</b>	<b>L2635121-1</b>						
Ammonia as N			85.4		%		75-125	14-SEP-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5583266</b>							
<b>WG3616149-2</b>	<b>LCS</b>							
Nitrite (as N)			98.0		%		90-110	03-SEP-21
<b>WG3616149-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	03-SEP-21
<b>WG3616149-4</b>	<b>MS</b>	<b>L2635121-5</b>						
Nitrite (as N)			106.7		%		75-125	03-SEP-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5583266</b>							
<b>WG3616149-2</b>	<b>LCS</b>							
Nitrate (as N)			100.3		%		90-110	03-SEP-21
<b>WG3616149-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	03-SEP-21
<b>WG3616149-4</b>	<b>MS</b>	<b>L2635121-5</b>						



## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5583266							
<b>WG3616149-4 MS</b>		<b>L2635121-5</b>						
Nitrate (as N)			110.5		%		75-125	03-SEP-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5584113							
<b>WG3617159-2 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	11-SEP-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5580670							
<b>WG3613197-1 CRM</b>		<b>CL-ORP</b>						
ORP			217		mV		210-230	08-SEP-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5578238							
<b>WG3610664-41 LCS</b>								
Phosphorus (P)-Total			99.0		%		80-120	07-SEP-21
<b>WG3610664-40 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	07-SEP-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5584113							
<b>WG3617159-5 LCS</b>								
pH			7.00		pH		6.9-7.1	11-SEP-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5576899							
<b>WG3610671-2 LCS</b>								
Orthophosphate-Dissolved (as P)			98.0		%		80-120	02-SEP-21
<b>WG3610671-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	02-SEP-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5583266							
<b>WG3616149-2 LCS</b>								
Sulfate (SO4)			100.9		%		90-110	03-SEP-21
<b>WG3616149-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	03-SEP-21
<b>WG3616149-4 MS</b>		<b>L2635121-5</b>						



## Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5583266							
<b>WG3616149-4 MS</b>		<b>L2635121-5</b>						
Sulfate (SO4)			109.3		%		75-125	03-SEP-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5581548							
<b>WG3612726-2 LCS</b>								
Total Dissolved Solids			97.4		%		85-115	08-SEP-21
<b>WG3612726-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	08-SEP-21
<b>TKN-F-VA</b>	<b>Water</b>							
Batch	R5582708							
<b>WG3613098-3 DUP</b>		<b>L2635121-1</b>						
Total Kjeldahl Nitrogen		0.234	0.184	J	mg/L	0.050	0.1	10-SEP-21
<b>WG3613098-2 LCS</b>								
Total Kjeldahl Nitrogen			96.8		%		75-125	10-SEP-21
<b>WG3613098-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-SEP-21
<b>WG3613098-4 MS</b>		<b>L2635121-2</b>						
Total Kjeldahl Nitrogen			96.6		%		70-130	10-SEP-21
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5579423							
<b>WG3611018-2 LCS</b>								
Total Suspended Solids			93.4		%		85-115	03-SEP-21
<b>WG3611018-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	03-SEP-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5579429							
<b>WG3611711-3 DUP</b>		<b>L2635121-1</b>						
Turbidity		6.11	5.73		NTU	6.3	15	04-SEP-21
<b>WG3611711-2 LCS</b>								
Turbidity			99.8		%		85-115	04-SEP-21
<b>WG3611711-1 MB</b>								
Turbidity			<0.10		NTU		0.1	04-SEP-21



# Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 9 of 10

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

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# Quality Control Report

Workorder: L2635121

Report Date: 06-DEC-21

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	01-SEP-21 10:10	08-SEP-21 11:10	0.25	169	hours	EHTR-FM
	2	01-SEP-21 09:45	08-SEP-21 11:10	0.25	169	hours	EHTR-FM
	3	01-SEP-21 10:10	08-SEP-21 11:10	0.25	169	hours	EHTR-FM
	4	01-SEP-21 12:00	08-SEP-21 11:10	0.25	167	hours	EHTR-FM
	5	01-SEP-21 12:00	08-SEP-21 11:10	0.25	167	hours	EHTR-FM
pH	1	01-SEP-21 10:10	11-SEP-21 00:00	0.25	230	hours	EHTR-FM
	3	01-SEP-21 10:10	11-SEP-21 00:00	0.25	230	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2635121 were received on 02-SEP-21 09:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2635121-COFC

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>														
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply														
Contact: Kim Harrer		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			PRIORITY (Business Days)		EMERGENCY												
Phone: Tel.: 250-464-9108		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			4 day [P4-20%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>												
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>												
Street: 520 Lake Street		Emails: SNC - 'Kim.Harrer'			2 day [P2-50%] <input type="checkbox"/>		Date and Time Required for all E&P TATs:												
City/Province: Nelson, BC		Vicky.Lipinski@sncclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.														
Postal Code: V1L 4C6		Teck: Drake.Tymstra@teck.com			<b>Analysis Request</b>														
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below														
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P P F/P P														
Company: SNC-Lavalin		Emails: Kim.Harrer@sncclavalin.com			DOC (C-DIS-ORG-LOW-CL)														
Contact: payables@sncclavalin.com		Project Information			TOC (C-TOT-ORG-LOW-CL)														
ALS Account # / Quote #: MOR125 / Q78198		Oil and Gas Required Fields (client use)			BC MDG D-Met. + Hg (MET-D-BCMDG-CL)														
Job #: Greenhills Operation Line Creek Operations		AFE/Cost Center: PO#			Total N Calc. (N-T-CALC-CL)														
PO / AFE: 683032		Major/Minor Code: Routing Code:			Nitrate + Nitrite Calc. (N2N3-CALC-CL)														
LSD:		Requisitioner:			Teck Routine (TECKCOAL-ROUTINE-CL)														
ALS Lab Work Order # (lab use only):		Location:			TKN (TKN-L-F-CL)														
ALS Contact:		Sampler: Chuck Stafford			Bicarbonate (BIC-CL)														
ALS Sample # (lab use only)		Sample Identification &/or Coordinates		Teck Sample Location (sys_loc_code)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type		Carbonate (CO3-CL)							
		(This description will appear on the report)		(For Teck data upload to EQUI'S database)								Hydroxide (OH-CL)							
LC-MW-WLCA-WG-2021-09-01-NP		LC-MW-WLCA		LC-MW-WLCA		01-SEP-21		10:10		WG		SAMPLES ON HOLD							
LC-MW-WLCB-WG-2021-09-01-NP		LC-MW-WLCB		LC-MW-WLCB		01-SEP-21		09:45		WG		Sample is hazardous (please provide further details)							
LC-MW-MCIOA-WG-2021-09-01-NP		LC-MW-MCIOA		LC-MW-MCIOA		01-SEP-21		10:10		WG		NUMBER OF CONTAINERS							
LC-MW-MCIOB-WG-2021-09-01-NP		LC-MW-MCIOB		LC-MW-MCIOB		01-SEP-21		12:00		WG									
LC-MW-MCIOC-WG-2021-09-01-NP		LC-MW-MCIOC		LC-MW-MCIOC		01-SEP-21		12:00		WG									
Drinking Water (DW) Samples <sup>1</sup> (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			SAMPLE CONDITION AS RECEIVED (lab use only)														
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		LCO-LINE CREEK OPERATIONS			Frozen <input checked="" type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>														
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)			Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>														
GHO-GREENHILLS OPERATION		FRO-FORDING RIVER OPERATION			Cooling Initiated <input checked="" type="checkbox"/>														
EVO-ELKVIEW OPERATIONS					INITIAL COOLER TEMPERATURES °C														
FINAL COOLER TEMPERATURES °C																			
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)														
Released by: Chuck Stafford		Date: 01/09/2021		Time: 16:00		Received by: [Signature]		Date: 01/09/2021		Time: [Signature]									



SNC-Lavalin  
ATTN: KIM HARRER  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 04-SEP-21  
Report Date: 12-OCT-21 17:14 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2635829  
Project P.O. #: 683032  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2635829-1 WG 03-SEP-21 09:30 RG_MW_ERXA_W B_2021_09_03_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Hardness (as CaCO3) (mg/L)	345			
	ORP (mV)	463			
	Total Suspended Solids (mg/L)	130			
	Total Dissolved Solids (mg/L)	439			
	Turbidity (NTU)	78.9			
<b>Anions and Nutrients</b>	Ammonia as N (mg/L)	0.0566			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	5.59			
	Fluoride (F) (mg/L)	0.249			
	Nitrate and Nitrite (as N) (mg/L)	7.82			
	Nitrate (as N) (mg/L)	7.82			
	Nitrite (as N) (mg/L)	0.0040			
	Total Kjeldahl Nitrogen (mg/L)	0.833			
	Total Nitrogen (mg/L)	8.66			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0136			
	Phosphorus (P)-Total (mg/L)	0.154 <sup>DLHC</sup>			
	Sulfate (SO4) (mg/L)	134			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.55			
	Total Organic Carbon (mg/L)	7.8			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0027			
	Antimony (Sb)-Dissolved (mg/L)	0.00123			
	Arsenic (As)-Dissolved (mg/L)	0.00053			
	Barium (Ba)-Dissolved (mg/L)	0.177			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.026			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000287			
	Calcium (Ca)-Dissolved (mg/L)	79.8			
	Chromium (Cr)-Dissolved (mg/L)	0.00010			
	Cobalt (Co)-Dissolved (mg/L)	0.00017			
	Copper (Cu)-Dissolved (mg/L)	0.00133			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0410			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	Description	Sampled Date	Sampled Time	Client ID
		L2635829-1	WG	03-SEP-21	09:30	RG_MW_ERXA_W B_2021_09_03_NP
<b>WATER</b>						
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)			35.3		
	Manganese (Mn)-Dissolved (mg/L)			0.0288		
	Mercury (Hg)-Dissolved (mg/L)			<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)			0.0232		
	Nickel (Ni)-Dissolved (mg/L)			0.00144		
	Phosphorus (P)-Dissolved (mg/L)			<0.050		
	Potassium (K)-Dissolved (mg/L)			1.10		
	Selenium (Se)-Dissolved (mg/L)			0.0345		
	Silicon (Si)-Dissolved (mg/L)			2.33		
	Silver (Ag)-Dissolved (mg/L)			<0.000010		
	Sodium (Na)-Dissolved (mg/L)			13.5		
	Strontium (Sr)-Dissolved (mg/L)			0.217		
	Sulfur (S)-Dissolved (mg/L)			50.4		
	Thallium (Tl)-Dissolved (mg/L)			0.000013		
	Tin (Sn)-Dissolved (mg/L)			0.00185		
	Titanium (Ti)-Dissolved (mg/L)			<0.00030		
	Uranium (U)-Dissolved (mg/L)			0.00140		
	Vanadium (V)-Dissolved (mg/L)			<0.00050		
	Zinc (Zn)-Dissolved (mg/L)			0.0088		
	Zirconium (Zr)-Dissolved (mg/L)			<0.00030		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2635829-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2635829-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2635829-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2635829-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			
TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			
TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated

## Reference Information

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TKN-F-VA** Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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**Chain of Custody Numbers:**

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## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 1 of 9

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: KIM HARRER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5585586</b>							
<b>WG3619374-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	16-SEP-21
<b>WG3619374-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			108.5		%		80-120	16-SEP-21
<b>WG3619374-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-SEP-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582004</b>							
<b>WG3614803-2</b>	<b>LCS</b>							
Bromide (Br)			99.4		%		85-115	05-SEP-21
<b>WG3614803-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	05-SEP-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584044</b>							
<b>WG3617087-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.2		%		80-120	13-SEP-21
<b>WG3617087-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-SEP-21
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5584044</b>							
<b>WG3617087-6</b>	<b>LCS</b>							
Total Organic Carbon			100.9		%		80-120	13-SEP-21
<b>WG3617087-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	13-SEP-21
<b>CL-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582004</b>							
<b>WG3614803-2</b>	<b>LCS</b>							
Chloride (Cl)			95.8		%		85-115	05-SEP-21
<b>WG3614803-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	05-SEP-21
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582004</b>							
<b>WG3614803-2</b>	<b>LCS</b>							
Fluoride (F)			95.6		%		90-110	05-SEP-21
<b>WG3614803-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	05-SEP-21
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5584768</b>							
<b>WG3616711-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.5		%		80-120	15-SEP-21
<b>WG3616711-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000050		mg/L		0.000005	15-SEP-21
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5585586</b>							
<b>WG3619374-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
Aluminum (Al)-Dissolved		0.0027	0.0025		mg/L	4.6	20	16-SEP-21
Antimony (Sb)-Dissolved		0.00123	0.00120		mg/L	2.8	20	16-SEP-21
Arsenic (As)-Dissolved		0.00053	0.00054		mg/L	1.3	20	16-SEP-21
Barium (Ba)-Dissolved		0.177	0.179		mg/L	1.2	20	16-SEP-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-SEP-21
Boron (B)-Dissolved		0.026	0.026		mg/L	0.6	20	16-SEP-21
Cadmium (Cd)-Dissolved		0.0000287	0.0000293		mg/L	2.2	20	16-SEP-21
Calcium (Ca)-Dissolved		79.8	80.3		mg/L	0.5	20	16-SEP-21
Chromium (Cr)-Dissolved		0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-SEP-21
Cobalt (Co)-Dissolved		0.00017	0.00018		mg/L	5.2	20	16-SEP-21
Copper (Cu)-Dissolved		0.00133	0.00133		mg/L	0.3	20	16-SEP-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-SEP-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-SEP-21
Lithium (Li)-Dissolved		0.0410	0.0407		mg/L	0.9	20	16-SEP-21
Magnesium (Mg)-Dissolved		35.3	35.3		mg/L	0.0	20	16-SEP-21
Manganese (Mn)-Dissolved		0.0288	0.0285		mg/L	1.1	20	16-SEP-21
Molybdenum (Mo)-Dissolved		0.0232	0.0228		mg/L	1.8	20	16-SEP-21
Nickel (Ni)-Dissolved		0.00144	0.00116	J	mg/L	0.00028	0.001	16-SEP-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-SEP-21
Potassium (K)-Dissolved		1.10	1.10		mg/L	0.2	20	16-SEP-21
Selenium (Se)-Dissolved		0.0345	0.0353		mg/L	2.3	20	16-SEP-21
Silicon (Si)-Dissolved		2.33	2.31		mg/L	1.0	20	16-SEP-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-SEP-21
Sodium (Na)-Dissolved		13.5	13.7		mg/L	1.3	20	16-SEP-21
Strontium (Sr)-Dissolved		0.217	0.211		mg/L	2.8	20	16-SEP-21
Sulfur (S)-Dissolved		50.4	51.1		mg/L	1.3	20	16-SEP-21
Thallium (Tl)-Dissolved		0.000013	0.000012		mg/L	9.0	20	16-SEP-21
Tin (Sn)-Dissolved		0.00185	0.00184		mg/L	0.8	20	16-SEP-21



## Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5585586</b>							
<b>WG3619374-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	16-SEP-21
Uranium (U)-Dissolved		0.00140	0.00137		mg/L	2.3	20	16-SEP-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	16-SEP-21
Zinc (Zn)-Dissolved		0.0088	0.0090		mg/L	2.1	20	16-SEP-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	16-SEP-21
<b>WG3619374-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			108.2		%		80-120	16-SEP-21
Antimony (Sb)-Dissolved			101.0		%		80-120	16-SEP-21
Arsenic (As)-Dissolved			103.6		%		80-120	16-SEP-21
Barium (Ba)-Dissolved			106.8		%		80-120	16-SEP-21
Bismuth (Bi)-Dissolved			104.7		%		80-120	16-SEP-21
Boron (B)-Dissolved			99.9		%		80-120	16-SEP-21
Cadmium (Cd)-Dissolved			106.9		%		80-120	16-SEP-21
Calcium (Ca)-Dissolved			103.6		%		80-120	16-SEP-21
Chromium (Cr)-Dissolved			106.8		%		80-120	16-SEP-21
Cobalt (Co)-Dissolved			106.0		%		80-120	16-SEP-21
Copper (Cu)-Dissolved			104.3		%		80-120	16-SEP-21
Iron (Fe)-Dissolved			114.5		%		80-120	16-SEP-21
Lead (Pb)-Dissolved			108.1		%		80-120	16-SEP-21
Lithium (Li)-Dissolved			99.6		%		80-120	16-SEP-21
Magnesium (Mg)-Dissolved			110.8		%		80-120	16-SEP-21
Manganese (Mn)-Dissolved			105.9		%		80-120	16-SEP-21
Molybdenum (Mo)-Dissolved			110.1		%		80-120	16-SEP-21
Nickel (Ni)-Dissolved			104.0		%		80-120	16-SEP-21
Phosphorus (P)-Dissolved			101.0		%		70-130	16-SEP-21
Potassium (K)-Dissolved			104.9		%		80-120	16-SEP-21
Selenium (Se)-Dissolved			102.3		%		80-120	16-SEP-21
Silicon (Si)-Dissolved			103.2		%		60-140	16-SEP-21
Silver (Ag)-Dissolved			108.7		%		80-120	16-SEP-21
Sodium (Na)-Dissolved			102.7		%		80-120	16-SEP-21
Strontium (Sr)-Dissolved			100.4		%		80-120	16-SEP-21
Sulfur (S)-Dissolved			113.5		%		80-120	16-SEP-21
Thallium (Tl)-Dissolved			104.3		%		80-120	16-SEP-21
Tin (Sn)-Dissolved			106.6		%		80-120	16-SEP-21



## Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5585586</b>							
<b>WG3619374-2</b>	<b>LCS</b>	<b>TMRM</b>						
Titanium (Ti)-Dissolved			105.6		%		80-120	16-SEP-21
Uranium (U)-Dissolved			97.3		%		80-120	16-SEP-21
Vanadium (V)-Dissolved			106.5		%		80-120	16-SEP-21
Zinc (Zn)-Dissolved			104.1		%		80-120	16-SEP-21
Zirconium (Zr)-Dissolved			110.4		%		80-120	16-SEP-21
<b>WG3619374-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-SEP-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-SEP-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-SEP-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-SEP-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-SEP-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-SEP-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-SEP-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-SEP-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-SEP-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-SEP-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-SEP-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	16-SEP-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-SEP-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-21



## Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch R5585586</b>								
<b>WG3619374-1 MB</b>								
			Titanium (Ti)-Dissolved		<0.00030		mg/L	0.0003 16-SEP-21
			Uranium (U)-Dissolved		<0.000010		mg/L	0.00001 16-SEP-21
			Vanadium (V)-Dissolved		<0.00050		mg/L	0.0005 16-SEP-21
			Zinc (Zn)-Dissolved		<0.0010		mg/L	0.001 16-SEP-21
			Zirconium (Zr)-Dissolved		<0.00020		mg/L	0.0002 16-SEP-21
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch R5589036</b>								
<b>WG3621234-2 LCS</b>								
			Ammonia as N		100.8		%	85-115 19-SEP-21
<b>WG3621234-1 MB</b>								
			Ammonia as N		<0.0050		mg/L	0.005 19-SEP-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R5582004</b>								
<b>WG3614803-2 LCS</b>								
			Nitrite (as N)		98.5		%	90-110 05-SEP-21
<b>WG3614803-1 MB</b>								
			Nitrite (as N)		<0.0010		mg/L	0.001 05-SEP-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R5582004</b>								
<b>WG3614803-2 LCS</b>								
			Nitrate (as N)		97.1		%	90-110 05-SEP-21
<b>WG3614803-1 MB</b>								
			Nitrate (as N)		<0.0050		mg/L	0.005 05-SEP-21
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch R5582732</b>								
			<b>WG3615587-1 CRM</b>	<b>CL-ORP</b>				
			ORP		216		mV	210-230 11-SEP-21
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch R5580775</b>								
<b>WG3613266-2 LCS</b>								
			Phosphorus (P)-Total		86.9		%	80-120 08-SEP-21
<b>WG3613266-1 MB</b>								
			Phosphorus (P)-Total		<0.0020		mg/L	0.002 08-SEP-21
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5579678</b>							
<b>WG3611946-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
	Orthophosphate-Dissolved (as P)	0.0136	0.0139		mg/L	2.2	20	05-SEP-21
<b>WG3611946-2</b>	<b>LCS</b>							
	Orthophosphate-Dissolved (as P)		98.0		%		80-120	05-SEP-21
<b>WG3611946-1</b>	<b>MB</b>							
	Orthophosphate-Dissolved (as P)		<0.0010		mg/L		0.001	05-SEP-21
<b>WG3611946-4</b>	<b>MS</b>	<b>L2635829-1</b>						
	Orthophosphate-Dissolved (as P)		114.8		%		70-130	05-SEP-21
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582004</b>							
<b>WG3614803-2</b>	<b>LCS</b>							
	Sulfate (SO4)		95.8		%		90-110	05-SEP-21
<b>WG3614803-1</b>	<b>MB</b>							
	Sulfate (SO4)		<0.30		mg/L		0.3	05-SEP-21
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5581548</b>							
<b>WG3612726-2</b>	<b>LCS</b>							
	Total Dissolved Solids		97.4		%		85-115	08-SEP-21
<b>WG3612726-1</b>	<b>MB</b>							
	Total Dissolved Solids		<10		mg/L		10	08-SEP-21
<b>TKN-F-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5585295</b>							
<b>WG3616073-3</b>	<b>DUP</b>	<b>L2635829-1</b>						
	Total Kjeldahl Nitrogen	0.833	0.732		mg/L	13	20	15-SEP-21
<b>WG3616073-2</b>	<b>LCS</b>							
	Total Kjeldahl Nitrogen		106.0		%		75-125	15-SEP-21
<b>WG3616073-1</b>	<b>MB</b>							
	Total Kjeldahl Nitrogen		<0.050		mg/L		0.05	15-SEP-21
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5582038</b>							
<b>WG3613771-2</b>	<b>LCS</b>							
	Total Suspended Solids		91.3		%		85-115	09-SEP-21
<b>WG3613771-1</b>	<b>MB</b>							
	Total Suspended Solids		<1.0		mg/L		1	09-SEP-21
<b>TURBIDITY-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5579682</b>							
<b>WG3611953-6</b>	<b>DUP</b>	<b>L2635829-1</b>						
Turbidity		78.9	80.8		NTU	2.4	15	05-SEP-21
<b>WG3611953-5</b>	<b>LCS</b>							
Turbidity			96.9		%		85-115	05-SEP-21
<b>WG3611953-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	05-SEP-21



# Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2635829

Report Date: 12-OCT-21

Page 9 of 9

## Hold Time Exceedances:

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ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	03-SEP-21 09:30	11-SEP-21 13:34	0.25	196	hours	EHTR-FM

## Legend & Qualifier Definitions:

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EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

Notes\*:  
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2635829 were received on 04-SEP-21 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

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The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																	
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																	
Contact: Kim Harrer		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Priority (Business Days)		Emergency															
Phone: Tel.: 250-464-9108		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			4 day [P4-20%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>															
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>															
Street: 520 Lake Street		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			2 day [P2-50%] <input type="checkbox"/>																	
City/Province: Nelson, BC		Emails: SNC - 'Kim.Harrer'			Date and Time Required for all E&P TATs:																	
Postal Code: V1L 4C6		Vicky.Lipinski@sncclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																	
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Teck: Drake.Tymstra@Teck.com			<b>Analysis Request</b>																	
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																	
Company:		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P	P	F/P															
Contact:		Emails: Kim.Harrer@sncclavalin.com																				
Project Information		Oil and Gas Required Fields (client use)																				
ALS Account # / Quote #: MOR125 / Q78198		AFE/Cost Center: PO#																				
Job #: Greenhills Operation Regional Effects Program		Major/Minor Code: Routing Code:																				
PO / AFE: 683032		Requisitioner:																				
LSD:		Location:																				
ALS Lab Work Order # (lab use only):		ALS Contact: Sampler: Chuck Stafford																				
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met. + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)							
	RG_MW_ERXA_WB_20_09_09_NP	RG_MW_ERXA	03-SEP-21	8:15	WG	R	R	R	R	R	R	R	R	R	R							5
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																	
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		REP - Regional Effects Program			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																	
Are samples for human consumption/ use? <input type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)			Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																	
		FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Cooling Initiated <input type="checkbox"/>																	
					INITIAL COOLER TEMPERATURES °C: 70 FINAL COOLER TEMPERATURES °C																	
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																	
Released by: Chuck Stafford		Received by:			Received by:																	
Date: Sep 3/21		Date:			Date: 09/04																	
Time: 9:30		Time:			Time: 9:45																	



SNC-Lavalin  
ATTN: KIM HARRER  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 30-SEP-21  
Report Date: 18-OCT-21 16:04 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2645881  
Project P.O. #: 683032  
Job Reference: RGMP  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

18-OCT-21 16:04 (MT)

Version: FINAL

Sample ID Description Sampled Date Sampled Time Client ID	L2645881-1 GW 29-SEP-21 12:40 RG_MW_DC1A_W G_2021_09_29_NP	L2645881-2 GW 29-SEP-21 11:30 RG_MW_DC1B_W G_2021_09_29_NP	L2645881-3 GW 29-SEP-21 14:00 RG_MW_FR11A_ WG_2021_09_29_ NP	L2645881-4 GW 29-SEP-21 14:25 RG_MW_FR11B_ WG_2021_09_29_ NP	L2645881-5 GW 29-SEP-21 12:00 RG_MW_MC10A_ WG_2021_09_29_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)				
	Hardness (as CaCO3) (mg/L)				
	pH (pH)				
<b>Anions and Nutrients</b>	Ammonia as N (mg/L)				
	Total Kjeldahl Nitrogen (mg/L)				
	Phosphorus (P)-Total (mg/L)				
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)				
	Total Organic Carbon (mg/L)				
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location				
	Dissolved Metals Filtration Location				
	Aluminum (Al)-Dissolved (mg/L)				
	Antimony (Sb)-Dissolved (mg/L)				
	Arsenic (As)-Dissolved (mg/L)				
	Barium (Ba)-Dissolved (mg/L)				
	Beryllium (Be)-Dissolved (mg/L)				
	Bismuth (Bi)-Dissolved (mg/L)				
	Boron (B)-Dissolved (mg/L)				
	Cadmium (Cd)-Dissolved (mg/L)				
	Calcium (Ca)-Dissolved (mg/L)				
	Chromium (Cr)-Dissolved (mg/L)				
	Cobalt (Co)-Dissolved (mg/L)				
	Copper (Cu)-Dissolved (mg/L)				
	Iron (Fe)-Dissolved (mg/L)				
	Lead (Pb)-Dissolved (mg/L)				
	Lithium (Li)-Dissolved (mg/L)				
	Magnesium (Mg)-Dissolved (mg/L)				
	Manganese (Mn)-Dissolved (mg/L)				
	Mercury (Hg)-Dissolved (mg/L)				
	Molybdenum (Mo)-Dissolved (mg/L)				
	Nickel (Ni)-Dissolved (mg/L)				
	Phosphorus (P)-Dissolved (mg/L)				
Potassium (K)-Dissolved (mg/L)					
Selenium (Se)-Dissolved (mg/L)					
Silicon (Si)-Dissolved (mg/L)					
Silver (Ag)-Dissolved (mg/L)					
Sodium (Na)-Dissolved (mg/L)					

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2645881-1	L2645881-2	L2645881-3	L2645881-4	L2645881-5
		Description	GW	GW	GW	GW	GW
		Sampled Date	29-SEP-21	29-SEP-21	29-SEP-21	29-SEP-21	29-SEP-21
		Sampled Time	12:40	11:30	14:00	14:25	12:00
		Client ID	RG_MW_DC1A_W G_2021_09_29_NP	RG_MW_DC1B_W G_2021_09_29_NP	RG_MW_FR11A_ WG_2021_09_29_ NP	RG_MW_FR11B_ WG_2021_09_29_ NP	RG_MW_MC10A_ WG_2021_09_29_ NP
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Strontium (Sr)-Dissolved (mg/L)		0.153	0.126	0.479	0.363	0.153
	Sulfur (S)-Dissolved (mg/L)		0.67	0.70	11.9	10.5	0.91
	Thallium (Tl)-Dissolved (mg/L)		0.000017	0.000017	0.000021	0.000022	0.000015
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	0.00111	0.00071	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		0.00042	<0.00030	<0.00030	<0.00030	0.00044
	Uranium (U)-Dissolved (mg/L)		0.000226	0.000120	0.00118	0.000864	0.000225
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0027	0.0015	0.0081	0.0119	0.0011
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
NDIS	No Data: Insufficient Sample - Samples -1 to -5 were received with Routine bottles almost empty; Only pH and EC could be run for -3 and -4, rest of codes had to be deleted

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2645881-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2645881-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2645881-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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**BE-D-L-CCMS-CL** Water Diss. Be (low) in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**C-DIS-ORG-LOW-CL** Water Dissolved Organic Carbon APHA 5310 B-Instrumental

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**C-TOT-ORG-LOW-CL** Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**TKN-F-VA** Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 1 of 8

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: KIM HARRER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BE-D-L-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-7</b>	<b>DUP</b>	<b>L2645881-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	08-OCT-21
<b>WG3635014-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			100.8		%		80-120	08-OCT-21
<b>WG3635014-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-OCT-21
<b>WG3635014-8</b>	<b>MS</b>	<b>L2645881-1</b>						
Beryllium (Be)-Dissolved			103.0		%		70-130	08-OCT-21
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5615044</b>							
<b>WG3635006-3</b>	<b>DUP</b>	<b>L2645881-5</b>						
Dissolved Organic Carbon		1.23	1.08		mg/L	13	20	08-OCT-21
<b>WG3635006-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			94.9		%		80-120	08-OCT-21
<b>WG3635006-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-OCT-21
<b>WG3635006-4</b>	<b>MS</b>	<b>L2645881-5</b>						
Dissolved Organic Carbon			87.2		%		70-130	08-OCT-21
<b>C-TOT-ORG-LOW-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5615044</b>							
<b>WG3635006-3</b>	<b>DUP</b>	<b>L2645881-5</b>						
Total Organic Carbon		1.41	1.47		mg/L	4.6	20	08-OCT-21
<b>WG3635006-2</b>	<b>LCS</b>							
Total Organic Carbon			97.9		%		80-120	08-OCT-21
<b>WG3635006-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	08-OCT-21
<b>WG3635006-4</b>	<b>MS</b>	<b>L2645881-5</b>						
Total Organic Carbon			91.8		%		70-130	08-OCT-21
<b>EC-L-PCT-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5615374</b>							
<b>WG3635299-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.0		%		90-110	11-OCT-21
<b>WG3635299-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-OCT-21
<b>HG-D-CVAA-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5609738</b>							
<b>WG3631495-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.3		%		80-120	05-OCT-21
<b>WG3631495-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000050		mg/L		0.000005	05-OCT-21
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-7</b>	<b>DUP</b>	<b>L2645881-1</b>						
Aluminum (Al)-Dissolved		0.0200	0.0199		mg/L	0.5	20	08-OCT-21
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-OCT-21
Arsenic (As)-Dissolved		0.00230	0.00227		mg/L	1.3	20	08-OCT-21
Barium (Ba)-Dissolved		0.449	0.437		mg/L	2.7	20	08-OCT-21
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-OCT-21
Boron (B)-Dissolved		0.022	0.023		mg/L	1.8	20	08-OCT-21
Cadmium (Cd)-Dissolved		0.0000197	0.0000207		mg/L	5.2	20	08-OCT-21
Calcium (Ca)-Dissolved		56.1	55.3		mg/L	1.4	20	08-OCT-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-OCT-21
Cobalt (Co)-Dissolved		0.00091	0.00090		mg/L	1.3	20	08-OCT-21
Copper (Cu)-Dissolved		0.00043	0.00042		mg/L	3.0	20	08-OCT-21
Iron (Fe)-Dissolved		1.38	1.36		mg/L	1.2	20	08-OCT-21
Lead (Pb)-Dissolved		0.000085	0.000085		mg/L	0.6	20	08-OCT-21
Lithium (Li)-Dissolved		0.0116	0.0120		mg/L	3.4	20	08-OCT-21
Magnesium (Mg)-Dissolved		25.8	25.7		mg/L	0.5	20	08-OCT-21
Manganese (Mn)-Dissolved		0.0833	0.0825		mg/L	1.0	20	08-OCT-21
Molybdenum (Mo)-Dissolved		0.00657	0.00652		mg/L	0.9	20	08-OCT-21
Nickel (Ni)-Dissolved		0.00150	0.00147		mg/L	2.5	20	08-OCT-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-OCT-21
Potassium (K)-Dissolved		2.48	2.52		mg/L	1.7	20	08-OCT-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-OCT-21
Silicon (Si)-Dissolved		5.16	5.18		mg/L	0.3	20	08-OCT-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	08-OCT-21
Sodium (Na)-Dissolved		3.62	3.62		mg/L	0.1	20	08-OCT-21
Strontium (Sr)-Dissolved		0.153	0.155		mg/L	1.4	20	08-OCT-21
Sulfur (S)-Dissolved		0.67	0.71		mg/L	5.8	20	08-OCT-21
Thallium (Tl)-Dissolved		0.000017	0.000017		mg/L	1.1	20	08-OCT-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-OCT-21



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-7</b>	<b>DUP</b>	<b>L2645881-1</b>						
Titanium (Ti)-Dissolved		0.00042	<0.00030	RPD-NA	mg/L	N/A	20	08-OCT-21
Uranium (U)-Dissolved		0.000226	0.000235		mg/L	4.0	20	08-OCT-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-OCT-21
Zinc (Zn)-Dissolved		0.0027	0.0027		mg/L	0.9	20	08-OCT-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	08-OCT-21
<b>WG3635014-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			106.7		%		80-120	08-OCT-21
Antimony (Sb)-Dissolved			109.2		%		80-120	08-OCT-21
Arsenic (As)-Dissolved			107.8		%		80-120	08-OCT-21
Barium (Ba)-Dissolved			113.1		%		80-120	08-OCT-21
Bismuth (Bi)-Dissolved			106.3		%		80-120	08-OCT-21
Boron (B)-Dissolved			99.0		%		80-120	08-OCT-21
Cadmium (Cd)-Dissolved			107.8		%		80-120	08-OCT-21
Calcium (Ca)-Dissolved			101.4		%		80-120	08-OCT-21
Chromium (Cr)-Dissolved			110.8		%		80-120	08-OCT-21
Cobalt (Co)-Dissolved			107.2		%		80-120	08-OCT-21
Copper (Cu)-Dissolved			107.9		%		80-120	08-OCT-21
Iron (Fe)-Dissolved			112.0		%		80-120	08-OCT-21
Lead (Pb)-Dissolved			105.8		%		80-120	08-OCT-21
Lithium (Li)-Dissolved			99.7		%		80-120	08-OCT-21
Magnesium (Mg)-Dissolved			116.0		%		80-120	08-OCT-21
Manganese (Mn)-Dissolved			110.2		%		80-120	08-OCT-21
Molybdenum (Mo)-Dissolved			105.1		%		80-120	08-OCT-21
Nickel (Ni)-Dissolved			108.6		%		80-120	08-OCT-21
Phosphorus (P)-Dissolved			114.0		%		70-130	08-OCT-21
Potassium (K)-Dissolved			112.7		%		80-120	08-OCT-21
Selenium (Se)-Dissolved			103.5		%		80-120	08-OCT-21
Silicon (Si)-Dissolved			107.0		%		60-140	08-OCT-21
Silver (Ag)-Dissolved			104.4		%		80-120	08-OCT-21
Sodium (Na)-Dissolved			107.1		%		80-120	08-OCT-21
Strontium (Sr)-Dissolved			108.6		%		80-120	08-OCT-21
Sulfur (S)-Dissolved			106.6		%		80-120	08-OCT-21
Thallium (Tl)-Dissolved			107.1		%		80-120	08-OCT-21
Tin (Sn)-Dissolved			111.2		%		80-120	08-OCT-21



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-6</b>	<b>LCS</b>	<b>TMRM</b>						
Titanium (Ti)-Dissolved			111.4		%		80-120	08-OCT-21
Uranium (U)-Dissolved			99.4		%		80-120	08-OCT-21
Vanadium (V)-Dissolved			109.6		%		80-120	08-OCT-21
Zinc (Zn)-Dissolved			112.2		%		80-120	08-OCT-21
Zirconium (Zr)-Dissolved			107.0		%		80-120	08-OCT-21
<b>WG3635014-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-OCT-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-OCT-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-OCT-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-OCT-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-OCT-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-OCT-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-OCT-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-21



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-5</b>	<b>MB</b>							
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-OCT-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-OCT-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-21
<b>WG3635014-8</b>	<b>MS</b>	<b>L2645881-1</b>						
Aluminum (Al)-Dissolved			106.4		%		70-130	08-OCT-21
Antimony (Sb)-Dissolved			108.3		%		70-130	08-OCT-21
Arsenic (As)-Dissolved			106.0		%		70-130	08-OCT-21
Barium (Ba)-Dissolved			N/A	MS-B	%		-	08-OCT-21
Bismuth (Bi)-Dissolved			111.5		%		70-130	08-OCT-21
Boron (B)-Dissolved			102.6		%		70-130	08-OCT-21
Cadmium (Cd)-Dissolved			110.7		%		70-130	08-OCT-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	08-OCT-21
Chromium (Cr)-Dissolved			108.7		%		70-130	08-OCT-21
Cobalt (Co)-Dissolved			106.2		%		70-130	08-OCT-21
Copper (Cu)-Dissolved			109.0		%		70-130	08-OCT-21
Iron (Fe)-Dissolved			109.1		%		70-130	08-OCT-21
Lead (Pb)-Dissolved			105.1		%		70-130	08-OCT-21
Lithium (Li)-Dissolved			101.5		%		70-130	08-OCT-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	08-OCT-21
Manganese (Mn)-Dissolved			108.5		%		70-130	08-OCT-21
Molybdenum (Mo)-Dissolved			96.1		%		70-130	08-OCT-21
Nickel (Ni)-Dissolved			109.0		%		70-130	08-OCT-21
Phosphorus (P)-Dissolved			109.0		%		70-130	08-OCT-21
Potassium (K)-Dissolved			109.8		%		70-130	08-OCT-21
Selenium (Se)-Dissolved			105.1		%		70-130	08-OCT-21
Silicon (Si)-Dissolved			95.1		%		70-130	08-OCT-21
Silver (Ag)-Dissolved			102.7		%		70-130	08-OCT-21
Sodium (Na)-Dissolved			106.8		%		70-130	08-OCT-21
Strontium (Sr)-Dissolved			102.7		%		70-130	08-OCT-21
Thallium (Tl)-Dissolved			101.0		%		70-130	08-OCT-21
Tin (Sn)-Dissolved			98.7		%		70-130	08-OCT-21
Titanium (Ti)-Dissolved			107.7		%		70-130	08-OCT-21



## Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5614807</b>							
<b>WG3635014-8</b>	<b>MS</b>	<b>L2645881-1</b>						
Uranium (U)-Dissolved			98.5		%		70-130	08-OCT-21
Vanadium (V)-Dissolved			107.9		%		70-130	08-OCT-21
Zinc (Zn)-Dissolved			109.0		%		70-130	08-OCT-21
Zirconium (Zr)-Dissolved			103.7		%		70-130	08-OCT-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5620920</b>							
<b>WG3638515-2</b>	<b>LCS</b>							
Ammonia as N			98.6		%		85-115	14-OCT-21
<b>WG3638515-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	14-OCT-21
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5609367</b>							
<b>WG3631783-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			107.9		%		80-120	05-OCT-21
<b>WG3631783-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.7		%		80-120	05-OCT-21
<b>WG3631783-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-OCT-21
<b>WG3631783-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-OCT-21
<b>PH-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5615374</b>							
<b>WG3635299-2</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	11-OCT-21
<b>TKN-F-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5612563</b>							
<b>WG3631537-3</b>	<b>DUP</b>	<b>L2645881-1</b>						
Total Kjeldahl Nitrogen		0.128	0.134		mg/L	4.7	20	06-OCT-21
<b>WG3631537-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.8		%		75-125	06-OCT-21
<b>WG3631537-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-OCT-21
<b>WG3631537-4</b>	<b>MS</b>	<b>L2645881-2</b>						
Total Kjeldahl Nitrogen			104.5		%		70-130	06-OCT-21

# Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 7 of 8

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2645881

Report Date: 18-OCT-21

Page 8 of 8

## Hold Time Exceedances:

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ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
pH	3	29-SEP-21 14:00	13-OCT-21 00:00	0.25	322	hours	EHTR-FM
	4	29-SEP-21 14:25	13-OCT-21 00:00	0.25	322	hours	EHTR-FM

## Legend & Qualifier Definitions:

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EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

Notes\*:  
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2645881 were received on 30-SEP-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

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The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.





L2645881-COFC

Main form body containing sections: Report To, Report Format / Distribution, Select Service Level Below, Invoice Distribution, Project Information, ALS Lab Work Order #, Sample Table, Drinking Water (DW) Samples, Special Instructions, SHIPMENT RELEASE, INITIAL SHIPMENT RECEPTION, FINAL SHIPMENT RECEPTION.

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

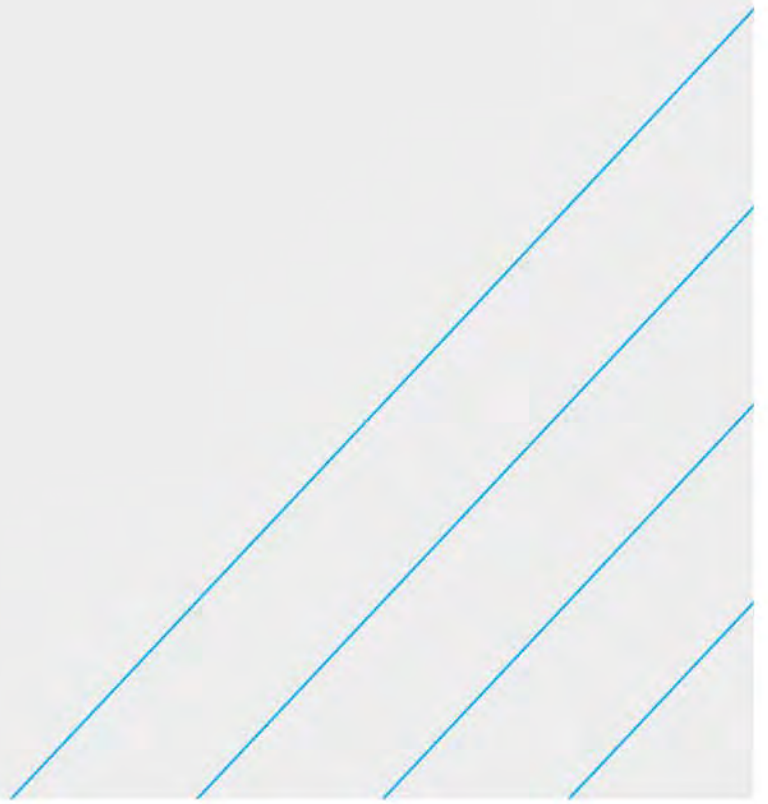
WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEP1 2017 FROMT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy. 1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

# Certificates of Analysis 2021 SSGMP and RGMP Report

- › Elkview Operations





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100489**  
**Client** : **Teck Coal Limited**  
**Contact** : Annie Larrivee  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210321Q1GW  
**Sampler** : CE/TP  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 8  
**No. of samples analysed** : 8

**Page** : 1 of 8  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Mar-2021 09:00  
**Date Analysis Commenced** : 23-Mar-2021  
**Issue Date** : 07-Apr-2021 14:41

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_GV3GWS_WG_2021_Q1_NP	EV_GV3GW_WG_2021_Q1_NP	EV_MW_GV4B_WG_2021_Q1_NP	EV_MW_GV4A_WG_2021_Q1_NP	EV_MW_GC1B_WG_2021_Q1_NP
Client sampling date / time					21-Mar-2021 10:23	21-Mar-2021 11:44	21-Mar-2021 12:34	21-Mar-2021 12:55	21-Mar-2021 14:54	
Analyte	CAS Number	Method	LOR	Unit	CG2100489-001	CG2100489-002	CG2100489-003	CG2100489-004	CG2100489-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	238	201	260	278	334	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	238	201	260	278	334	
conductivity	----	E100	2.0	µS/cm	468	559	503	638	925	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	271	332	303	312	543	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	322	408	381	384	293	
pH	----	E108	0.10	pH units	8.12	7.97	7.94	7.79	7.83	
solids, total dissolved [TDS]	----	E162	10	mg/L	260 <sup>DLHC</sup>	380 <sup>DLHC</sup>	302 <sup>DLHC</sup>	400 <sup>DLHC</sup>	634 <sup>DLHC</sup>	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	4.7	<1.0	
turbidity	----	E121	0.10	NTU	0.38	<0.10	0.17	1.54	0.53	
bicarbonate	71-52-3	E290	1.0	mg/L	291	245	317	339	408	
carbonate	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
hydroxide	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0343	0.0142	0.0087	0.0716 <sup>RRV</sup>	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	0.137	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.71	1.48	0.82	2.34	24.0	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.215	0.362	0.452	0.585	0.144	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.298	0.158	0.275	0.0316	0.0209	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0016	0.0011	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0020	0.0017	0.0024	<0.0010	0.0013	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	0.0027	<0.0020	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	34.2	138	62.0	112	218	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.298	0.158	0.275	<0.050	<0.050	
<b>Organic / Inorganic Carbon</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_GV3GWS_WG_2021_Q1_NP	EV_GV3GW_WG_2021_Q1_NP	EV_MW_GV4B_WG_2021_Q1_NP	EV_MW_GV4A_WG_2021_Q1_NP	EV_MW_GC1B_WG_2021_Q1_NP
Client sampling date / time					21-Mar-2021 10:23	21-Mar-2021 11:44	21-Mar-2021 12:34	21-Mar-2021 12:55	21-Mar-2021 14:54	
Analyte	CAS Number	Method	LOR	Unit	CG2100489-001	CG2100489-002	CG2100489-003	CG2100489-004	CG2100489-005	
					Result	Result	Result	Result	Result	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.80	0.81	0.82	4.21	1.37	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.84	0.57	0.75	4.96	1.21	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.52	6.96	6.55	7.99	11.9	
cation sum	----	EC101	0.10	meq/L	5.54	6.80	6.22	7.74	11.7	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	97.7	95.0	96.9	98.3	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.181	1.16	2.58	1.59	0.847	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0044	<0.0010	<0.0010	0.0015	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00018	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00071	0.00014	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0646	0.0177	0.0603	0.0465	0.0904	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.011	<0.010	0.016	0.050	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0068	0.0058	0.0073	<0.0050	0.116	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	71.1	80.8	72.4	75.4	119	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00016	0.00023	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	0.91	0.48	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	0.127	0.101	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0066	0.0147	0.0086	0.0108	0.0367	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	22.8	31.6	29.6	30.0	59.8	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00024	<0.00010	0.00072	0.375	0.791	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00108	0.000872	0.00151	0.00281	0.00186	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00064	<0.00050	0.00181	0.00363	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.948	1.01	1.10	1.46	2.16	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	3.13	4.71	3.70	4.20	0.843	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_GV3GWS_ WG_2021_Q1_ NP	EV_GV3GW_W G_2021_Q1_NP	EV_MW_GV4B_ WG_2021_Q1_ NP	EV_MW_GV4A_ WG_2021_Q1_ NP	EV_MW_GC1B_ WG_2021_Q1_ NP
Client sampling date / time					21-Mar-2021 10:23	21-Mar-2021 11:44	21-Mar-2021 12:34	21-Mar-2021 12:55	21-Mar-2021 14:54	
Analyte	CAS Number	Method	LOR	Unit	CG2100489-001	CG2100489-002	CG2100489-003	CG2100489-004	CG2100489-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.28	3.35	4.29	4.64	4.32	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.18	3.30	3.27	33.5	17.9	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.194	0.556	0.276	0.324	0.732	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	12.2	49.2	22.2	39.4	81.0	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	0.000018	0.000059	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00124	0.00170	0.00138	0.00290	0.00145	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_BC10A _WG_2021_Q1 _NP	EV_MW_BC10B _WG_2021_Q1 _NP	EV_MW_BC10C _WG_2021_Q1 _NP	----	----
Client sampling date / time					21-Mar-2021 14:59	21-Mar-2021 15:04	21-Mar-2021 15:09	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100489-006 Result	CG2100489-007 Result	CG2100489-008 Result	----- ----	----- ----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	2.1	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	334	<1.0	<1.0	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	334	<1.0	<1.0	----	----	
conductivity	----	E100	2.0	µS/cm	937	<2.0	<2.0	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	534	<0.50	<0.50	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	270	390	404	----	----	
pH	----	E108	0.10	pH units	7.84	5.65	5.49	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	657 <sup>DLHC</sup>	<10	<10	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
turbidity	----	E121	0.10	NTU	0.53	<0.10	<0.10	----	----	
bicarbonate	71-52-3	E290	1.0	mg/L	408	<1.0	<1.0	----	----	
carbonate	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
hydroxide	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0765	0.120 <sup>RRV</sup>	<0.0050	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.142	<0.050	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	24.1	<0.10	<0.10	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.132	<0.020	<0.020	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.088	0.109 <sup>RRV</sup>	<0.050	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0017	<0.0010	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0016	<0.0010	<0.0010	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	----	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	219	<0.30	<0.30	----	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.090	0.109	<0.050	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.60	<0.50	<0.50	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_BC10A _WG_2021_Q1 _NP	EV_MW_BC10B _WG_2021_Q1 _NP	EV_MW_BC10C _WG_2021_Q1 _NP	----	----
Client sampling date / time					21-Mar-2021 14:59	21-Mar-2021 15:04	21-Mar-2021 15:09	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100489-006	CG2100489-007	CG2100489-008	-----	-----	
					Result	Result	Result	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.43	<0.50	<0.50	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	11.9	<0.10	<0.10	----	----	
cation sum	----	EC101	0.10	meq/L	11.6	<0.10	<0.10	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	97.5	100	100	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.28	<0.010	<0.010	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00013	<0.00010	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0895	<0.00010	<0.00010	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.050	<0.010	<0.010	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.113	<0.0050	<0.0050	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	117	<0.050	<0.050	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.47	<0.10	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.101	<0.010	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0359	<0.0010	<0.0010	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	58.7	<0.0050	<0.0050	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.768	<0.00010	<0.00010	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00180	<0.000050	<0.000050	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00351	<0.00050	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.18	<0.050	<0.050	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.778	<0.050	<0.050	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.26	<0.050	<0.050	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_BC10A _WG_2021_Q1 _NP	EV_MW_BC10B _WG_2021_Q1 _NP	EV_MW_BC10C _WG_2021_Q1 _NP	----	----
Client sampling date / time					21-Mar-2021 14:59	21-Mar-2021 15:04	21-Mar-2021 15:09	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100489-006 Result	CG2100489-007 Result	CG2100489-008 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	18.2	<0.050	<0.050	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.737	<0.00020	<0.00020	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	80.1	<0.50	<0.50	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000057	<0.000010	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00146	<0.000010	<0.000010	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100489</b>	Page	: 1 of 30
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Annie Larrivee	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V1C 4C3	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 23-Mar-2021 09:00
PO	: VPO00741597	Issue Date	: 07-Apr-2021 14:41
C-O-C number	: 20210321Q1GW		
Sampler	: CE/TP		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

RIGHT SOLUTIONS | RIGHT PARTNER



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q1_NP	E298	21-Mar-2021	28-Mar-2021	28 days	6 days	✓	28-Mar-2021	21 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q1_NP	E298	21-Mar-2021	28-Mar-2021	28 days	6 days	✓	28-Mar-2021	21 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q1_NP	E298	21-Mar-2021	28-Mar-2021	28 days	6 days	✓	28-Mar-2021	21 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q1_NP	E298	21-Mar-2021	28-Mar-2021	28 days	6 days	✓	28-Mar-2021	21 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q1_NP	E298	21-Mar-2021	28-Mar-2021	28 days	6 days	✓	28-Mar-2021	21 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GW_WG_2021_Q1_NP	E298	21-Mar-2021	28-Mar-2021	28 days	7 days	✓	28-Mar-2021	20 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q1_NP	E298	21-Mar-2021	28-Mar-2021	28 days	7 days	✓	28-Mar-2021	20 days	0 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q1_NP	E298	21-Mar-2021	28-Mar-2021	28 days	7 days	✓	28-Mar-2021	20 days	0 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_GV3GW_WG_2021_Q1_NP	E235.Br-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC10A_WG_2021_Q1_NP	E235.Br-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q1_NP	E235.Br-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC10C_WG_2021_Q1_NP	E235.Br-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GC1B_WG_2021_Q1_NP	E235.Br-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q1_NP	E235.Br-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q1_NP	E235.Br-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q1_NP	E235.Br-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_GV3GW_WG_2021_Q1_NP	E235.CI-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC10A_WG_2021_Q1_NP	E235.CI-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q1_NP	E235.CI-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC10C_WG_2021_Q1_NP	E235.CI-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GC1B_WG_2021_Q1_NP	E235.CI-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q1_NP	E235.CI-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q1_NP	E235.CI-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q1_NP	E235.CI-L	21-Mar-2021	----	----	----		24-Mar-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> EV_GV3GW_WG_2021_Q1_NP	E378-U	21-Mar-2021	----	----	----		23-Mar-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_GV3GWS_WG_2021_Q1_NP	E378-U	21-Mar-2021	----	----	----		23-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_BC10A_WG_2021_Q1_NP	E378-U	21-Mar-2021	----	----	----		23-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_BC10B_WG_2021_Q1_NP	E378-U	21-Mar-2021	----	----	----		23-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_BC10C_WG_2021_Q1_NP	E378-U	21-Mar-2021	----	----	----		23-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_GC1B_WG_2021_Q1_NP	E378-U	21-Mar-2021	----	----	----		23-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_GV4A_WG_2021_Q1_NP	E378-U	21-Mar-2021	----	----	----		23-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_GV4B_WG_2021_Q1_NP	E378-U	21-Mar-2021	----	----	----		23-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_GV3GW_WG_2021_Q1_NP	E235.F	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_BC10A_WG_2021_Q1_NP	E235.F	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q1_NP	E235.F	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_MW_BC10C_WG_2021_Q1_NP	E235.F	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_MW_GC1B_WG_2021_Q1_NP	E235.F	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q1_NP	E235.F	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q1_NP	E235.F	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q1_NP	E235.F	21-Mar-2021	----	----	----		24-Mar-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_GV3GW_WG_2021_Q1_NP	E235.NO3-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC10A_WG_2021_Q1_NP	E235.NO3-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q1_NP	E235.NO3-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_BC10C_WG_2021_Q1_NP	E235.NO3-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_GC1B_WG_2021_Q1_NP	E235.NO3-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_GV4A_WG_2021_Q1_NP	E235.NO3-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_GV4B_WG_2021_Q1_NP	E235.NO3-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_GV3GWS_WG_2021_Q1_NP	E235.NO3-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_GV3GW_WG_2021_Q1_NP	E235.NO2-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_BC10A_WG_2021_Q1_NP	E235.NO2-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_BC10B_WG_2021_Q1_NP	E235.NO2-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_BC10C_WG_2021_Q1_NP	E235.NO2-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_GC1B_WG_2021_Q1_NP	E235.NO2-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_GV4A_WG_2021_Q1_NP	E235.NO2-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_GV4B_WG_2021_Q1_NP	E235.NO2-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_GV3GWS_WG_2021_Q1_NP	E235.NO2-L	21-Mar-2021	----	----	----		24-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_GV3GW_WG_2021_Q1_NP	E235.SO4	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_BC10A_WG_2021_Q1_NP	E235.SO4	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_BC10B_WG_2021_Q1_NP	E235.SO4	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_BC10C_WG_2021_Q1_NP	E235.SO4	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_GC1B_WG_2021_Q1_NP	E235.SO4	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✓	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q1_NP	E235.SO4	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q1_NP	E235.SO4	21-Mar-2021	----	----	----		24-Mar-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_GV3GWS_WG_2021_Q1_NP	E235.SO4	21-Mar-2021	----	----	----		24-Mar-2021	28 days	3 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_GV3GW_WG_2021_Q1_NP	E375-T	21-Mar-2021	26-Mar-2021	28 days	4 days	✔	26-Mar-2021	23 days	0 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q1_NP	E375-T	21-Mar-2021	26-Mar-2021	28 days	4 days	✔	26-Mar-2021	23 days	0 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q1_NP	E375-T	21-Mar-2021	26-Mar-2021	28 days	4 days	✔	26-Mar-2021	23 days	0 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q1_NP	E375-T	21-Mar-2021	26-Mar-2021	28 days	4 days	✔	26-Mar-2021	23 days	0 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q1_NP	E375-T	21-Mar-2021	26-Mar-2021	28 days	4 days	✔	26-Mar-2021	23 days	0 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q1_NP	E375-T	21-Mar-2021	26-Mar-2021	28 days	4 days	✔	26-Mar-2021	23 days	0 days	✔



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q1_NP	E375-T	21-Mar-2021	26-Mar-2021	28 days	4 days	✔	26-Mar-2021	23 days	0 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q1_NP	E375-T	21-Mar-2021	26-Mar-2021	28 days	4 days	✔	26-Mar-2021	23 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GW_WG_2021_Q1_NP	E318	21-Mar-2021	29-Mar-2021	28 days	8 days	✔	29-Mar-2021	19 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q1_NP	E318	21-Mar-2021	29-Mar-2021	28 days	8 days	✔	29-Mar-2021	19 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q1_NP	E318	21-Mar-2021	29-Mar-2021	28 days	8 days	✔	29-Mar-2021	19 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q1_NP	E318	21-Mar-2021	29-Mar-2021	28 days	8 days	✔	29-Mar-2021	19 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q1_NP	E318	21-Mar-2021	29-Mar-2021	28 days	8 days	✔	29-Mar-2021	19 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q1_NP	E318	21-Mar-2021	29-Mar-2021	28 days	8 days	✔	29-Mar-2021	19 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q1_NP	E318	21-Mar-2021	29-Mar-2021	28 days	8 days	✔	29-Mar-2021	19 days	0 days	✔	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q1_NP	E318	21-Mar-2021	29-Mar-2021	28 days	8 days	✔	29-Mar-2021	19 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GW_WG_2021_Q1_NP	E372-U	21-Mar-2021	29-Mar-2021	28 days	7 days	✔	29-Mar-2021	20 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q1_NP	E372-U	21-Mar-2021	29-Mar-2021	28 days	7 days	✔	29-Mar-2021	20 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q1_NP	E372-U	21-Mar-2021	29-Mar-2021	28 days	7 days	✔	29-Mar-2021	20 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q1_NP	E372-U	21-Mar-2021	29-Mar-2021	28 days	7 days	✔	29-Mar-2021	20 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q1_NP	E372-U	21-Mar-2021	29-Mar-2021	28 days	7 days	✔	29-Mar-2021	20 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q1_NP	E372-U	21-Mar-2021	29-Mar-2021	28 days	7 days	✔	29-Mar-2021	20 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
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<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q1_NP	E372-U	21-Mar-2021	29-Mar-2021	28 days	7 days	✔	29-Mar-2021	20 days	0 days	✔	





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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_GV3GW_WG_2021_Q1_NP	E421.Cr-L	21-Mar-2021	25-Mar-2021	180 days	3 days	✔	26-Mar-2021	176 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10A_WG_2021_Q1_NP	E421.Cr-L	21-Mar-2021	25-Mar-2021	180 days	3 days	✔	26-Mar-2021	176 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10B_WG_2021_Q1_NP	E421.Cr-L	21-Mar-2021	25-Mar-2021	180 days	3 days	✔	26-Mar-2021	176 days	1 days	✔	
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<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_GV3GWS_WG_2021_Q1_NP	E421.Cr-L	21-Mar-2021	25-Mar-2021	180 days	4 days	✔	26-Mar-2021	175 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_GV3GW_WG_2021_Q1_NP	E509	21-Mar-2021	26-Mar-2021	28 days	4 days	✔	26-Mar-2021	23 days	0 days	✔	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_GV3GWS_WG_2021_Q1_NP	E509	21-Mar-2021	26-Mar-2021	28 days	4 days	✓	26-Mar-2021	23 days	0 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_BC10A_WG_2021_Q1_NP	E509	21-Mar-2021	26-Mar-2021	28 days	4 days	✓	26-Mar-2021	23 days	0 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_BC10B_WG_2021_Q1_NP	E509	21-Mar-2021	26-Mar-2021	28 days	4 days	✓	26-Mar-2021	23 days	0 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
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<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
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<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
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<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GV4B_WG_2021_Q1_NP	E509	21-Mar-2021	26-Mar-2021	28 days	4 days	✓	26-Mar-2021	23 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_GV3GW_WG_2021_Q1_NP	E421	21-Mar-2021	25-Mar-2021	180 days	3 days	✓	26-Mar-2021	176 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10A_WG_2021_Q1_NP	E421	21-Mar-2021	25-Mar-2021	180 days	3 days	✓	26-Mar-2021	176 days	1 days	✓	





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			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10B_WG_2021_Q1_NP	E421	21-Mar-2021	25-Mar-2021	180 days	3 days	✔	26-Mar-2021	176 days	1 days	✔	
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<b>HDPE dissolved (nitric acid)</b> EV_MW_GV4A_WG_2021_Q1_NP	E421	21-Mar-2021	25-Mar-2021	180 days	3 days	✔	26-Mar-2021	176 days	1 days	✔	
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<b>HDPE dissolved (nitric acid)</b> EV_MW_GV4B_WG_2021_Q1_NP	E421	21-Mar-2021	25-Mar-2021	180 days	3 days	✔	26-Mar-2021	176 days	1 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_GV3GWS_WG_2021_Q1_NP	E421	21-Mar-2021	25-Mar-2021	180 days	4 days	✔	26-Mar-2021	175 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_GV3GW_WG_2021_Q1_NP	E358-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✔	29-Mar-2021	19 days	0 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q1_NP	E358-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✔	29-Mar-2021	19 days	0 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q1_NP	E358-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✔	29-Mar-2021	19 days	0 days	✔	



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			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q1_NP	E358-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✓	29-Mar-2021	19 days	0 days	✓	
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<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q1_NP	E358-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✓	29-Mar-2021	19 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q1_NP	E358-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✓	29-Mar-2021	19 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q1_NP	E358-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✓	29-Mar-2021	19 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q1_NP	E358-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✓	29-Mar-2021	19 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GW_WG_2021_Q1_NP	E355-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✓	29-Mar-2021	19 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q1_NP	E355-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✓	29-Mar-2021	19 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q1_NP	E355-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✓	29-Mar-2021	19 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q1_NP	E355-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✓	29-Mar-2021	19 days	0 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q1_NP	E355-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✓	29-Mar-2021	19 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q1_NP	E355-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✓	29-Mar-2021	19 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q1_NP	E355-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✓	29-Mar-2021	19 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q1_NP	E355-L	21-Mar-2021	29-Mar-2021	28 days	8 days	✓	29-Mar-2021	19 days	0 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_GV3GW_WG_2021_Q1_NP	E283	21-Mar-2021	----	----	----		02-Apr-2021	14 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q1_NP	E283	21-Mar-2021	----	----	----		02-Apr-2021	14 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_BC10A_WG_2021_Q1_NP	E283	21-Mar-2021	----	----	----		02-Apr-2021	14 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q1_NP	E283	21-Mar-2021	----	----	----		02-Apr-2021	14 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_BC10C_WG_2021_Q1_NP	E283	21-Mar-2021	----	----	----		02-Apr-2021	14 days	11 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_MW_GC1B_WG_2021_Q1_NP	E283	21-Mar-2021	----	----	----		02-Apr-2021	14 days	11 days	✔
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_MW_GV4A_WG_2021_Q1_NP	E283	21-Mar-2021	----	----	----		02-Apr-2021	14 days	11 days	✔
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_MW_GV4B_WG_2021_Q1_NP	E283	21-Mar-2021	----	----	----		02-Apr-2021	14 days	11 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_BC10A_WG_2021_Q1_NP	E290	21-Mar-2021	----	----	----		29-Mar-2021	14 days	7 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_BC10B_WG_2021_Q1_NP	E290	21-Mar-2021	----	----	----		29-Mar-2021	14 days	7 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_BC10C_WG_2021_Q1_NP	E290	21-Mar-2021	----	----	----		29-Mar-2021	14 days	7 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_GV3GW_WG_2021_Q1_NP	E290	21-Mar-2021	----	----	----		29-Mar-2021	14 days	8 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_GV3GWS_WG_2021_Q1_NP	E290	21-Mar-2021	----	----	----		29-Mar-2021	14 days	8 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_GC1B_WG_2021_Q1_NP	E290	21-Mar-2021	----	----	----		29-Mar-2021	14 days	8 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_GV4A_WG_2021_Q1_NP	E290	21-Mar-2021	----	----	----		29-Mar-2021	14 days	8 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_GV4B_WG_2021_Q1_NP	E290	21-Mar-2021	----	----	----		29-Mar-2021	14 days	8 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_BC10A_WG_2021_Q1_NP	E100	21-Mar-2021	----	----	----		29-Mar-2021	28 days	7 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_BC10B_WG_2021_Q1_NP	E100	21-Mar-2021	----	----	----		29-Mar-2021	28 days	7 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_BC10C_WG_2021_Q1_NP	E100	21-Mar-2021	----	----	----		29-Mar-2021	28 days	7 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_GV3GW_WG_2021_Q1_NP	E100	21-Mar-2021	----	----	----		29-Mar-2021	28 days	8 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_GV3GWS_WG_2021_Q1_NP	E100	21-Mar-2021	----	----	----		29-Mar-2021	28 days	8 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_GC1B_WG_2021_Q1_NP	E100	21-Mar-2021	----	----	----		29-Mar-2021	28 days	8 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_GV4A_WG_2021_Q1_NP	E100	21-Mar-2021	----	----	----		29-Mar-2021	28 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q1_NP	E100	21-Mar-2021	----	----	----		29-Mar-2021	28 days	8 days		✓
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> EV_MW_BC10A_WG_2021_Q1_NP	E125	21-Mar-2021	----	----	----		30-Mar-2021	0.34 hrs	207 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q1_NP	E125	21-Mar-2021	----	----	----		30-Mar-2021	0.34 hrs	207 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> EV_MW_BC10C_WG_2021_Q1_NP	E125	21-Mar-2021	----	----	----		30-Mar-2021	0.34 hrs	207 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> EV_MW_GC1B_WG_2021_Q1_NP	E125	21-Mar-2021	----	----	----		30-Mar-2021	0.34 hrs	207 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q1_NP	E125	21-Mar-2021	----	----	----		30-Mar-2021	0.34 hrs	209 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q1_NP	E125	21-Mar-2021	----	----	----		30-Mar-2021	0.34 hrs	209 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> EV_GV3GW_WG_2021_Q1_NP	E125	21-Mar-2021	----	----	----		30-Mar-2021	0.34 hrs	210 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q1_NP	E125	21-Mar-2021	----	----	----		30-Mar-2021	0.34 hrs	212 hrs		* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_BC10A_WG_2021_Q1_NP	E108	21-Mar-2021	----	----	----		29-Mar-2021	0.25 hrs	191 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_BC10B_WG_2021_Q1_NP	E108	21-Mar-2021	----	----	----		29-Mar-2021	0.25 hrs	191 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_BC10C_WG_2021_Q1_NP	E108	21-Mar-2021	----	----	----		29-Mar-2021	0.25 hrs	191 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_GC1B_WG_2021_Q1_NP	E108	21-Mar-2021	----	----	----		29-Mar-2021	0.25 hrs	192 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_GV3GWS_WG_2021_Q1_NP	E108	21-Mar-2021	----	----	----		29-Mar-2021	0.25 hrs	194 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_GV4A_WG_2021_Q1_NP	E108	21-Mar-2021	----	----	----		29-Mar-2021	0.25 hrs	194 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_GV4B_WG_2021_Q1_NP	E108	21-Mar-2021	----	----	----		29-Mar-2021	0.25 hrs	194 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_GV3GW_WG_2021_Q1_NP	E108	21-Mar-2021	----	----	----		29-Mar-2021	0.25 hrs	195 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_BC10A_WG_2021_Q1_NP	E162	21-Mar-2021	----	----	----		29-Mar-2021	7 days	7 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_BC10B_WG_2021_Q1_NP	E162	21-Mar-2021	----	----	----		29-Mar-2021	7 days	7 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_BC10C_WG_2021_Q1_NP	E162	21-Mar-2021	----	----	----		29-Mar-2021	7 days	7 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_GC1B_WG_2021_Q1_NP	E162	21-Mar-2021	----	----	----		29-Mar-2021	7 days	7 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_GV3GW_WG_2021_Q1_NP	E162	21-Mar-2021	----	----	----		29-Mar-2021	7 days	8 days	* EHT
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_GV3GWS_WG_2021_Q1_NP	E162	21-Mar-2021	----	----	----		29-Mar-2021	7 days	8 days	* EHT
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_GV4A_WG_2021_Q1_NP	E162	21-Mar-2021	----	----	----		29-Mar-2021	7 days	8 days	* EHT
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_GV4B_WG_2021_Q1_NP	E162	21-Mar-2021	----	----	----		29-Mar-2021	7 days	8 days	* EHT
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] EV_MW_BC10A_WG_2021_Q1_NP	E160-L	21-Mar-2021	----	----	----		29-Mar-2021	7 days	7 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] EV_MW_BC10B_WG_2021_Q1_NP	E160-L	21-Mar-2021	----	----	----		29-Mar-2021	7 days	7 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_BC10C_WG_2021_Q1_NP	E160-L	21-Mar-2021	----	----	----		29-Mar-2021	7 days	7 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_GC1B_WG_2021_Q1_NP	E160-L	21-Mar-2021	----	----	----		29-Mar-2021	7 days	7 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_GV3GW_WG_2021_Q1_NP	E160-L	21-Mar-2021	----	----	----		29-Mar-2021	7 days	8 days	* EHT
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_GV3GWS_WG_2021_Q1_NP	E160-L	21-Mar-2021	----	----	----		29-Mar-2021	7 days	8 days	* EHT
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_GV4A_WG_2021_Q1_NP	E160-L	21-Mar-2021	----	----	----		29-Mar-2021	7 days	8 days	* EHT
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_GV4B_WG_2021_Q1_NP	E160-L	21-Mar-2021	----	----	----		29-Mar-2021	7 days	8 days	* EHT
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_GV3GW_WG_2021_Q1_NP	E121	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_GV3GWS_WG_2021_Q1_NP	E121	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_BC10A_WG_2021_Q1_NP	E121	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q1_NP	E121	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_BC10C_WG_2021_Q1_NP	E121	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_GC1B_WG_2021_Q1_NP	E121	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q1_NP	E121	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q1_NP	E121	21-Mar-2021	----	----	----		24-Mar-2021	3 days	2 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 EHT: Exceeded ALS recommended hold time prior to analysis.  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	172841	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	170713	1	27	3.7	5.0	✖
Ammonia by Fluorescence	E298	170429	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	168253	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	168254	1	20	5.0	5.0	✔
Conductivity in Water	E100	170711	1	27	3.7	5.0	✖
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	168786	1	12	8.3	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	169422	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	168787	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	170898	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	167917	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	168257	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	168255	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	168256	1	20	5.0	5.0	✔
ORP by Electrode	E125	170994	2	40	5.0	5.0	✔
pH by Meter	E108	170712	1	27	3.7	5.0	✖
Sulfate in Water by IC	E235.SO4	168252	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	170810	2	40	5.0	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	168685	1	12	8.3	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	170839	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	170904	0	20	0.0	5.0	✖
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	170417	2	35	5.7	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	170804	0	20	0.0	5.0	✖
Turbidity by Nephelometry	E121	168063	2	40	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	172841	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	170713	2	27	7.4	5.0	✔
Ammonia by Fluorescence	E298	170429	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	168253	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	168254	1	20	5.0	5.0	✔
Conductivity in Water	E100	170711	2	27	7.4	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	168786	1	12	8.3	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	169422	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	168787	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	170898	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	167917	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	168257	1	20	5.0	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	168255	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	168256	1	20	5.0	5.0	✓
ORP by Electrode	E125	170994	2	40	5.0	5.0	✓
pH by Meter	E108	170712	2	27	7.4	5.0	✓
Sulfate in Water by IC	E235.SO4	168252	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	170810	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	168685	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	170839	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	170904	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	170417	2	35	5.7	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	170804	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	168063	2	40	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	172841	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	170713	2	27	7.4	5.0	✓
Ammonia by Fluorescence	E298	170429	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	168253	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	168254	1	20	5.0	5.0	✓
Conductivity in Water	E100	170711	2	27	7.4	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	168786	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	169422	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	168787	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	170898	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	167917	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	168257	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	168255	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	168256	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	168252	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	170810	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	168685	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	170839	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	170904	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	170417	2	35	5.7	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	170804	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	168063	2	40	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	170429	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	168253	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	168254	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	168786	1	12	8.3	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Mercury in Water by CVAAS	E509	169422	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	168787	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	170898	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	167917	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	168257	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	168255	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	168256	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	168252	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	168685	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	170839	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	170904	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	170417	2	35	5.7	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2100489**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Annie Larrivee  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210321Q1GW  
**Sampler** : CE/TP  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 8  
**No. of samples analysed** : 8

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Mar-2021 09:00  
**Date Analysis Commenced** : 23-Mar-2021  
**Issue Date** : 07-Apr-2021 14:41

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2100489  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 168063)</b>											
CG2100486-011	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 168064)</b>											
CG2100489-008	EV_MW_BC10C_WG_2021_Q1_NP	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 170711)</b>											
CG2100489-001	EV_GV3GWS_WG_2021_Q1_NP	conductivity	----	E100	2.0	µS/cm	468	467	0.214%	10%	----
<b>Physical Tests (QC Lot: 170712)</b>											
CG2100489-001	EV_GV3GWS_WG_2021_Q1_NP	pH	----	E108	0.10	pH units	8.12	8.12	0.00%	4%	----
<b>Physical Tests (QC Lot: 170713)</b>											
CG2100489-001	EV_GV3GWS_WG_2021_Q1_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	238	246	3.30%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	238	246	3.30%	20%	----
<b>Physical Tests (QC Lot: 170810)</b>											
CG2100485-008	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1720	1710	0.613%	20%	----
<b>Physical Tests (QC Lot: 170811)</b>											
CG2100489-002	EV_GV3GW_WG_2021_Q1_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	380	365	4.03%	20%	----
<b>Physical Tests (QC Lot: 170994)</b>											
CG2100485-009	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	312	300	3.92%	15%	----
<b>Physical Tests (QC Lot: 170995)</b>											
CG2100489-003	EV_MW_GV4B_WG_2021_Q1_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	381	383	0.550%	15%	----
<b>Physical Tests (QC Lot: 172841)</b>											
CG2100470-013	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.1	2.2	0.1	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 167917)</b>											
CG2100486-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0174	0.0181	3.54%	20%	----
<b>Anions and Nutrients (QC Lot: 168252)</b>											
CG2100486-012	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	0.38	0.08	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 168253)</b>											
CG2100486-012	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 168254)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 168254) - continued</b>											
CG2100486-012	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 168255)</b>											
CG2100486-012	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 168256)</b>											
CG2100486-012	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 168257)</b>											
CG2100486-012	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 168685)</b>											
CG2100459-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0091	0.0090	0.00003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170417)</b>											
CG2100485-008	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0119	0.0121	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170418)</b>											
CG2100489-002	EV_GV3GW_WG_2021_Q1_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170429)</b>											
CG2100486-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0102	0.0097	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170839)</b>											
CG2100486-006	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.205	0.151	0.054	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 170898)</b>											
CG2100486-011	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 168786)</b>											
CG2100489-001	EV_GV3GWS_WG_2021_Q1_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00016	0.00018	0.00001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 168787)</b>											
CG2100489-001	EV_GV3GWS_WG_2021_Q1_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0044	0.0032	0.0012	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0646	0.0655	1.37%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0068 µg/L	0.0000062	0.0000006	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	71.1	70.0	1.66%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 168787) - continued</b>											
CG2100489-001	EV_GV3GWS_WG_2021_Q1_NP	lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0066	0.0066	0.000001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	22.8	22.9	0.615%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00024	0.00026	0.00002	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00108	0.00114	5.75%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.948	0.971	2.39%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	3.13 µg/L	0.00319	1.89%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.28	3.32	1.14%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.18	2.17	0.754%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.194	0.193	0.562%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	12.2	12.6	3.38%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00010	0.00010	0.0000009	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00124	0.00127	2.38%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 169422)</b>											
CG2100486-004	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 168063)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 168064)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 170711)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 170713)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 170804)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 170810)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 170811)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 170823)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 170824)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 172841)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 167917)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 168252)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 168253)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 168254)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 168255)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 168256)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 168257)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 168685)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 170417)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 170418)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 170429)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 170839)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Organic / Inorganic Carbon (QCLot: 170898)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 170904)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 168786)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 168787)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 168787) - continued</b>						
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 169422)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 168063)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100	85.0	115	---
<b>Physical Tests (QCLot: 168064)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 170711)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.3	90.0	110	---
<b>Physical Tests (QCLot: 170712)</b>									
pH	---	E108	---	pH units	7 pH units	99.8	98.6	101	---
<b>Physical Tests (QCLot: 170713)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	98.6	85.0	115	---
<b>Physical Tests (QCLot: 170804)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	87.5	85.0	115	---
<b>Physical Tests (QCLot: 170810)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	97.0	85.0	115	---
<b>Physical Tests (QCLot: 170811)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	97.2	85.0	115	---
<b>Physical Tests (QCLot: 170822)</b>									
pH	---	E108	---	pH units	7 pH units	99.8	98.6	101	---
<b>Physical Tests (QCLot: 170823)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.5	90.0	110	---
<b>Physical Tests (QCLot: 170824)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	99.7	85.0	115	---
<b>Physical Tests (QCLot: 170994)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 170995)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Physical Tests (QCLot: 172841)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	114	85.0	115	---
<b>Anions and Nutrients (QCLot: 167917)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	93.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 168252)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 168253)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 168253) - continued</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	106	85.0	115	----
<b>Anions and Nutrients (QCLot: 168254)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 168255)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 168256)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	109	90.0	110	----
<b>Anions and Nutrients (QCLot: 168257)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 168685)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	92.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 170417)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	93.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 170418)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	88.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 170429)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	93.1	85.0	115	----
<b>Anions and Nutrients (QCLot: 170839)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	89.0	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 170898)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 170904)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	97.8	80.0	120	----
<b>Dissolved Metals (QCLot: 168786)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
<b>Dissolved Metals (QCLot: 168787)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.3	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.2	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	94.1	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	95.8	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.1	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 168787) - continued</b>									
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.4	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.6	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.9	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.3	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	86.4	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.0	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.6	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	97.5	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.3	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.1	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 167917)</b>										
CG2100486-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0501 mg/L	0.05 mg/L	100	70.0	130	----
<b>Anions and Nutrients (QCLot: 168252)</b>										
CG2100486-012	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 168253)</b>										
CG2100486-012	Anonymous	bromide	24959-67-9	E235.Br-L	0.525 mg/L	0.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 168254)</b>										
CG2100486-012	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 168255)</b>										
CG2100486-012	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 168256)</b>										
CG2100486-012	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.550 mg/L	0.5 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 168257)</b>										
CG2100486-012	Anonymous	fluoride	16984-48-8	E235.F	1.10 mg/L	1 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 168685)</b>										
CG2100459-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0699 mg/L	0.0676 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 170417)</b>										
CG2100485-009	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0543 mg/L	0.0676 mg/L	80.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 170418)</b>										
CG2100489-003	EV_MW_GV4B_WG_2021_Q1_NP	phosphorus, total	7723-14-0	E372-U	0.0491 mg/L	0.0676 mg/L	72.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 170429)</b>										
CG2100486-009	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0835 mg/L	0.1 mg/L	83.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 170839)</b>										
CG2100486-007	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	3.21 mg/L	2.5 mg/L	128	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 170898)</b>										
CG2100486-012	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.8 mg/L	23.9 mg/L	99.4	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 170904)</b>										
CG2100486-004	Anonymous	carbon, total organic [TOC]	----	E355-L	22.5 mg/L	23.9 mg/L	94.0	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 168786)</b>										
CG2100489-001	EV_GV3GWS_WG_2021_Q1_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0393 mg/L	0.04 mg/L	98.3	70.0	130	----
<b>Dissolved Metals (QCLot: 168787)</b>										
CG2100489-001	EV_GV3GWS_WG_2021_Q1_NP	aluminum, dissolved	7429-90-5	E421	0.189 mg/L	0.2 mg/L	94.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00787 mg/L	0.01 mg/L	78.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.096 mg/L	0.1 mg/L	96.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00385 mg/L	0.004 mg/L	96.3	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0186 mg/L	0.02 mg/L	93.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.87 mg/L	2 mg/L	93.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0985 mg/L	0.1 mg/L	98.5	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0195 mg/L	0.02 mg/L	97.3	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0371 mg/L	0.04 mg/L	92.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.10 mg/L	4 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0426 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.26 mg/L	10 mg/L	92.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.7 mg/L	20 mg/L	104	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00367 mg/L	0.004 mg/L	91.9	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0387 mg/L	0.04 mg/L	96.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00386 mg/L	0.004 mg/L	96.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0990 mg/L	0.1 mg/L	99.0	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.408 mg/L	0.4 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 169422)</b>										
CG2100486-005	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000982 mg/L	0.0001 mg/L	98.2	70.0	130	----



COC ID: 20210321QIGW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO		LABORATORY			OTHER INFO				
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling	Lab Contact	Lyudmyla Shvets		Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Annie Larrivee	Email	lyudmyla.shvets@alsglobal.com		Email 2:	Annie.Larrivee@teck.com	X	X	X
Email	Annie.Larrivee@teck.com	Address	2559 29 Street NE		Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3				Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
					Email 5:	teckcoal@equisonline.com			X
					Email 6:	Micheal.Moore@teck.com	X	X	X

Environmental Division  
Calgary  
Work Order Reference  
**CG2100489**



Telephone : +1 403 407 1800

Province	BC	City	Calgary	Province	AB
Country	Canada	Postal Code	T1Y 7B5	Country	Canada
Phone Number	403-407-1800		PO number	VPO00741597	

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PH	TECKCOAL-ROUTINE-VA (E305.1)	Bi-carbonate, Bi-CL, Carbonate, CO3-CL, Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EY_GV3GWS_WG_2021_Q1_NP	EY_GV3GWS	WG	N	03/21/21	10:23	G	5		1	1	1	1							1		
EY_GV3GW_WG_2021_Q1_NP	EY_GV3GW	WG	N	03/21/21	11:44	G	5		1	1	1	1							1		
EY_MW_GV4B_WG_2021_Q1_NP	EY_MW_GV4B	WG	N	03/21/21	12:34	G	5		1	1	1	1							1		
EY_MW_GV4A_WG_2021_Q1_NP	EY_MW_GV4A	WG	N	03/21/21	12:55	G	5		1	1	1	1							1		
EY_MW_GC1B_WG_2021_Q1_NP	EY_MW_GC1B	WG	N	03/21/21	14:54	G	5		1	1	1	1							1		
EY_MW_BC10A_WG_2021_Q1_NP	EY_MW_BC10A	WG	N	03/21/21	14:59	G	5		1	1	1	1							1		
EY_MW_BC10B_WG_2021_Q1_NP	EY_MW_BC10B	WG	N	03/21/21	15:04	G	5		1	1	1	1							1		
EY_MW_BC10C_WG_2021_Q1_NP	EY_MW_BC10C	WG	N	03/21/21	15:09	G	5		1	1	1	1							1		
							Total	40													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Emslie/T. Phillips	March 21, 2021	<i>[Signature]</i>	3/21 0900

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	C. Emslie/T. Phillips	Mobile #	1-250-425-1101	
Sampler's Signature	<i>[Signature]</i>	Date/Time	March 21, 2021	

92



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100336**  
**Client** : **Teck Coal Limited**  
**Contact** : Annie Larrivee  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210311Q1GW  
**Sampler** : T. Phillips  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 12-Mar-2021 08:50  
**Date Analysis Commenced** : 12-Mar-2021  
**Issue Date** : 23-Mar-2021 12:18

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Woochan Song	Lab Assistant	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID		EV_MW_SP1A_	EV_MW_SP1B_	EV_MW_SP1C_	----	----
(Matrix: Water)					WG_2021_Q1_	WG_2021_Q1_	WG_2021_Q1_				
					N	N	N				
Client sampling date / time					11-Mar-2021 12:10	11-Mar-2021 11:45	11-Mar-2021 13:05				
Analyte	CAS Number	Method	LOR	Unit	CG2100336-001	CG2100336-002	CG2100336-003	-----	-----		
					Result	Result	Result	---	---		
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
conductivity	----	E100	2.0	µS/cm	551	471	452	----	----		
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	301	255	242	----	----		
oxidation-reduction potential [ORP]	----	E125	0.10	mV	390	409	390	----	----		
pH	----	E108	0.10	pH units	8.22	8.25 <sup>DLHC</sup>	8.26 <sup>DLHC</sup>	----	----		
solids, total dissolved [TDS]	----	E162	10	mg/L	306 <sup>DLHC</sup>	292 <sup>DLHC</sup>	258 <sup>DLHC</sup>	----	----		
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	1.4	----	----		
turbidity	----	E121	0.10	NTU	5.87	<0.10	0.26	----	----		
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	293	174	188	----	----		
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	293	174	188	----	----		
bicarbonate	71-52-3	E290	1.0	mg/L	357	212	230	----	----		
carbonate	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----		
hydroxide	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----		
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.824 <sup>DLM</sup>	<0.0050	<0.0050	----	----		
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0.051	----	----		
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.23	3.92	9.89	----	----		
fluoride	16984-48-8	E235.F	0.020	mg/L	0.327	0.121	0.126	----	----		
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.804	0.164	0.052	----	----		
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0121	0.939	0.376	----	----		
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0018	0.0011	----	----		
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0.0015	----	----		
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0103	<0.0020	0.0094	----	----		
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0074	<0.0020	0.0040	----	----		
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	41.4	88.1	57.2	----	----		
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.816	1.10	0.429	----	----		
<b>Organic / Inorganic Carbon</b>											



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SP1A_ WG_2021_Q1_ N	EV_MW_SP1B_ WG_2021_Q1_ N	EV_MW_SP1C_ WG_2021_Q1_ N	----	----
Client sampling date / time					11-Mar-2021 12:10	11-Mar-2021 11:45	11-Mar-2021 13:05	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100336-001	CG2100336-002	CG2100336-003	-----	-----	
					Result	Result	Result	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	<0.50	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	<0.50	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.85	5.50	5.26	----	----	
cation sum	----	EC101	0.10	meq/L	6.59	5.36	5.20	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.2	97.4	98.8	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.93	1.29	0.574	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0033	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00010	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.559	0.160	0.162	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.027	<0.010	<0.010	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0098	0.0281	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	76.2	66.4	66.6	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00015	0.00014	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0.00044	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.540	<0.010	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0937	0.0064	0.0089	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	27.0	21.7	18.5	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0608	<0.00010	0.00044	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000374	0.000719	0.000800	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.51	0.738	0.830	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	9.82	3.91	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SP1A_ WG_2021_Q1_ N	EV_MW_SP1B_ WG_2021_Q1_ N	EV_MW_SP1C_ WG_2021_Q1_ N	----	----
Client sampling date / time					11-Mar-2021 12:10	11-Mar-2021 11:45	11-Mar-2021 13:05	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100336-001 Result	CG2100336-002 Result	CG2100336-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.23	2.54	2.67	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	9.15	5.69	7.80	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.292	0.154	0.162	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	16.3	35.0	22.6	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000104	0.000813	0.000820	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100336</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Annie Larrivee	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V1C 4C3	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 12-Mar-2021 08:50
PO	: VPO00741597	Issue Date	: 23-Mar-2021 12:18
C-O-C number	: 20210311Q1GW		
Sampler	: T. Phillips		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.





**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Laboratory Control Sample (LCS) Recoveries</b>								
Dissolved Metals	QC-MRG2-1632470 02	----	sulfur, dissolved	7704-34-9	E421	121 % <sup>MES</sup>	80.0-120%	Recovery greater than upper control limit

**Result Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q1_N	E298	11-Mar-2021	18-Mar-2021	28 days	6 days	✓	18-Mar-2021	21 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q1_N	E298	11-Mar-2021	18-Mar-2021	28 days	6 days	✓	18-Mar-2021	21 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q1_N	E298	11-Mar-2021	18-Mar-2021	28 days	6 days	✓	18-Mar-2021	21 days	0 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1A_WG_2021_Q1_N	E235.Br-L	11-Mar-2021	----	----	----		13-Mar-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1B_WG_2021_Q1_N	E235.Br-L	11-Mar-2021	----	----	----		13-Mar-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1C_WG_2021_Q1_N	E235.Br-L	11-Mar-2021	----	----	----		13-Mar-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1A_WG_2021_Q1_N	E235.Cl-L	11-Mar-2021	----	----	----		13-Mar-2021	28 days	1 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1B_WG_2021_Q1_N	E235.Cl-L	11-Mar-2021	----	----	----		13-Mar-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1C_WG_2021_Q1_N	E235.Cl-L	11-Mar-2021	----	----	----		13-Mar-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_SP1A_WG_2021_Q1_N	E378-U	11-Mar-2021	----	----	----		13-Mar-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_SP1B_WG_2021_Q1_N	E378-U	11-Mar-2021	----	----	----		13-Mar-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_SP1C_WG_2021_Q1_N	E378-U	11-Mar-2021	----	----	----		13-Mar-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_SP1A_WG_2021_Q1_N	E235.F	11-Mar-2021	----	----	----		13-Mar-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_SP1B_WG_2021_Q1_N	E235.F	11-Mar-2021	----	----	----		13-Mar-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_SP1C_WG_2021_Q1_N	E235.F	11-Mar-2021	----	----	----		13-Mar-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1A_WG_2021_Q1_N	E235.NO3-L	11-Mar-2021	----	----	----		13-Mar-2021	3 days	1 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1B_WG_2021_Q1_N	E235.NO3-L	11-Mar-2021	----	----	----		13-Mar-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1C_WG_2021_Q1_N	E235.NO3-L	11-Mar-2021	----	----	----		13-Mar-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1A_WG_2021_Q1_N	E235.NO2-L	11-Mar-2021	----	----	----		13-Mar-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1B_WG_2021_Q1_N	E235.NO2-L	11-Mar-2021	----	----	----		13-Mar-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1C_WG_2021_Q1_N	E235.NO2-L	11-Mar-2021	----	----	----		13-Mar-2021	3 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE EV_MW_SP1A_WG_2021_Q1_N	E235.SO4	11-Mar-2021	----	----	----		13-Mar-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE EV_MW_SP1B_WG_2021_Q1_N	E235.SO4	11-Mar-2021	----	----	----		13-Mar-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE EV_MW_SP1C_WG_2021_Q1_N	E235.SO4	11-Mar-2021	----	----	----		13-Mar-2021	28 days	1 days	✓
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q1_N	E375-T	11-Mar-2021	16-Mar-2021	28 days	4 days	✓	16-Mar-2021	23 days	0 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q1_N	E375-T	11-Mar-2021	16-Mar-2021	28 days	4 days	✔	16-Mar-2021	23 days	0 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q1_N	E375-T	11-Mar-2021	16-Mar-2021	28 days	4 days	✔	16-Mar-2021	23 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q1_N	E318	11-Mar-2021	17-Mar-2021	28 days	5 days	✔	17-Mar-2021	22 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q1_N	E318	11-Mar-2021	17-Mar-2021	28 days	5 days	✔	17-Mar-2021	22 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q1_N	E318	11-Mar-2021	17-Mar-2021	28 days	5 days	✔	17-Mar-2021	22 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q1_N	E372-U	11-Mar-2021	14-Mar-2021	28 days	2 days	✔	16-Mar-2021	25 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q1_N	E372-U	11-Mar-2021	14-Mar-2021	28 days	2 days	✔	16-Mar-2021	25 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q1_N	E372-U	11-Mar-2021	14-Mar-2021	28 days	3 days	✔	16-Mar-2021	24 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1A_WG_2021_Q1_N	E421.Cr-L	11-Mar-2021	14-Mar-2021	180 days	2 days	✔	14-Mar-2021	177 days	0 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1B_WG_2021_Q1_N	E421.Cr-L	11-Mar-2021	14-Mar-2021	180 days	2 days	✓	14-Mar-2021	177 days	0 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1C_WG_2021_Q1_N	E421.Cr-L	11-Mar-2021	14-Mar-2021	180 days	2 days	✓	14-Mar-2021	177 days	0 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SP1A_WG_2021_Q1_N	E509	11-Mar-2021	14-Mar-2021	28 days	2 days	✓	14-Mar-2021	25 days	0 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SP1B_WG_2021_Q1_N	E509	11-Mar-2021	14-Mar-2021	28 days	2 days	✓	14-Mar-2021	25 days	0 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SP1C_WG_2021_Q1_N	E509	11-Mar-2021	14-Mar-2021	28 days	2 days	✓	14-Mar-2021	25 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1A_WG_2021_Q1_N	E421	11-Mar-2021	14-Mar-2021	180 days	2 days	✓	14-Mar-2021	177 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1B_WG_2021_Q1_N	E421	11-Mar-2021	14-Mar-2021	180 days	2 days	✓	14-Mar-2021	177 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1C_WG_2021_Q1_N	E421	11-Mar-2021	14-Mar-2021	180 days	2 days	✓	14-Mar-2021	177 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q1_N	E358-L	11-Mar-2021	18-Mar-2021	28 days	6 days	✓	18-Mar-2021	21 days	0 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q1_N	E358-L	11-Mar-2021	18-Mar-2021	28 days	6 days	✓	18-Mar-2021	21 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q1_N	E358-L	11-Mar-2021	18-Mar-2021	28 days	6 days	✓	18-Mar-2021	21 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q1_N	E355-L	11-Mar-2021	18-Mar-2021	28 days	6 days	✓	18-Mar-2021	21 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q1_N	E355-L	11-Mar-2021	18-Mar-2021	28 days	6 days	✓	18-Mar-2021	21 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q1_N	E355-L	11-Mar-2021	18-Mar-2021	28 days	6 days	✓	18-Mar-2021	21 days	0 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_SP1A_WG_2021_Q1_N	E283	11-Mar-2021	----	----	----		19-Mar-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_SP1C_WG_2021_Q1_N	E283	11-Mar-2021	----	----	----		19-Mar-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_SP1B_WG_2021_Q1_N	E283	11-Mar-2021	----	----	----		19-Mar-2021	14 days	8 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_SP1C_WG_2021_Q1_N	E290	11-Mar-2021	----	----	----		22-Mar-2021	14 days	10 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_SP1A_WG_2021_Q1_N	E290	11-Mar-2021	----	----	----		22-Mar-2021	14 days	11 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_SP1B_WG_2021_Q1_N	E290	11-Mar-2021	----	----	----		22-Mar-2021	14 days	11 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_SP1C_WG_2021_Q1_N	E100	11-Mar-2021	----	----	----		22-Mar-2021	28 days	10 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_SP1A_WG_2021_Q1_N	E100	11-Mar-2021	----	----	----		22-Mar-2021	28 days	11 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_SP1B_WG_2021_Q1_N	E100	11-Mar-2021	----	----	----		22-Mar-2021	28 days	11 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_SP1C_WG_2021_Q1_N	E125	11-Mar-2021	----	----	----		18-Mar-2021	0.34 hrs	160 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_SP1A_WG_2021_Q1_N	E125	11-Mar-2021	----	----	----		18-Mar-2021	0.34 hrs	161 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_SP1B_WG_2021_Q1_N	E125	11-Mar-2021	----	----	----		18-Mar-2021	0.34 hrs	161 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_SP1C_WG_2021_Q1_N	E108	11-Mar-2021	----	----	----		22-Mar-2021	0.25 hrs	263 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_SP1A_WG_2021_Q1_N	E108	11-Mar-2021	----	----	----		22-Mar-2021	0.25 hrs	264 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_SP1B_WG_2021_Q1_N	E108	11-Mar-2021	----	----	----		22-Mar-2021	0.25 hrs	265 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_SP1A_WG_2021_Q1_N	E162	11-Mar-2021	----	----	----		18-Mar-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_SP1B_WG_2021_Q1_N	E162	11-Mar-2021	----	----	----		18-Mar-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_SP1C_WG_2021_Q1_N	E162	11-Mar-2021	----	----	----		18-Mar-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE EV_MW_SP1A_WG_2021_Q1_N	E160-L	11-Mar-2021	----	----	----		18-Mar-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE EV_MW_SP1B_WG_2021_Q1_N	E160-L	11-Mar-2021	----	----	----		18-Mar-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE EV_MW_SP1C_WG_2021_Q1_N	E160-L	11-Mar-2021	----	----	----		18-Mar-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_MW_SP1A_WG_2021_Q1_N	E121	11-Mar-2021	----	----	----		13-Mar-2021	3 days	1 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_SP1B_WG_2021_Q1_N	E121	11-Mar-2021	----	----	----		13-Mar-2021	3 days	1 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_SP1C_WG_2021_Q1_N	E121	11-Mar-2021	----	----	----		13-Mar-2021	3 days	1 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	166771	0	20	0.0	5.0	✖
Alkalinity Species by Titration	E290	167244	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	165302	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	163027	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	163028	1	20	5.0	5.0	✔
Conductivity in Water	E100	167242	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	163247	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	163254	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	163248	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	165184	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	163155	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	163026	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	163029	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	163030	1	20	5.0	5.0	✔
ORP by Electrode	E125	165157	1	20	5.0	5.0	✔
pH by Meter	E108	167243	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	163031	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	165148	1	20	5.0	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	163302	1	3	33.3	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	164006	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	165190	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	163305	1	11	9.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	165144	0	20	0.0	5.0	✖
Turbidity by Nephelometry	E121	162809	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	166771	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	167244	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	165302	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	163027	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	163028	1	20	5.0	5.0	✔
Conductivity in Water	E100	167242	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	163247	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	163254	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	163248	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	165184	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	163155	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	163026	1	20	5.0	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	163029	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	163030	1	20	5.0	5.0	✓
ORP by Electrode	E125	165157	1	20	5.0	5.0	✓
pH by Meter	E108	167243	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	163031	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	165148	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	163302	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	164006	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	165190	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	163305	1	11	9.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	165144	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	162809	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	166771	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	167244	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	165302	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	163027	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	163028	1	20	5.0	5.0	✓
Conductivity in Water	E100	167242	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	163247	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	163254	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	163248	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	165184	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	163155	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	163026	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	163029	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	163030	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	163031	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	165148	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	163302	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	164006	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	165190	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	163305	1	11	9.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	165144	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	162809	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	165302	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	163027	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	163028	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	163247	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Mercury in Water by CVAAS	E509	163254	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	163248	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	165184	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	163155	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	163026	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	163029	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	163030	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	163031	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	163302	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	164006	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	165190	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	163305	1	11	9.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2100336**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Annie Larrivee  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210311Q1GW  
**Sampler** : T. Phillips  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 12-Mar-2021 08:50  
**Date Analysis Commenced** : 12-Mar-2021  
**Issue Date** : 23-Mar-2021 12:18

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
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Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
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Page : 2 of 14  
Work Order : CG2100336  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 162809)</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	turbidity	----	E121	0.10	NTU	5.87	5.90	0.510%	15%	----
<b>Physical Tests (QC Lot: 165148)</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	solids, total dissolved [TDS]	----	E162	20	mg/L	306	324	5.55%	20%	----
<b>Physical Tests (QC Lot: 165157)</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	390	385	1.31%	15%	----
<b>Physical Tests (QC Lot: 167242)</b>											
CG2100329-013	Anonymous	conductivity	----	E100	2.0	µS/cm	525	523	0.382%	10%	----
<b>Physical Tests (QC Lot: 167243)</b>											
CG2100329-013	Anonymous	pH	----	E108	0.10	pH units	8.30	8.31	0.120%	4%	----
<b>Physical Tests (QC Lot: 167244)</b>											
CG2100329-013	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	223	218	2.45%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	6.4	6.8	0.4	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	230	224	2.20%	20%	----
<b>Anions and Nutrients (QC Lot: 163026)</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	fluoride	16984-48-8	E235.F	0.020	mg/L	0.327	0.321	1.91%	20%	----
<b>Anions and Nutrients (QC Lot: 163027)</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 163028)</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.23	4.17	1.41%	20%	----
<b>Anions and Nutrients (QC Lot: 163029)</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0121	<0.0050	0.0071	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 163030)</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 163031)</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	41.4	41.3	0.252%	20%	----
<b>Anions and Nutrients (QC Lot: 163155)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 163155) - continued</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 163302)</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0074	0.0072	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 163305)</b>											
CG2100325-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0434	0.0425	2.22%	20%	----
<b>Anions and Nutrients (QC Lot: 164006)</b>											
CG2100330-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.00	mg/L	5.14	4.30	0.838	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 165302)</b>											
CG2100339-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 165184)</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 165190)</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 163247)</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	chromium, dissolved	7440-47-3	E421-Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 163248)</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.559	0.556	0.451%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.027	0.028	0.0010	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	76.2	79.3	3.98%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.540	0.538	0.388%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0937	0.0957	2.14%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	27.0	26.7	1.26%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0608	0.0612	0.644%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000374	0.000381	0.000006	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 163248) - continued</b>											
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.51	3.56	1.35%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.23	3.20	0.706%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	9.15	9.35	2.15%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.292	0.290	0.717%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	16.3	16.4	0.396%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000104	0.000102	2.23%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 163254)</b>											
CG2100328-014	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 162809)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 165144)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 165148)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 166771)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 167242)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 167244)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 163026)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 163027)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 163028)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 163029)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 163030)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 163031)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 163155)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 163302)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 163305)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 164006)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 164006) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 165302)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 165184)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 165190)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 163247)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 163248)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 163248) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 163254)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 162809)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 165144)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	96.6	85.0	115	---
<b>Physical Tests (QCLot: 165148)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	95.6	85.0	115	---
<b>Physical Tests (QCLot: 165157)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 166771)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	111	85.0	115	---
<b>Physical Tests (QCLot: 167242)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.0	90.0	110	---
<b>Physical Tests (QCLot: 167243)</b>									
pH	---	E108	---	pH units	7 pH units	99.6	98.6	101	---
<b>Physical Tests (QCLot: 167244)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 163026)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 163027)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	108	85.0	115	---
<b>Anions and Nutrients (QCLot: 163028)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 163029)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	108	90.0	110	---
<b>Anions and Nutrients (QCLot: 163030)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 163031)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	108	90.0	110	---
<b>Anions and Nutrients (QCLot: 163155)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	97.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 163302)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	87.1	80.0	120	---
<b>Anions and Nutrients (QCLot: 163305)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 163305) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	85.3	80.0	120	----
<b>Anions and Nutrients (QCLot: 164006)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	85.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 165302)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	104	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 165184)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	91.1	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 165190)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 163247)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
<b>Dissolved Metals (QCLot: 163248)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	110	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	108	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.9	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	106	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	110	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	108	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.3	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	107	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	107	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	113	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	112	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	110	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 163248) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.9	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	# 121	80.0	120	MES
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	107	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	105	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	111	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	108	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----

### Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 163026)</b>										
CG2100336-002	EV_MW_SP1B_WG_2021_Q1_N	fluoride	16984-48-8	E235.F	1.14 mg/L	1 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 163027)</b>										
CG2100336-002	EV_MW_SP1B_WG_2021_Q1_N	bromide	24959-67-9	E235.Br-L	0.595 mg/L	0.5 mg/L	119	75.0	125	----
<b>Anions and Nutrients (QCLot: 163028)</b>										
CG2100336-002	EV_MW_SP1B_WG_2021_Q1_N	chloride	16887-00-6	E235.Cl-L	114 mg/L	100 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 163029)</b>										
CG2100336-002	EV_MW_SP1B_WG_2021_Q1_N	nitrate (as N)	14797-55-8	E235.NO3-L	2.81 mg/L	2.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 163030)</b>										
CG2100336-002	EV_MW_SP1B_WG_2021_Q1_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.575 mg/L	0.5 mg/L	115	75.0	125	----
<b>Anions and Nutrients (QCLot: 163031)</b>										
CG2100336-002	EV_MW_SP1B_WG_2021_Q1_N	sulfate (as SO4)	14808-79-8	E235.SO4	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 163155)</b>										
CG2100340-006	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0508 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 163302)</b>										
CG2100336-002	EV_MW_SP1B_WG_2021_Q1_N	phosphorus, total dissolved	7723-14-0	E375-T	0.0525 mg/L	0.0676 mg/L	77.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 163305)</b>										
CG2100325-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0540 mg/L	0.0676 mg/L	79.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 164006)</b>										
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	Kjeldahl nitrogen, total [TKN]	----	E318	2.24 mg/L	2.5 mg/L	89.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 165302)</b>										
CG2100339-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 165184)</b>										
CG2100336-002	EV_MW_SP1B_WG_2021_Q1_N	carbon, dissolved organic [DOC]	----	E358-L	23.2 mg/L	23.9 mg/L	97.1	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 165190)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Organic / Inorganic Carbon (QCLot: 165190) - continued</b>										
CG2100336-002	EV_MW_SP1B_WG_2021_Q1_N	carbon, total organic [TOC]	----	E355-L	22.5 mg/L	23.9 mg/L	94.1	70.0	130	----
<b>Dissolved Metals (QCLot: 163247)</b>										
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0418 mg/L	0.04 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 163248)</b>										
CG2100336-001	EV_MW_SP1A_WG_2021_Q1_N	aluminum, dissolved	7429-90-5	E421	0.204 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0240 mg/L	0.02 mg/L	120	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00830 mg/L	0.01 mg/L	83.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.095 mg/L	0.1 mg/L	95.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00424 mg/L	0.004 mg/L	106	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.04 mg/L	2 mg/L	102	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0793 mg/L	0.1 mg/L	79.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.99 mg/L	4 mg/L	99.8	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0515 mg/L	0.04 mg/L	129	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.70 mg/L	10 mg/L	97.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00341 mg/L	0.004 mg/L	85.2	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	22.3 mg/L	20 mg/L	112	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00422 mg/L	0.004 mg/L	106	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.424 mg/L	0.4 mg/L	106	70.0	130	----

Page : 14 of 14  
 Work Order : CG2100336  
 Client : Teck Coal Limited  
 Project : ELKVIEW OPERATIONS



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 163254)</b>										
CG2100328-015	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000700 mg/L	0.0001 mg/L	70.0	70.0	130	----

COC ID: <b>20210311Q1GW</b>		TURNAROUND TIME:		RUSH:															
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>													
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary		Report Format / Distribution			Excel	PDF	EDD							
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets		Email 1:	kimberley.Hackett@teck.com	X	X	X								
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com		Email 2:	Annie.Larrivee@teck.com	X	X	X								
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE		Email 3:	kennedy.allan@teck.com	X	X	X								
Address	RR#1 HWY# 3						Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X								
							Email 5:	teckcoal@equisonline.com			X								
Province	BC			City	Calgary		Province	AB											
Country	Canada			Postal Code	T1Y 7B5		Country	Canada											
5-5289				Phone Number	403-407-1800		PO number	VPO00741597											
<b>SAMPLE DETAILS</b>				<b>ANALYSIS REQUESTED</b>															
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com # Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MW_SP1A_WG_2021_Q1_N	EV_MW_SP1A	WG	N	03/11/21	12:10	G 5	1	1	1	1							1		
EV_MW_SP1B_WG_2021_Q1_N	EV_MW_SP1B	WG	N	03/11/21	11:45	G 5	1	1	1	1							1		
EV_MW_SP1C_WG_2021_Q1_N	EV_MW_SP1C	WG	N	03/11/21	13:05	G 5	1	1	1	1							1		
							1	1	1	1							1		
							1	1	1	1							1		
						Total	15												
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS				RELINQUISHED BY/AFFILIATION		DATE/TIME	ACCEPTED BY/AFFILIATION			DATE/TIME									
				T. Phillips		March 11, 2021				3/11/2021									
SERVICE REQUEST (rush - subject to availability)				Sampler's Name		T. Phillips	Mobile #		1-250-425-1101										
Regular (default) X				Sampler's Signature			Date/Time		March 11, 2021										
Priority (2-3 business days) - 50% surcharge																			
Emergency (1 Business Day) - 100% surcharge																			
For Emergency <1 Day, ASAP or Weekend - Contact ALS																			

Environmental Division  
Calgary  
Work Order Reference  
**CG2100336**



Telephone: -1 403 407 1800

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100459**  
**Client** : **Teck Coal Limited**  
**Contact** : Annie Larrivee  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210319Q1GW  
**Sampler** : C. Emslie  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Mar-2021 09:20  
**Date Analysis Commenced** : 20-Mar-2021  
**Issue Date** : 31-Mar-2021 17:46

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Jeanie Mark	Laboratory Analyst	Organics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebeccah Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
RRV	Reported result verified by repeat analysis.





## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					EV_OCGW_WG _2021_Q1_NP	EV_MC5GW_W G_2021_Q1_NP	EV_MC6GW_W G_2021_Q1_NP	EV_MC7GW_W G_2021_Q1_NP	----
Client sampling date / time					19-Mar-2021 14:20	19-Mar-2021 14:25	19-Mar-2021 14:30	19-Mar-2021 14:35	----
Analyte	CAS Number	Method	LOR	Unit	CG2100459-001	CG2100459-002	CG2100459-003	CG2100459-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
conductivity	----	E100	2.0	µS/cm	441	445	<2.0	<2.0	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	134	133	<0.50	<0.50	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	404	344	402	373	----
pH	----	E108	0.10	pH units	8.10	8.07	5.50	5.52	----
solids, total dissolved [TDS]	----	E162	10	mg/L	257 <sup>DLHC</sup>	258 <sup>DLHC</sup>	<10	<10	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
turbidity	----	E121	0.10	NTU	1.69	1.02	<0.10	<0.10	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	185	185	<2.0	<2.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	185	185	<2.0	<2.0	----
bicarbonate	71-52-3	E290	1.0	mg/L	225	226	<1.0	<1.0	----
carbonate	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
hydroxide	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0844	0.0737	<0.0050	<0.0050	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.08	2.06	<0.10	<0.10	----
fluoride	16984-48-8	E235.F	0.020	mg/L	1.12	1.14	<0.020	<0.020	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.065	0.063	<0.050	<0.050	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0851	0.0063	<0.0050	<0.0050	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0012	0.0012	<0.0010	<0.0010	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0102	0.0107	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0101	0.0100	<0.0020	<0.0020	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0091	0.0095	<0.0020	<0.0020	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	68.2	67.7	<0.30	<0.30	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.151	0.070	<0.050	<0.050	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.98	0.93	<0.50	<0.50	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_OCGW_WG _2021_Q1_NP	EV_MC5GW_W G_2021_Q1_NP	EV_MC6GW_W G_2021_Q1_NP	EV_MC7GW_W G_2021_Q1_NP	----
Client sampling date / time					19-Mar-2021 14:20	19-Mar-2021 14:25	19-Mar-2021 14:30	19-Mar-2021 14:35	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100459-001	CG2100459-002	CG2100459-003	CG2100459-004	-----	
					Result	Result	Result	Result	----	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.24	5.22	<0.10	<0.10	----	
cation sum	----	EC101	0.10	meq/L	4.68	4.64	<0.10	<0.10	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	89.3	88.9	100	100	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.64	5.88	<0.010	<0.010	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0022	0.0015	<0.0010	0.0012 <sup>RRV</sup>	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00129	0.00138	<0.00010	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0502	0.0498	<0.00010	<0.00010	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.094	0.094	<0.010	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	24.2	23.7	<0.050	<0.050	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.119	0.174	<0.010	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0214	0.0205	<0.0010	<0.0010	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.0	17.9	<0.0050	<0.0050	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0807	0.0808	<0.00010	0.00014 <sup>RRV</sup>	----	
mercury, dissolved	7439-97-6	E509-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0124	0.0119	<0.000050	<0.000050	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.48	1.50	<0.050	<0.050	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.22	4.42	<0.050	<0.050	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_OCGW_WG _2021_Q1_NP	EV_MC5GW_W G_2021_Q1_NP	EV_MC6GW_W G_2021_Q1_NP	EV_MC7GW_W G_2021_Q1_NP	----
Client sampling date / time					19-Mar-2021 14:20	19-Mar-2021 14:25	19-Mar-2021 14:30	19-Mar-2021 14:35	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100459-001	CG2100459-002	CG2100459-003	CG2100459-004	-----	
					Result	Result	Result	Result	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	44.7	44.5	<0.050	<0.050	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.354	0.342	<0.00020	<0.00020	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	21.3	23.0	<0.50	<0.50	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000931	0.000917	<0.000010	<0.000010	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0017 <sup>RRV</sup>	----	
dissolved mercury filtration location	----	EP509-L	-	-	Laboratory	Laboratory	Laboratory	Laboratory	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	
<b>Speciated Metals</b>										
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	<0.40	<0.40	<0.40	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%	89.0	90.8	91.3	78.7	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100459</b>	Page	: 1 of 22
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Annie Larrivee	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V1C 4C3	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 20-Mar-2021 09:20
PO	: VPO00741597	Issue Date	: 31-Mar-2021 17:46
C-O-C number	: 20210319Q1GW		
Sampler	: C. Emslie		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.





**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Method Blank (MB) Values</b>								
Dissolved Metals	QC-MRG2-1679680 01	----	selenium, dissolved	7782-49-2	E421	0.000058 <sup>B</sup> mg/L	0.00005 mg/L	Blank result exceeds permitted value

**Result Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q1_NP	E298	19-Mar-2021	27-Mar-2021	28 days	7 days	✓	27-Mar-2021	20 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q1_NP	E298	19-Mar-2021	27-Mar-2021	28 days	7 days	✓	27-Mar-2021	20 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC7GW_WG_2021_Q1_NP	E298	19-Mar-2021	27-Mar-2021	28 days	7 days	✓	27-Mar-2021	20 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q1_NP	E298	19-Mar-2021	27-Mar-2021	28 days	7 days	✓	27-Mar-2021	20 days	0 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q1_NP	E235.Br-L	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q1_NP	E235.Br-L	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC7GW_WG_2021_Q1_NP	E235.Br-L	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE EV_OCGW_WG_2021_Q1_NP	E235.Br-L	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MC5GW_WG_2021_Q1_NP	E235.Cl-L	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MC6GW_WG_2021_Q1_NP	E235.Cl-L	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MC7GW_WG_2021_Q1_NP	E235.Cl-L	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_OCGW_WG_2021_Q1_NP	E235.Cl-L	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MC5GW_WG_2021_Q1_NP	E378-U	19-Mar-2021	----	----	----		21-Mar-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MC6GW_WG_2021_Q1_NP	E378-U	19-Mar-2021	----	----	----		21-Mar-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MC7GW_WG_2021_Q1_NP	E378-U	19-Mar-2021	----	----	----		21-Mar-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_OCGW_WG_2021_Q1_NP	E378-U	19-Mar-2021	----	----	----		21-Mar-2021	3 days	1 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MC5GW_WG_2021_Q1_NP	E235.F	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MC6GW_WG_2021_Q1_NP	E235.F	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MC7GW_WG_2021_Q1_NP	E235.F	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_OCGW_WG_2021_Q1_NP	E235.F	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MC5GW_WG_2021_Q1_NP	E235.NO3-L	19-Mar-2021	----	----	----		21-Mar-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MC6GW_WG_2021_Q1_NP	E235.NO3-L	19-Mar-2021	----	----	----		21-Mar-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MC7GW_WG_2021_Q1_NP	E235.NO3-L	19-Mar-2021	----	----	----		21-Mar-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_OCGW_WG_2021_Q1_NP	E235.NO3-L	19-Mar-2021	----	----	----		21-Mar-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MC5GW_WG_2021_Q1_NP	E235.NO2-L	19-Mar-2021	----	----	----		21-Mar-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MC6GW_WG_2021_Q1_NP	E235.NO2-L	19-Mar-2021	----	----	----		21-Mar-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MC7GW_WG_2021_Q1_NP	E235.NO2-L	19-Mar-2021	----	----	----		21-Mar-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_OCGW_WG_2021_Q1_NP	E235.NO2-L	19-Mar-2021	----	----	----		21-Mar-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MC5GW_WG_2021_Q1_NP	E235.SO4	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MC6GW_WG_2021_Q1_NP	E235.SO4	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MC7GW_WG_2021_Q1_NP	E235.SO4	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_OCGW_WG_2021_Q1_NP	E235.SO4	19-Mar-2021	----	----	----		21-Mar-2021	28 days	2 days	✓
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC5GW_WG_2021_Q1_NP	E375-T	19-Mar-2021	26-Mar-2021	28 days	6 days	✓	26-Mar-2021	21 days	0 days	✓
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC6GW_WG_2021_Q1_NP	E375-T	19-Mar-2021	26-Mar-2021	28 days	6 days	✓	26-Mar-2021	21 days	0 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC7GW_WG_2021_Q1_NP	E375-T	19-Mar-2021	26-Mar-2021	28 days	6 days	✔	26-Mar-2021	21 days	0 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_OCGW_WG_2021_Q1_NP	E375-T	19-Mar-2021	26-Mar-2021	28 days	6 days	✔	26-Mar-2021	21 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q1_NP	E318	19-Mar-2021	28-Mar-2021	28 days	9 days	✔	28-Mar-2021	18 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q1_NP	E318	19-Mar-2021	28-Mar-2021	28 days	9 days	✔	28-Mar-2021	18 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC7GW_WG_2021_Q1_NP	E318	19-Mar-2021	28-Mar-2021	28 days	9 days	✔	28-Mar-2021	18 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q1_NP	E318	19-Mar-2021	28-Mar-2021	28 days	9 days	✔	28-Mar-2021	18 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q1_NP	E372-U	19-Mar-2021	26-Mar-2021	28 days	6 days	✔	26-Mar-2021	21 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q1_NP	E372-U	19-Mar-2021	26-Mar-2021	28 days	6 days	✔	26-Mar-2021	21 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC7GW_WG_2021_Q1_NP	E372-U	19-Mar-2021	26-Mar-2021	28 days	6 days	✔	26-Mar-2021	21 days	0 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q1_NP	E372-U	19-Mar-2021	26-Mar-2021	28 days	6 days	✔	26-Mar-2021	21 days	0 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC5GW_WG_2021_Q1_NP	E421.Cr-L	19-Mar-2021	23-Mar-2021	180 days	4 days	✔	24-Mar-2021	175 days	0 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC6GW_WG_2021_Q1_NP	E421.Cr-L	19-Mar-2021	23-Mar-2021	180 days	4 days	✔	24-Mar-2021	175 days	0 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC7GW_WG_2021_Q1_NP	E421.Cr-L	19-Mar-2021	23-Mar-2021	180 days	4 days	✔	24-Mar-2021	175 days	0 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_OCGW_WG_2021_Q1_NP	E421.Cr-L	19-Mar-2021	23-Mar-2021	180 days	4 days	✔	24-Mar-2021	175 days	0 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_MC5GW_WG_2021_Q1_NP	E509-L	19-Mar-2021	29-Mar-2021	28 days	9 days	✔	29-Mar-2021	18 days	0 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_MC6GW_WG_2021_Q1_NP	E509-L	19-Mar-2021	29-Mar-2021	28 days	9 days	✔	29-Mar-2021	18 days	0 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_MC7GW_WG_2021_Q1_NP	E509-L	19-Mar-2021	29-Mar-2021	28 days	9 days	✔	29-Mar-2021	18 days	0 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_OCGW_WG_2021_Q1_NP	E509-L	19-Mar-2021	29-Mar-2021	28 days	9 days	✔	29-Mar-2021	18 days	0 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC5GW_WG_2021_Q1_NP	E421	19-Mar-2021	23-Mar-2021	180 days	4 days	✓	24-Mar-2021	175 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC6GW_WG_2021_Q1_NP	E421	19-Mar-2021	23-Mar-2021	180 days	4 days	✓	24-Mar-2021	175 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC7GW_WG_2021_Q1_NP	E421	19-Mar-2021	23-Mar-2021	180 days	4 days	✓	24-Mar-2021	175 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_OCGW_WG_2021_Q1_NP	E421	19-Mar-2021	23-Mar-2021	180 days	4 days	✓	24-Mar-2021	175 days	0 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC5GW_WG_2021_Q1_NP	E601A	19-Mar-2021	23-Mar-2021	14 days	3 days	✓	24-Mar-2021	40 days	1 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC6GW_WG_2021_Q1_NP	E601A	19-Mar-2021	23-Mar-2021	14 days	3 days	✓	24-Mar-2021	40 days	1 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC7GW_WG_2021_Q1_NP	E601A	19-Mar-2021	23-Mar-2021	14 days	3 days	✓	24-Mar-2021	40 days	1 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_OCGW_WG_2021_Q1_NP	E601A	19-Mar-2021	23-Mar-2021	14 days	3 days	✓	24-Mar-2021	40 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC5GW_WG_2021_Q1_NP	E358-L	19-Mar-2021	27-Mar-2021	28 days	7 days	✓	27-Mar-2021	20 days	0 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC6GW_WG_2021_Q1_NP	E358-L	19-Mar-2021	27-Mar-2021	28 days	7 days	✔	27-Mar-2021	20 days	0 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC7GW_WG_2021_Q1_NP	E358-L	19-Mar-2021	27-Mar-2021	28 days	7 days	✔	27-Mar-2021	20 days	0 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_OCGW_WG_2021_Q1_NP	E358-L	19-Mar-2021	27-Mar-2021	28 days	7 days	✔	27-Mar-2021	20 days	0 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q1_NP	E355-L	19-Mar-2021	27-Mar-2021	28 days	7 days	✔	27-Mar-2021	20 days	0 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q1_NP	E355-L	19-Mar-2021	27-Mar-2021	28 days	7 days	✔	27-Mar-2021	20 days	0 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC7GW_WG_2021_Q1_NP	E355-L	19-Mar-2021	27-Mar-2021	28 days	7 days	✔	27-Mar-2021	20 days	0 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q1_NP	E355-L	19-Mar-2021	27-Mar-2021	28 days	7 days	✔	27-Mar-2021	20 days	0 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q1_NP	E283	19-Mar-2021	----	----	----		29-Mar-2021	14 days	9 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q1_NP	E283	19-Mar-2021	----	----	----		29-Mar-2021	14 days	9 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_MC7GW_WG_2021_Q1_NP	E283	19-Mar-2021	----	----	----		29-Mar-2021	14 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_OCGW_WG_2021_Q1_NP	E283	19-Mar-2021	----	----	----		29-Mar-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MC5GW_WG_2021_Q1_NP	E290	19-Mar-2021	----	----	----		29-Mar-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MC6GW_WG_2021_Q1_NP	E290	19-Mar-2021	----	----	----		29-Mar-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MC7GW_WG_2021_Q1_NP	E290	19-Mar-2021	----	----	----		29-Mar-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_OCGW_WG_2021_Q1_NP	E290	19-Mar-2021	----	----	----		29-Mar-2021	14 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MC5GW_WG_2021_Q1_NP	E100	19-Mar-2021	----	----	----		29-Mar-2021	28 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MC6GW_WG_2021_Q1_NP	E100	19-Mar-2021	----	----	----		29-Mar-2021	28 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MC7GW_WG_2021_Q1_NP	E100	19-Mar-2021	----	----	----		29-Mar-2021	28 days	9 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_OCGW_WG_2021_Q1_NP	E100	19-Mar-2021	----	----	----		29-Mar-2021	28 days	9 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MC5GW_WG_2021_Q1_NP	E125	19-Mar-2021	----	----	----		26-Mar-2021	0.34 hrs	159 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MC6GW_WG_2021_Q1_NP	E125	19-Mar-2021	----	----	----		26-Mar-2021	0.34 hrs	159 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MC7GW_WG_2021_Q1_NP	E125	19-Mar-2021	----	----	----		26-Mar-2021	0.34 hrs	159 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_OCGW_WG_2021_Q1_NP	E125	19-Mar-2021	----	----	----		26-Mar-2021	0.34 hrs	159 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MC5GW_WG_2021_Q1_NP	E108	19-Mar-2021	----	----	----		29-Mar-2021	0.25 hrs	237 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MC6GW_WG_2021_Q1_NP	E108	19-Mar-2021	----	----	----		29-Mar-2021	0.25 hrs	237 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MC7GW_WG_2021_Q1_NP	E108	19-Mar-2021	----	----	----		29-Mar-2021	0.25 hrs	237 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_OCGW_WG_2021_Q1_NP	E108	19-Mar-2021	----	----	----		29-Mar-2021	0.25 hrs	238 hrs		* EHTR-FM





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q1_NP	E162	19-Mar-2021	----	----	----		26-Mar-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q1_NP	E162	19-Mar-2021	----	----	----		26-Mar-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_MC7GW_WG_2021_Q1_NP	E162	19-Mar-2021	----	----	----		26-Mar-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_OCGW_WG_2021_Q1_NP	E162	19-Mar-2021	----	----	----		26-Mar-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MC5GW_WG_2021_Q1_NP	E160-L	19-Mar-2021	----	----	----		26-Mar-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MC6GW_WG_2021_Q1_NP	E160-L	19-Mar-2021	----	----	----		26-Mar-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MC7GW_WG_2021_Q1_NP	E160-L	19-Mar-2021	----	----	----		26-Mar-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_OCGW_WG_2021_Q1_NP	E160-L	19-Mar-2021	----	----	----		26-Mar-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q1_NP	E121	19-Mar-2021	----	----	----		21-Mar-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q1_NP	E121	19-Mar-2021	----	----	----		21-Mar-2021	3 days	1 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MC7GW_WG_2021_Q1_NP	E121	19-Mar-2021	----	----	----		21-Mar-2021	3 days	1 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_OCGW_WG_2021_Q1_NP	E121	19-Mar-2021	----	----	----		21-Mar-2021	3 days	1 days	✔	
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>											
<b>HDPE - dissolved (sodium hydroxide)</b> EV_MC5GW_WG_2021_Q1_NP	E532A	19-Mar-2021	----	----	----		24-Mar-2021	28 days	4 days	✔	
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>											
<b>HDPE - dissolved (sodium hydroxide)</b> EV_MC6GW_WG_2021_Q1_NP	E532A	19-Mar-2021	----	----	----		24-Mar-2021	28 days	4 days	✔	
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>											
<b>HDPE - dissolved (sodium hydroxide)</b> EV_MC7GW_WG_2021_Q1_NP	E532A	19-Mar-2021	----	----	----		24-Mar-2021	28 days	4 days	✔	
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>											
<b>HDPE - dissolved (sodium hydroxide)</b> EV_OCGW_WG_2021_Q1_NP	E532A	19-Mar-2021	----	----	----		24-Mar-2021	28 days	4 days	✔	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	171443	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	170698	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	169995	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	166972	1	15	6.6	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	166973	1	15	6.6	5.0	✔
Conductivity in Water	E100	170697	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	167968	1	15	6.6	5.0	✔
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	168295	1	4	25.0	5.0	✔
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	170582	1	7	14.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	167969	1	15	6.6	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	170185	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	166788	1	15	6.6	5.0	✔
Fluoride in Water by IC	E235.F	166976	1	15	6.6	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	166974	1	14	7.1	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	166975	1	14	7.1	5.0	✔
ORP by Electrode	E125	169251	1	20	5.0	5.0	✔
pH by Meter	E108	170696	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	166971	1	15	6.6	5.0	✔
TDS by Gravimetry	E162	169263	1	20	5.0	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	168685	1	12	8.3	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	170498	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	170191	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	168681	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	169257	0	20	0.0	5.0	✖
Turbidity by Nephelometry	E121	166780	1	10	10.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	171443	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	170698	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	169995	1	20	5.0	5.0	✔
BC PHC - EPH by GC-FID	E601A	167561	1	5	20.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	166972	1	15	6.6	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	166973	1	15	6.6	5.0	✔
Conductivity in Water	E100	170697	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	167968	1	15	6.6	5.0	✔
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	168295	1	4	25.0	5.0	✔
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	170582	1	7	14.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	167969	1	15	6.6	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	170185	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	166788	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	166976	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	166974	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	166975	1	14	7.1	5.0	✓
ORP by Electrode	E125	169251	1	20	5.0	5.0	✓
pH by Meter	E108	170696	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	166971	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	169263	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	168685	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	170498	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	170191	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	168681	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	169257	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	166780	1	10	10.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	171443	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	170698	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	169995	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	167561	1	5	20.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	166972	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	166973	1	15	6.6	5.0	✓
Conductivity in Water	E100	170697	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	167968	1	15	6.6	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	168295	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	170582	1	7	14.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	167969	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	170185	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	166788	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	166976	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	166974	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	166975	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	166971	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	169263	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	168685	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	170498	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	170191	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	168681	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	169257	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	166780	1	10	10.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	169995	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	166972	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	166973	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	167968	1	15	6.6	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	168295	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	170582	1	7	14.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	167969	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	170185	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	166788	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	166976	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	166974	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	166975	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	166971	1	15	6.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	168685	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	170498	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	170191	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	168681	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A Edmonton - Environmental	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection.  sample pretreatment involved field or lab filtration following by sample preservation.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.  Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .





<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration (Low Level)	EP509-L Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
PHCs and PAHs Hexane Extraction	EP601 Calgary - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

## QUALITY CONTROL REPORT

**Work Order** : **CG2100459**

**Page** : 1 of 15

**Client** : Teck Coal Limited  
**Contact** : Annie Larrivee  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210319Q1GW  
**Sampler** : C. Emslie  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Mar-2021 09:20  
**Date Analysis Commenced** : 20-Mar-2021  
**Issue Date** : 31-Mar-2021 17:46

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Jeanie Mark	Laboratory Analyst	Organics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Shaneel Dayal

Analyst

Metals, Burnaby, British Columbia



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 166780)</b>											
CG2100448-001	Anonymous	turbidity	----	E121	0.10	NTU	128	128	0.00%	15%	----
<b>Physical Tests (QC Lot: 169251)</b>											
CG2100444-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	430	437	1.54%	15%	----
<b>Physical Tests (QC Lot: 169263)</b>											
CG2100449-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1100	1030	6.76%	20%	----
<b>Physical Tests (QC Lot: 170696)</b>											
CG2100449-001	Anonymous	pH	----	E108	0.10	pH units	8.17	8.18	0.122%	4%	----
<b>Physical Tests (QC Lot: 170697)</b>											
CG2100449-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1270	1270	0.315%	10%	----
<b>Physical Tests (QC Lot: 170698)</b>											
CG2100449-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	248	252	1.64%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	248	252	1.64%	20%	----
<b>Physical Tests (QC Lot: 171443)</b>											
CG2100468-007	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	10.0	mg/L	12.7	10.3	2.4	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 166788)</b>											
CG2100443-007	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 166971)</b>											
CG2100459-004	EV_MC7GW_WG_2021_Q1_NP	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 166972)</b>											
CG2100459-004	EV_MC7GW_WG_2021_Q1_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 166973)</b>											
CG2100459-004	EV_MC7GW_WG_2021_Q1_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 166974)</b>											
CG2100459-004	EV_MC7GW_WG_2021_Q1_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 166975)</b>											
CG2100459-004	EV_MC7GW_WG_2021_Q1_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 166976)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 166976) - continued</b>											
CG2100459-004	EV_MC7GW_WG_2021_Q1_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 168681)</b>											
CG2100457-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0027	0.0025	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 168685)</b>											
CG2100459-001	EV_OCGW_WG_2021_Q1_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0091	0.0090	0.00003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 169995)</b>											
CG2100449-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0133	0.0071	0.0062	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170498)</b>											
CG2100453-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 170185)</b>											
CG2100448-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 170191)</b>											
CG2100449-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.15	3.22	0.06	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 167968)</b>											
CG2100444-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 167969)</b>											
CG2100444-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00017	0.00017	0.000006	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.189	0.184	2.30%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.118 µg/L	0.000118	0.550%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	56.6	53.6	5.43%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00049	0.00034	0.00015	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0150	0.0138	8.69%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	22.9	22.8	0.344%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00177	0.00164	7.62%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00067	0.00068	0.00001	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 167969) - continued</b>											
CG2100444-001	Anonymous	potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.16	2.11	2.41%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	2.15 µg/L	0.00239	10.5%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.90	2.87	0.887%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.06	1.04	1.83%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0640	0.0622	2.86%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.15	1.87	0.28	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000762	0.000714	6.56%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00052	0.00054	0.00002	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0028	0.0029	0.00003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 170582)</b>											
CG2100459-001	EV_OCGW_WG_2021_Q1_NP	mercury, dissolved	7439-97-6	E509-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Speciated Metals (QC Lot: 168295)</b>											
CG2100459-004	EV_MC7GW_WG_2021_Q1_NP	chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 166780)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 169257)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 169263)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 170697)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 170698)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 171443)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 166788)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 166971)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 166972)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 166973)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 166974)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 166975)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 166976)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 168681)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 168685)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 169995)</b>						





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 169995) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 170498)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 170185)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 170191)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 167968)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 167969)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	# 0.000058	B
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 167969) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 170582)</b>						
mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	<0.50	----
<b>Speciated Metals (QCLot: 168295)</b>						
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	<0.00050	----
<b>Hydrocarbons (QCLot: 167561)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----

**Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 166780)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 169251)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Physical Tests (QCLot: 169257)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	96.4	85.0	115	---
<b>Physical Tests (QCLot: 169263)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.8	85.0	115	---
<b>Physical Tests (QCLot: 170696)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 170697)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.2	90.0	110	---
<b>Physical Tests (QCLot: 170698)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	98.8	85.0	115	---
<b>Physical Tests (QCLot: 171443)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	107	85.0	115	---
<b>Anions and Nutrients (QCLot: 166788)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	97.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 166971)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 166972)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 166973)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 166974)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 166975)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 166976)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.7	90.0	110	---
<b>Anions and Nutrients (QCLot: 168681)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	92.0	80.0	120	---
<b>Anions and Nutrients (QCLot: 168685)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 168685) - continued</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	92.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 169995)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	96.7	85.0	115	----
<b>Anions and Nutrients (QCLot: 170498)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	92.6	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 170185)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	100	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 170191)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 167968)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	94.7	80.0	120	----
<b>Dissolved Metals (QCLot: 167969)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	91.1	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.1	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	90.4	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	95.7	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	91.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	93.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	83.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	94.5	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.3	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	93.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	92.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	90.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	94.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.1	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	95.5	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.1	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	94.6	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 167969) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	95.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	91.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.7	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	91.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	91.0	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	93.7	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	90.7	80.0	120	----
mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	94.8	80.0	120	----
<b>Speciated Metals (QCLot: 168295)</b>									
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
<b>Hydrocarbons (QCLot: 167561)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	95.0	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	100	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	96.1	70.0	130	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 166788)</b>										
CG2100448-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0531 mg/L	0.05 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 166971)</b>										
CG2100459-004	EV_MC7GW_WG_2021_Q1_NP	sulfate (as SO4)	14808-79-8	E235.SO4	116 mg/L	100 mg/L	116	75.0	125	----
<b>Anions and Nutrients (QCLot: 166972)</b>										
CG2100459-004	EV_MC7GW_WG_2021_Q1_NP	bromide	24959-67-9	E235.Br-L	0.588 mg/L	0.5 mg/L	118	75.0	125	----
<b>Anions and Nutrients (QCLot: 166973)</b>										
CG2100459-004	EV_MC7GW_WG_2021_Q1_NP	chloride	16887-00-6	E235.Cl-L	114 mg/L	100 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 166974)</b>										
CG2100459-004	EV_MC7GW_WG_2021_Q1_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.83 mg/L	2.5 mg/L	113	75.0	125	----
<b>Anions and Nutrients (QCLot: 166975)</b>										
CG2100459-004	EV_MC7GW_WG_2021_Q1_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.585 mg/L	0.5 mg/L	117	75.0	125	----
<b>Anions and Nutrients (QCLot: 166976)</b>										
CG2100459-004	EV_MC7GW_WG_2021_Q1_NP	fluoride	16984-48-8	E235.F	1.14 mg/L	1 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 168681)</b>										
CG2100457-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0663 mg/L	0.0676 mg/L	98.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 168685)</b>										
CG2100459-002	EV_MC5GW_WG_2021_Q1_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0699 mg/L	0.0676 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 169995)</b>										
CG2100453-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.101 mg/L	0.1 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 170498)</b>										
CG2100453-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.17 mg/L	2.5 mg/L	86.9	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 170185)</b>										
CG2100449-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.2 mg/L	23.9 mg/L	92.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 170191)</b>										
CG2100453-001	Anonymous	carbon, total organic [TOC]	----	E355-L	21.0 mg/L	23.9 mg/L	88.0	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 167968)</b>										
CG2100444-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0373 mg/L	0.04 mg/L	93.3	70.0	130	----
<b>Dissolved Metals (QCLot: 167969)</b>										
CG2100444-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.183 mg/L	0.2 mg/L	91.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0182 mg/L	0.02 mg/L	90.9	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0360 mg/L	0.04 mg/L	90.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00797 mg/L	0.01 mg/L	79.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.087 mg/L	0.1 mg/L	86.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00378 mg/L	0.004 mg/L	94.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0176 mg/L	0.02 mg/L	88.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.85 mg/L	2 mg/L	92.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0179 mg/L	0.02 mg/L	89.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0915 mg/L	0.1 mg/L	91.5	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0185 mg/L	0.02 mg/L	92.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0368 mg/L	0.04 mg/L	91.9	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.59 mg/L	4 mg/L	89.8	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.57 mg/L	10 mg/L	85.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00378 mg/L	0.004 mg/L	94.4	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.81 mg/L	2 mg/L	90.3	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.9 mg/L	20 mg/L	99.4	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00356 mg/L	0.004 mg/L	89.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0345 mg/L	0.04 mg/L	86.2	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00374 mg/L	0.004 mg/L	93.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0919 mg/L	0.1 mg/L	91.9	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.374 mg/L	0.4 mg/L	93.4	70.0	130	----
<b>Dissolved Metals (QCLot: 170582)</b>										
CG2100459-002	EV_MC5GW_WG_2021_Q1_NP	mercury, dissolved	7439-97-6	E509-L	4.51 ng/L	5 ng/L	90.2	70.0	130	----

Page : 15 of 15  
 Work Order : CG2100459  
 Client : Teck Coal Limited  
 Project : ELKVIEW OPERATIONS



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Speciated Metals (QCLot: 168295)</b>										
CG2100459-004	EV_MC7GW_WG_2021_Q1_NP	chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0495 mg/L	0.05 mg/L	99.0	70.0	130	----



COC ID: <b>20210319Q1GW</b>		TURNAROUND TIME:				RUSH:						
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com	X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoat@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 6:	Micheal.Moore@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	PRESERVE		Yes		No		Yes		No		
									TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL, Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury
EV_OCGW_WG_2021_Q1_NP	EV_OCGW	WG	N	03/19/21	14:20	G	8												
EV_MC5GW_WG_2021_Q1_NP	EV_MC5GW	WG	N	03/19/21	14:25	G	8												
EV_MC6GW_WG_2021_Q1_NP	EV_MC6GW	WG	N	03/19/21	14:30	G	8												
EV_MC7GW_WG_2021_Q1_NP	EV_MC7GW	WG	N	03/19/21	14:35	G	8												
Total							32												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Emslie	March 19, 2021	<i>[Signature]</i>	3/20 920
SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name	C. Emslie	Mobile #	1-250-425-1101
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	March 19, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2100459**



Telephone : -1 403 407 1800

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>CG2100548</b> <b>Amendment</b> : <b>2</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Cam Jaeger <b>Address</b> : 421 Pine Avenue Sparwood BC Canada V0B 2G0 <b>Telephone</b> : ---- <b>Project</b> : REGIONAL EFFECTS PROGRAM <b>PO</b> : VPO00690772 <b>C-O-C number</b> : RG_MW-Q1-2021 <b>Sampler</b> : Monica Bartha <b>Site</b> : ---- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 2 <b>No. of samples analysed</b> : 2	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Lyudmyla Shvets <b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5 <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 26-Mar-2021 08:40 <b>Date Analysis Commenced</b> : 26-Mar-2021 <b>Issue Date</b> : 27-Jan-2022 11:00
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_MW_WW_ WP_Q1-2021_N P	RG_MW-03-04_ WP_Q1-2021_N P	----	----	----
Client sampling date / time					25-Mar-2021 11:21	25-Mar-2021 13:21	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100548-001 Result	CG2100548-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	2.5	2.4	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	187	204	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	228	248	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	187	204	----	----	----	
conductivity	----	E100	2.0	µS/cm	449	578	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	248	324	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	413	373	----	----	----	
pH	----	E108	0.10	pH units	8.12	8.14	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	250 <sup>DLHC</sup>	316 <sup>DLHC</sup>	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	0.19	<0.10	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	0.092	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.28	9.22	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.156	0.088	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.411	0.326	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.98	1.03	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0012	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0048	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0368	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	63.4	114	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	0.74	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_MW_WW_ WP_Q1-2021_N P	RG_MW-03-04_ WP_Q1-2021_N P	---	---	---
Client sampling date / time					25-Mar-2021 11:21	25-Mar-2021 13:21	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2100548-001 Result	CG2100548-002 Result	----- ---	----- ---	----- ---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.27	6.79	---	---	---	
cation sum	----	EC101	0.10	meq/L	5.08	6.80	---	---	---	
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.4	100	---	---	---	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.84	0.074	---	---	---	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0109	<0.0030	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	0.00011	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00013	0.00017	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.129	0.137	---	---	---	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	0.010	---	---	---	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0114	0.0062	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	63.5	75.1	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00020	0.00013	---	---	---	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0049	0.0097	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	18.7	26.8	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00062	0.00026	---	---	---	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00156	0.000919	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	0.663	0.890	---	---	---	
selenium, total	7782-49-2	E420	0.050	µg/L	9.32	9.42	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	2.64	2.42	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, total	7440-23-5	E420	0.050	mg/L	2.48	6.65	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_MW_WW_ WP_Q1-2021_N P	RG_MW-03-04_ WP_Q1-2021_N P	---	---	---
Client sampling date / time					25-Mar-2021 11:21	25-Mar-2021 13:21	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2100548-001 Result	CG2100548-002 Result	----- ---	----- ---	----- ---	
<b>Total Metals</b>										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.213	0.183	---	---	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	22.8	42.2	---	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000922	0.00130	---	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0017	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00014	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.119	0.129	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.010	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0089	0.0117	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	68.4	82.3	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00018	0.00012	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00070	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0050	0.0098	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.8	28.8	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00012	0.00019	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00151	0.000910	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.638	0.898	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_MW_WW_ WP_Q1-2021_N P	RG_MW-03-04_ WP_Q1-2021_N P	---	---	---
Client sampling date / time					25-Mar-2021 11:21	25-Mar-2021 13:21	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2100548-001 Result	CG2100548-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
selenium, dissolved	7782-49-2	E421	0.050	µg/L	10.8	10.1	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.75	2.38	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.41	6.92	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.224	0.191	---	---	---	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	23.6	44.2	---	---	---	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000855	0.00117	---	---	---	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	---	---	---	
dissolved metals filtration location	----	EP421	-	-	Field	Field	---	---	---	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100548</b>	Page	: 1 of 15
Amendment	: 2		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Spanwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 26-Mar-2021 08:40
PO	: VPO00690772	Issue Date	: 27-Jan-2022 11:00
C-O-C number	: RG_MW-Q1-2021		
Sampler	: Monica Bartha		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_MW_WW_WP_Q1-2021_NP	E298	25-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	8 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WP_Q1-2021_NP	E298	25-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	8 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_MW_WW_WP_Q1-2021_NP	E235.Br-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_MW-03-04_WP_Q1-2021_NP	E235.Br-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_MW_WW_WP_Q1-2021_NP	E235.Cl-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_MW-03-04_WP_Q1-2021_NP	E235.Cl-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> RG_MW_WW_WP_Q1-2021_NP	E378-U	25-Mar-2021	----	----	----		26-Mar-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE RG_MW-03-04_WP_Q1-2021_NP	E378-U	25-Mar-2021	----	----	----		26-Mar-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE RG_MW_WW_WP_Q1-2021_NP	E235.F	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE RG_MW-03-04_WP_Q1-2021_NP	E235.F	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_MW_WW_WP_Q1-2021_NP	E235.NO3-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_MW-03-04_WP_Q1-2021_NP	E235.NO3-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_MW_WW_WP_Q1-2021_NP	E235.NO2-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_MW-03-04_WP_Q1-2021_NP	E235.NO2-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_MW_WW_WP_Q1-2021_NP	E235.SO4	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_MW-03-04_WP_Q1-2021_NP	E235.SO4	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW_WW_WP_Q1-2021_NP	E318	25-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WP_Q1-2021_NP	E318	25-Mar-2021	02-Apr-2021	----	----		02-Apr-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW_WW_WP_Q1-2021_NP	E372-U	25-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WP_Q1-2021_NP	E372-U	25-Mar-2021	01-Apr-2021	----	----		01-Apr-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_MW_WW_WP_Q1-2021_NP	E421.Cr-L	25-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_MW-03-04_WP_Q1-2021_NP	E421.Cr-L	25-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> RG_MW_WW_WP_Q1-2021_NP	E509	25-Mar-2021	31-Mar-2021	----	----		31-Mar-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> RG_MW-03-04_WP_Q1-2021_NP	E509	25-Mar-2021	31-Mar-2021	----	----		31-Mar-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_MW_WW_WP_Q1-2021_NP	E421	25-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	4 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_MW-03-04_WP_Q1-2021_NP	E421	25-Mar-2021	29-Mar-2021	----	----		29-Mar-2021	180 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_MW_WW_WP_Q1-2021_NP	E358-L	25-Mar-2021	05-Apr-2021	----	----		05-Apr-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_MW-03-04_WP_Q1-2021_NP	E358-L	25-Mar-2021	05-Apr-2021	----	----		05-Apr-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW_WW_WP_Q1-2021_NP	E355-L	25-Mar-2021	05-Apr-2021	----	----		05-Apr-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WP_Q1-2021_NP	E355-L	25-Mar-2021	05-Apr-2021	----	----		05-Apr-2021	28 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_MW_WW_WP_Q1-2021_NP	E283	25-Mar-2021	----	----	----		06-Apr-2021	14 days	12 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_MW-03-04_WP_Q1-2021_NP	E283	25-Mar-2021	----	----	----		06-Apr-2021	14 days	12 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> RG_MW_WW_WP_Q1-2021_NP	E290	25-Mar-2021	----	----	----		07-Apr-2021	14 days	13 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> RG_MW-03-04_WP_Q1-2021_NP	E290	25-Mar-2021	----	----	----		07-Apr-2021	14 days	13 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_MW_WW_WP_Q1-2021_NP	E100	25-Mar-2021	----	----	----		07-Apr-2021	28 days	13 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_MW-03-04_WP_Q1-2021_NP	E100	25-Mar-2021	----	----	----		07-Apr-2021	28 days	13 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_MW-03-04_WP_Q1-2021_NP	E125	25-Mar-2021	----	----	----		03-Apr-2021	0.25 hrs	215 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_MW_WW_WP_Q1-2021_NP	E125	25-Mar-2021	----	----	----		03-Apr-2021	0.25 hrs	217 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE RG_MW-03-04_WP_Q1-2021_NP	E108	25-Mar-2021	----	----	----		07-Apr-2021	0.25 hrs	315 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE RG_MW_WW_WP_Q1-2021_NP	E108	25-Mar-2021	----	----	----		07-Apr-2021	0.25 hrs	317 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE RG_MW_WW_WP_Q1-2021_NP	E162	25-Mar-2021	----	----	----		01-Apr-2021	7 days	7 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE RG_MW-03-04_WP_Q1-2021_NP	E162	25-Mar-2021	----	----	----		01-Apr-2021	7 days	7 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE RG_MW_WW_WP_Q1-2021_NP	E160-L	25-Mar-2021	----	----	----		01-Apr-2021	7 days	7 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE</b> RG_MW-03-04_WP_Q1-2021_NP	E160-L	25-Mar-2021	----	----	----		01-Apr-2021	7 days	7 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> RG_MW_WW_WP_Q1-2021_NP	E121	25-Mar-2021	----	----	----		27-Mar-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> RG_MW-03-04_WP_Q1-2021_NP	E121	25-Mar-2021	----	----	----		27-Mar-2021	3 days	2 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> RG_MW_WW_WP_Q1-2021_NP	E420.Cr-L	25-Mar-2021	----	----	----		30-Mar-2021	180 days	5 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> RG_MW-03-04_WP_Q1-2021_NP	E420.Cr-L	25-Mar-2021	----	----	----		30-Mar-2021	180 days	5 days	✓
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> RG_MW_WW_WP_Q1-2021_NP	E508	25-Mar-2021	----	----	----		31-Mar-2021	28 days	6 days	✓
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
<b>Glass vial total (hydrochloric acid)</b> RG_MW-03-04_WP_Q1-2021_NP	E508	25-Mar-2021	----	----	----		31-Mar-2021	28 days	6 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> RG_MW_WW_WP_Q1-2021_NP	E420	25-Mar-2021	----	----	----		30-Mar-2021	180 days	5 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> RG_MW-03-04_WP_Q1-2021_NP	E420	25-Mar-2021	----	----	----		30-Mar-2021	180 days	5 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 8 of 15  
Work Order : CG2100548 Amendment 2  
Client : Teck Coal Limited  
Project : REGIONAL EFFECTS PROGRAM

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	174170	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	174922	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	172852	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	170486	0	20	0.0	5.0	✖
Chloride in Water by IC (Low Level)	E235.Cl-L	170487	0	20	0.0	5.0	✖
Conductivity in Water	E100	174920	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	172101	1	15	6.6	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	170622	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173661	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169830	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	170485	0	20	0.0	5.0	✖
Nitrate in Water by IC (Low Level)	E235.NO3-L	170489	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	170490	1	20	5.0	5.0	✔
ORP by Electrode	E125	173144	1	20	5.0	5.0	✔
pH by Meter	E108	174921	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	170488	0	20	0.0	5.0	✖
TDS by Gravimetry	E162	172301	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	170467	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172854	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	172056	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	170466	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173662	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171017	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	170008	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	174170	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	174922	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	172852	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	170486	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	170487	1	20	5.0	5.0	✔
Conductivity in Water	E100	174920	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	172101	1	15	6.6	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	170622	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173661	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169830	1	20	5.0	5.0	✔



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Fluoride in Water by IC	E235.F	170485	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	170489	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	170490	1	20	5.0	5.0	✔
ORP by Electrode	E125	173144	1	20	5.0	5.0	✔
pH by Meter	E108	174921	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	170488	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	172301	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	170467	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172854	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	172056	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	170466	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173662	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171017	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	172294	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	170008	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	174170	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	174922	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	172852	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	170486	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	170487	1	20	5.0	5.0	✔
Conductivity in Water	E100	174920	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	172101	1	15	6.6	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	170622	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173661	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169830	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	170485	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	170489	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	170490	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	170488	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	172301	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	170467	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172854	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	172056	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	170466	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173662	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171017	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	172294	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	170008	1	20	5.0	5.0	✔



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	172852	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	170486	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	170487	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	172101	1	15	6.6	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	170622	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173661	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169830	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	170485	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	170489	0	20	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	170490	0	20	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	170488	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	170467	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172854	1	20	5.0	5.0	✔
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Total Metals in Water by CRC ICPMS	E420	170466	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173662	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171017	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509  Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

Page : 15 of 15  
Work Order : CG2100548 Amendment 2  
Client : Teck Coal Limited  
Project : REGIONAL EFFECTS PROGRAM



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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			

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## QUALITY CONTROL REPORT

**Work Order** : **CG2100548**  
**Amendment** : **2**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00690772  
**C-O-C number** : RG\_MW-Q1-2021  
**Sampler** : Monica Bartha  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Mar-2021 08:40  
**Date Analysis Commenced** : 26-Mar-2021  
**Issue Date** : 27-Jan-2022 11:00

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta





## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 170008)</b>											
CG2100540-009	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 172301)</b>											
CG2100540-021	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2990	3040	1.66%	20%	----
<b>Physical Tests (QC Lot: 173144)</b>											
CG2100540-021	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	402	399	0.649%	15%	----
<b>Physical Tests (QC Lot: 174170)</b>											
CG2100548-001	RG_MW_WW_WP_Q1-20 21_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	2.5	3.1	0.6	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 174920)</b>											
CG2100550-001	Anonymous	conductivity	----	E100	2.0	µS/cm	3080	3060	0.651%	10%	----
<b>Physical Tests (QC Lot: 174921)</b>											
CG2100550-001	Anonymous	pH	----	E108	0.10	pH units	7.74	7.74	0.00%	4%	----
<b>Physical Tests (QC Lot: 174922)</b>											
CG2100550-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	494	508	2.79%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	494	508	2.79%	20%	----
<b>Anions and Nutrients (QC Lot: 169830)</b>											
CG2100540-012	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170489)</b>											
CG2100540-011	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170490)</b>											
CG2100540-011	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 171017)</b>											
CG2100540-014	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172852)</b>											
CG2100556-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172854)</b>											
CG2100544-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.133	0.172	0.039	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 173661)</b>											
CG2100544-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.28	2.36	0.08	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 173662)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Organic / Inorganic Carbon (QC Lot: 173662) - continued</b>											
CG2100544-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.42	2.94	0.51	Diff <2x LOR	----
<b>Total Metals (QC Lot: 170466)</b>											
CG2100544-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0071	0.0067	0.0003	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00018	0.00017	0.000004	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0218	0.0213	2.38%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.029	0.028	0.00004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0190 µg/L	0.0000178	0.0000012	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	281	288	2.56%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.89 µg/L	0.00089	0.000004	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.437	0.443	1.32%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0402	0.0418	3.80%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	155	156	0.536%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0905	0.0903	0.184%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000863	0.000824	4.72%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0103	0.0104	1.01%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	3.90	3.90	0.0207%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	1.42 µg/L	0.00140	1.11%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.68	4.66	0.410%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	7.92	8.09	2.13%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.412	0.417	1.04%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	353	353	0.0114%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	0.000012	0.000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00597	0.00594	0.510%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0190	0.0192	0.0002	Diff <2x LOR	----
<b>Total Metals (QC Lot: 170467)</b>											
CG2100544-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 172056)</b>											
CG2100548-001	RG_MW_WW_WP_Q1-20 21_NP	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 170621)</b>											
CG2100548-001	RG_MW_WW_WP_Q1-20 21_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00018	0.00020	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 170622)</b>											
CG2100548-001	RG_MW_WW_WP_Q1-20 21_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0019	0.0007	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00012	0.000009	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.119	0.126	5.42%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0089 µg/L	0.0000079	0.0000010	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	68.4	66.0	3.59%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0050	0.0048	0.0001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.8	19.2	1.97%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00012	0.00025	0.00014	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00151	0.00137	9.33%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.638	0.642	0.701%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	10.8 µg/L	0.00976	10.4%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.75	2.62	4.55%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.41	2.47	2.38%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.224	0.211	5.95%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	23.6	22.1	6.73%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000855	0.000806	5.92%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 170622) - continued</b>											
CG2100548-001	RG_MW_WW_WP_Q1-20 21_NP	zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 172101)</b>											
CG2100548-001	RG_MW_WW_WP_Q1-20 21_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 170008)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 172294)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 172301)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 174170)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 174920)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 174922)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 169830)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 170485)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 170486)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 170487)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 170488)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 170489)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 170490)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 171017)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 172852)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 172854)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 172854) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 173661)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 173662)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 170466)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 170466) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 170467)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 172056)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 170621)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 170622)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----





Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 170622) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 172101)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 170008)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 172294)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	92.7	85.0	115	---
<b>Physical Tests (QCLot: 172301)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.6	85.0	115	---
<b>Physical Tests (QCLot: 173144)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.6	95.4	104	---
<b>Physical Tests (QCLot: 174170)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 174920)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.6	90.0	110	---
<b>Physical Tests (QCLot: 174921)</b>									
pH	---	E108	---	pH units	7 pH units	99.8	98.6	101	---
<b>Physical Tests (QCLot: 174922)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 169830)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	97.0	80.0	120	---
<b>Anions and Nutrients (QCLot: 170485)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 170486)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	---
<b>Anions and Nutrients (QCLot: 170487)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 170488)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 170489)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 170490)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 171017)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	84.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 172852)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 172852) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	114	85.0	115	----
<b>Anions and Nutrients (QCLot: 172854)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	92.1	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 173661)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 173662)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	108	80.0	120	----
<b>Total Metals (QCLot: 170466)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	105	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.8	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	94.7	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.9	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	95.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.2	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	90.3	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	94.2	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	93.8	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.5	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 170466) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	97.5	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 170467)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Total Metals (QCLot: 172056)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	108	80.0	120	----
<b>Dissolved Metals (QCLot: 170621)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	95.7	80.0	120	----
<b>Dissolved Metals (QCLot: 170622)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	94.8	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.7	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	94.0	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	94.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.1	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	92.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	93.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.4	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.2	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.6	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 170622) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.5	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	90.9	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.0	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	95.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	89.9	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 169830)</b>										
CG2100540-013	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0588 mg/L	0.05 mg/L	118	70.0	130	----
<b>Anions and Nutrients (QCLot: 170485)</b>										
CG2100540-011	Anonymous	fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 170486)</b>										
CG2100540-011	Anonymous	bromide	24959-67-9	E235.Br-L	0.557 mg/L	0.5 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 170487)</b>										
CG2100540-011	Anonymous	chloride	16887-00-6	E235.Cl-L	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 170488)</b>										
CG2100540-011	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 171017)</b>										
CG2100540-015	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0565 mg/L	0.0676 mg/L	83.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 172852)</b>										
CG2100556-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 172854)</b>										
CG2100544-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.87 mg/L	2.5 mg/L	115	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 173661)</b>										
CG2100544-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	21.9 mg/L	23.9 mg/L	91.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 173662)</b>										
CG2100544-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.4 mg/L	23.9 mg/L	98.2	70.0	130	----
<b>Total Metals (QCLot: 170466)</b>										
CG2100544-001	Anonymous	aluminum, total	7429-90-5	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, total	7440-36-0	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0389 mg/L	0.04 mg/L	97.2	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00959 mg/L	0.01 mg/L	95.9	70.0	130	----
		boron, total	7440-42-8	E420	0.098 mg/L	0.1 mg/L	98.6	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00402 mg/L	0.004 mg/L	100	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 170466) - continued</b>										
CG2100544-001	Anonymous	calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		copper, total	7440-50-8	E420	0.0185 mg/L	0.02 mg/L	92.6	70.0	130	----
		iron, total	7439-89-6	E420	1.94 mg/L	2 mg/L	97.3	70.0	130	----
		lead, total	7439-92-1	E420	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0927 mg/L	0.1 mg/L	92.7	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		nickel, total	7440-02-0	E420	0.0372 mg/L	0.04 mg/L	93.0	70.0	130	----
		potassium, total	7440-09-7	E420	3.73 mg/L	4 mg/L	93.4	70.0	130	----
		selenium, total	7782-49-2	E420	0.0439 mg/L	0.04 mg/L	110	70.0	130	----
		silicon, total	7440-21-3	E420	8.99 mg/L	10 mg/L	89.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00390 mg/L	0.004 mg/L	97.5	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00382 mg/L	0.004 mg/L	95.4	70.0	130	----
		tin, total	7440-31-5	E420	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		titanium, total	7440-32-6	E420	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	95.9	70.0	130	----
<b>Total Metals (QCLot: 170467)</b>										
CG2100544-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
<b>Total Metals (QCLot: 172056)</b>										
CG2100548-002	RG_MW-03-04_WP_Q1-2021_NP	mercury, total	7439-97-6	E508	0.000105 mg/L	0.0001 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 170621)</b>										
CG2100548-001	RG_MW_WW_WP_Q1-2021_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
<b>Dissolved Metals (QCLot: 170622)</b>										
CG2100548-001	RG_MW_WW_WP_Q1-2021_NP	aluminum, dissolved	7429-90-5	E421	0.197 mg/L	0.2 mg/L	98.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 170622) - continued</b>										
CG2100548-001	RG_MW_WW_WP_Q1-2021_NP	beryllium, dissolved	7440-41-7	E421	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00801 mg/L	0.01 mg/L	80.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0183 mg/L	0.02 mg/L	91.6	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.01 mg/L	4 mg/L	100	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0441 mg/L	0.04 mg/L	110	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.66 mg/L	10 mg/L	96.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00396 mg/L	0.004 mg/L	99.0	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00383 mg/L	0.004 mg/L	95.6	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0389 mg/L	0.04 mg/L	97.4	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.0996 mg/L	0.1 mg/L	99.6	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.395 mg/L	0.4 mg/L	98.8	70.0	130	----		
<b>Dissolved Metals (QCLot: 172101)</b>										
CG2100548-002	RG_MW-03-04_WP_Q1-2021_NP	mercury, dissolved	7439-97-6	E509	0.0000999 mg/L	0.0001 mg/L	99.9	70.0	130	----

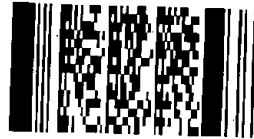


COC ID: **RG\_MW-Q1-2021**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	monica.bartha@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teck.lab.results@sharepoint.teck.ca	X	X	
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-425-8463			Phone Number	403 407 1794			PO number	VPO690772			

SAMPLE DETAILS								ANALYSIS REQUESTED								
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ENV	PRESENA
RG_MW_WW_WP_Q1-2021_NP	RG_MW_WW	WP		25-Mar-21	11:21	G	7	1	1	1	1	1	1	1	y	N
RG_MW_03_04_WP_Q1-2021_NP	RG_MW_03_04	WP		25-Mar-21	13:21	G	7	1	1	1	1	1	1	1	y	N

Environmental Division  
Calgary  
Work Order Reference  
**CG2100548**



Telephone : +1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	3/25/21

SERVICE REQUEST (rush subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/> Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge	Monica Bartha <i>[Signature]</i>	250-425-4784

March 25, 2021

5



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100558**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210325Q1GW  
**Sampler** : D.NICHOLAS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Mar-2021 08:45  
**Date Analysis Commenced** : 26-Mar-2021  
**Issue Date** : 12-Apr-2021 12:30

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					EV_MCGWD_W G_2021_Q1_NP	EV_MW_MC10 A_WG_2021_Q 1_NP	EV_MW_MC10 B_WG_2021_Q 1_NP	EV_MW_MC10 C_WG_2021_Q 1_NP	----
Client sampling date / time					25-Mar-2021 14:00	25-Mar-2021 14:20	25-Mar-2021 14:40	25-Mar-2021 14:15	----
Analyte	CAS Number	Method	LOR	Unit	CG2100558-001	CG2100558-002	CG2100558-003	CG2100558-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	2.6	3.0	<2.0	<2.0	----
conductivity	----	E100	2.0	µS/cm	527	503	<2.0	<2.0	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	230	231	<0.50	<0.50	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	412	401	366	409	----
pH	----	E108	0.10	pH units	7.72	7.70	5.00	4.94	----
solids, total dissolved [TDS]	----	E162	10	mg/L	320 <sup>DLHC</sup>	290 <sup>DLHC</sup>	<10	<10	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	377	23.4	<1.0	<1.0	----
turbidity	----	E121	0.10	NTU	121	8.78	<0.10	<0.10	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	241	245	<2.0	<2.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	240	244	<2.0	<2.0	----
bicarbonate	71-52-3	E290	2.0	mg/L	294	298	<2.0	<2.0	----
carbonate	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
hydroxide	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.213	0.130	0.0103 <sup>RRV</sup>	0.0191 <sup>RRV</sup>	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.17	2.65	<0.10	<0.10	----
fluoride	16984-48-8	E235.F	0.020	mg/L	1.15	1.00	<0.020	<0.020	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.551	0.231	<0.050	<0.050	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0510	0.0967	<0.0050	<0.0050	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0157	0.0046	<0.0010	<0.0010	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0061	0.0066	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.209 <sup>DLHC</sup>	0.0250	<0.0020	<0.0020	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0091	0.0077 <sup>DLM</sup>	<0.0020	<0.0020	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	68.6	56.0	<0.30	<0.30	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.618	0.332	<0.050	<0.050	----
<b>Organic / Inorganic Carbon</b>									



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MCGWD_W G_2021_Q1_NP	EV_MW_MC10 A_WG_2021_Q 1_NP	EV_MW_MC10 B_WG_2021_Q 1_NP	EV_MW_MC10 C_WG_2021_Q 1_NP	----
Client sampling date / time					25-Mar-2021 14:00	25-Mar-2021 14:20	25-Mar-2021 14:40	25-Mar-2021 14:15	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100558-001	CG2100558-002	CG2100558-003	CG2100558-004	-----	
					Result	Result	Result	Result	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.45	1.08	<0.50	<0.50	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.91	0.95	<0.50	<0.50	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.34	6.20	<0.10	<0.10	----	
cation sum	----	EC101	0.10	meq/L	6.10	6.04	<0.10	<0.10	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.2	97.4	100	100	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.93	1.31	<0.010	<0.010	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0011	<0.0010	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00019	0.00020	<0.00010	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00084	0.00071	<0.00010	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0550	0.0570	<0.00010	<0.00010	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.079	0.081	<0.010	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0494	0.0487	<0.0050	<0.0050	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	50.6	51.8	<0.050	<0.050	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.54	0.54	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00047	0.00047	<0.00020	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.216	0.167	<0.010	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0088	0.0089	<0.0010	<0.0010	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	25.3	24.6	<0.0050	<0.0050	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.356	0.350	<0.00010	<0.00010	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0164	0.0156	<0.000050	<0.000050	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00290	0.00306	<0.00050	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.31	1.32	<0.050	<0.050	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.094	0.080	<0.050	<0.050	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MCGWD_W G_2021_Q1_NP	EV_MW_MC10 A_WG_2021_Q 1_NP	EV_MW_MC10 B_WG_2021_Q 1_NP	EV_MW_MC10 C_WG_2021_Q 1_NP	----
Client sampling date / time					25-Mar-2021 14:00	25-Mar-2021 14:20	25-Mar-2021 14:40	25-Mar-2021 14:15	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100558-001 Result	CG2100558-002 Result	CG2100558-003 Result	CG2100558-004 Result	----- ----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.48	5.26	<0.050	<0.050	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	32.8	31.4	<0.050	<0.050	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.513	0.502	<0.00020	<0.00020	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	22.2	21.6	<0.50	<0.50	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000040	0.000046	<0.000010	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00287	0.00284	<0.000010	<0.000010	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0219	0.0243	<0.0010	<0.0010	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100558</b>	Page	: 1 of 19
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Kennedy Allen	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V1C 4C3	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 26-Mar-2021 08:45
PO	: VPO00741597	Issue Date	: 12-Apr-2021 12:30
C-O-C number	: 20210325Q1GW		
Sampler	: D.NICHOLAS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.







## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MCGWD_WG_2021_Q1_NP	E298	25-Mar-2021	02-Apr-2021	28 days	7 days	✓	02-Apr-2021	20 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q1_NP	E298	25-Mar-2021	02-Apr-2021	28 days	7 days	✓	02-Apr-2021	20 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q1_NP	E298	25-Mar-2021	02-Apr-2021	28 days	7 days	✓	02-Apr-2021	20 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10C_WG_2021_Q1_NP	E298	25-Mar-2021	02-Apr-2021	28 days	7 days	✓	02-Apr-2021	20 days	0 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MCGWD_WG_2021_Q1_NP	E235.Br-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC10A_WG_2021_Q1_NP	E235.Br-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC10B_WG_2021_Q1_NP	E235.Br-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MW_MC10C_WG_2021_Q1_NP	E235.Br-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MCGWD_WG_2021_Q1_NP	E235.Cl-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_MC10A_WG_2021_Q1_NP	E235.Cl-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_MC10B_WG_2021_Q1_NP	E235.Cl-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_MC10C_WG_2021_Q1_NP	E235.Cl-L	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MCGWD_WG_2021_Q1_NP	E378-U	25-Mar-2021	----	----	----		26-Mar-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_MC10A_WG_2021_Q1_NP	E378-U	25-Mar-2021	----	----	----		26-Mar-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_MC10B_WG_2021_Q1_NP	E378-U	25-Mar-2021	----	----	----		26-Mar-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_MC10C_WG_2021_Q1_NP	E378-U	25-Mar-2021	----	----	----		26-Mar-2021	3 days	1 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MCGWD_WG_2021_Q1_NP	E235.F	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC10A_WG_2021_Q1_NP	E235.F	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC10B_WG_2021_Q1_NP	E235.F	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC10C_WG_2021_Q1_NP	E235.F	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MCGWD_WG_2021_Q1_NP	E235.NO3-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_MC10A_WG_2021_Q1_NP	E235.NO3-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_MC10B_WG_2021_Q1_NP	E235.NO3-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_MC10C_WG_2021_Q1_NP	E235.NO3-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MCGWD_WG_2021_Q1_NP	E235.NO2-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC10A_WG_2021_Q1_NP	E235.NO2-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC10B_WG_2021_Q1_NP	E235.NO2-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC10C_WG_2021_Q1_NP	E235.NO2-L	25-Mar-2021	----	----	----		28-Mar-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MCGWD_WG_2021_Q1_NP	E235.SO4	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC10A_WG_2021_Q1_NP	E235.SO4	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC10B_WG_2021_Q1_NP	E235.SO4	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC10C_WG_2021_Q1_NP	E235.SO4	25-Mar-2021	----	----	----		28-Mar-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MCGWD_WG_2021_Q1_NP	E375-T	25-Mar-2021	01-Apr-2021	28 days	6 days	✓	01-Apr-2021	21 days	0 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q1_NP	E375-T	25-Mar-2021	01-Apr-2021	28 days	6 days	✓	01-Apr-2021	21 days	0 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q1_NP	E375-T	25-Mar-2021	01-Apr-2021	28 days	6 days	✔	01-Apr-2021	21 days	0 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10C_WG_2021_Q1_NP	E375-T	25-Mar-2021	01-Apr-2021	28 days	6 days	✔	01-Apr-2021	21 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MCGWD_WG_2021_Q1_NP	E318	25-Mar-2021	02-Apr-2021	28 days	7 days	✔	02-Apr-2021	20 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q1_NP	E318	25-Mar-2021	02-Apr-2021	28 days	7 days	✔	02-Apr-2021	20 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q1_NP	E318	25-Mar-2021	02-Apr-2021	28 days	7 days	✔	02-Apr-2021	20 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10C_WG_2021_Q1_NP	E318	25-Mar-2021	02-Apr-2021	28 days	7 days	✔	02-Apr-2021	20 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MCGWD_WG_2021_Q1_NP	E372-U	25-Mar-2021	01-Apr-2021	28 days	6 days	✔	01-Apr-2021	21 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q1_NP	E372-U	25-Mar-2021	01-Apr-2021	28 days	6 days	✔	01-Apr-2021	21 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q1_NP	E372-U	25-Mar-2021	01-Apr-2021	28 days	6 days	✔	01-Apr-2021	21 days	0 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10C_WG_2021_Q1_NP	E372-U	25-Mar-2021	01-Apr-2021	28 days	6 days	✔	01-Apr-2021	21 days	0 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MCGWD_WG_2021_Q1_NP	E421.Cr-L	25-Mar-2021	29-Mar-2021	180 days	3 days	✔	29-Mar-2021	176 days	0 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10A_WG_2021_Q1_NP	E421.Cr-L	25-Mar-2021	29-Mar-2021	180 days	3 days	✔	29-Mar-2021	176 days	0 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10B_WG_2021_Q1_NP	E421.Cr-L	25-Mar-2021	29-Mar-2021	180 days	3 days	✔	29-Mar-2021	176 days	0 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10C_WG_2021_Q1_NP	E421.Cr-L	25-Mar-2021	29-Mar-2021	180 days	3 days	✔	29-Mar-2021	176 days	0 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MCGWD_WG_2021_Q1_NP	E509	25-Mar-2021	01-Apr-2021	28 days	7 days	✔	01-Apr-2021	20 days	0 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC10A_WG_2021_Q1_NP	E509	25-Mar-2021	01-Apr-2021	28 days	7 days	✔	01-Apr-2021	20 days	0 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC10B_WG_2021_Q1_NP	E509	25-Mar-2021	01-Apr-2021	28 days	7 days	✔	01-Apr-2021	20 days	0 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC10C_WG_2021_Q1_NP	E509	25-Mar-2021	01-Apr-2021	28 days	7 days	✔	01-Apr-2021	20 days	0 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MCGWD_WG_2021_Q1_NP	E421	25-Mar-2021	29-Mar-2021	180 days	3 days	✓	29-Mar-2021	176 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10A_WG_2021_Q1_NP	E421	25-Mar-2021	29-Mar-2021	180 days	3 days	✓	29-Mar-2021	176 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10B_WG_2021_Q1_NP	E421	25-Mar-2021	29-Mar-2021	180 days	3 days	✓	29-Mar-2021	176 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10C_WG_2021_Q1_NP	E421	25-Mar-2021	29-Mar-2021	180 days	3 days	✓	29-Mar-2021	176 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MCGWD_WG_2021_Q1_NP	E358-L	25-Mar-2021	06-Apr-2021	28 days	11 days	✓	06-Apr-2021	16 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q1_NP	E358-L	25-Mar-2021	06-Apr-2021	28 days	11 days	✓	06-Apr-2021	16 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q1_NP	E358-L	25-Mar-2021	06-Apr-2021	28 days	11 days	✓	06-Apr-2021	16 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10C_WG_2021_Q1_NP	E358-L	25-Mar-2021	06-Apr-2021	28 days	11 days	✓	06-Apr-2021	16 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MCGWD_WG_2021_Q1_NP	E355-L	25-Mar-2021	06-Apr-2021	28 days	11 days	✓	06-Apr-2021	16 days	0 days	✓	





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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q1_NP	E355-L	25-Mar-2021	06-Apr-2021	28 days	11 days	✓	06-Apr-2021	16 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q1_NP	E355-L	25-Mar-2021	06-Apr-2021	28 days	11 days	✓	06-Apr-2021	16 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10C_WG_2021_Q1_NP	E355-L	25-Mar-2021	06-Apr-2021	28 days	11 days	✓	06-Apr-2021	16 days	0 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MCGWD_WG_2021_Q1_NP	E283	25-Mar-2021	----	----	----		08-Apr-2021	14 days	13 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC10A_WG_2021_Q1_NP	E283	25-Mar-2021	----	----	----		08-Apr-2021	14 days	13 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC10B_WG_2021_Q1_NP	E283	25-Mar-2021	----	----	----		08-Apr-2021	14 days	13 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC10C_WG_2021_Q1_NP	E283	25-Mar-2021	----	----	----		08-Apr-2021	14 days	13 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MCGWD_WG_2021_Q1_NP	E290	25-Mar-2021	----	----	----		07-Apr-2021	14 days	13 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_MC10A_WG_2021_Q1_NP	E290	25-Mar-2021	----	----	----		07-Apr-2021	14 days	13 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_MC10B_WG_2021_Q1_NP	E290	25-Mar-2021	----	----	----		07-Apr-2021	14 days	13 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_MC10C_WG_2021_Q1_NP	E290	25-Mar-2021	----	----	----		07-Apr-2021	14 days	13 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MCGWD_WG_2021_Q1_NP	E100	25-Mar-2021	----	----	----		07-Apr-2021	28 days	13 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_MC10A_WG_2021_Q1_NP	E100	25-Mar-2021	----	----	----		07-Apr-2021	28 days	13 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_MC10B_WG_2021_Q1_NP	E100	25-Mar-2021	----	----	----		07-Apr-2021	28 days	13 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_MC10C_WG_2021_Q1_NP	E100	25-Mar-2021	----	----	----		07-Apr-2021	28 days	13 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MCGWD_WG_2021_Q1_NP	E125	25-Mar-2021	----	----	----		03-Apr-2021	0.34 hrs	214 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_MC10A_WG_2021_Q1_NP	E125	25-Mar-2021	----	----	----		03-Apr-2021	0.34 hrs	214 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_MC10B_WG_2021_Q1_NP	E125	25-Mar-2021	----	----	----		03-Apr-2021	0.34 hrs	214 hrs	* EHTR-FM



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MC10C_WG_2021_Q1_NP	E125	25-Mar-2021	----	----	----		03-Apr-2021	0.34 hrs	214 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MCGWD_WG_2021_Q1_NP	E108	25-Mar-2021	----	----	----		07-Apr-2021	0.25 hrs	314 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MC10A_WG_2021_Q1_NP	E108	25-Mar-2021	----	----	----		07-Apr-2021	0.25 hrs	314 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MC10B_WG_2021_Q1_NP	E108	25-Mar-2021	----	----	----		07-Apr-2021	0.25 hrs	314 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MC10C_WG_2021_Q1_NP	E108	25-Mar-2021	----	----	----		07-Apr-2021	0.25 hrs	314 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MCGWD_WG_2021_Q1_NP	E162	25-Mar-2021	----	----	----		01-Apr-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC10A_WG_2021_Q1_NP	E162	25-Mar-2021	----	----	----		01-Apr-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC10B_WG_2021_Q1_NP	E162	25-Mar-2021	----	----	----		01-Apr-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC10C_WG_2021_Q1_NP	E162	25-Mar-2021	----	----	----		01-Apr-2021	7 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MCGWD_WG_2021_Q1_NP	E160-L	25-Mar-2021	----	----	----		01-Apr-2021	7 days	6 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_MC10A_WG_2021_Q1_NP	E160-L	25-Mar-2021	----	----	----		01-Apr-2021	7 days	6 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_MC10B_WG_2021_Q1_NP	E160-L	25-Mar-2021	----	----	----		01-Apr-2021	7 days	6 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_MC10C_WG_2021_Q1_NP	E160-L	25-Mar-2021	----	----	----		01-Apr-2021	7 days	6 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MCGWD_WG_2021_Q1_NP	E121	25-Mar-2021	----	----	----		27-Mar-2021	3 days	1 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_MC10A_WG_2021_Q1_NP	E121	25-Mar-2021	----	----	----		27-Mar-2021	3 days	1 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_MC10B_WG_2021_Q1_NP	E121	25-Mar-2021	----	----	----		27-Mar-2021	3 days	1 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_MC10C_WG_2021_Q1_NP	E121	25-Mar-2021	----	----	----		27-Mar-2021	3 days	1 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	175428	1	18	5.5	5.0	✔
Alkalinity Species by Titration	E290	174925	1	12	8.3	5.0	✔
Ammonia by Fluorescence	E298	172853	1	12	8.3	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	170486	0	20	0.0	5.0	✖
Chloride in Water by IC (Low Level)	E235.Cl-L	170487	0	20	0.0	5.0	✖
Conductivity in Water	E100	174923	1	12	8.3	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	2	26	7.6	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	172528	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	170622	2	26	7.6	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173849	1	11	9.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169831	1	8	12.5	5.0	✔
Fluoride in Water by IC	E235.F	170485	0	20	0.0	5.0	✖
Nitrate in Water by IC (Low Level)	E235.NO3-L	170489	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	170490	1	20	5.0	5.0	✔
ORP by Electrode	E125	173145	1	10	10.0	5.0	✔
pH by Meter	E108	174924	1	12	8.3	5.0	✔
Sulfate in Water by IC	E235.SO4	170488	0	20	0.0	5.0	✖
TDS by Gravimetry	E162	172301	1	20	5.0	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	171020	1	4	25.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172855	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173848	1	18	5.5	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171018	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	172294	0	20	0.0	5.0	✖
Turbidity by Nephelometry	E121	170010	1	8	12.5	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	175428	1	18	5.5	5.0	✔
Alkalinity Species by Titration	E290	174925	1	12	8.3	5.0	✔
Ammonia by Fluorescence	E298	172853	1	12	8.3	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	170486	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	170487	1	20	5.0	5.0	✔
Conductivity in Water	E100	174923	1	12	8.3	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	2	26	7.6	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	172528	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	170622	2	26	7.6	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173849	1	11	9.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169831	1	8	12.5	5.0	✔
Fluoride in Water by IC	E235.F	170485	1	20	5.0	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	170489	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	170490	1	20	5.0	5.0	✓
ORP by Electrode	E125	173145	1	10	10.0	5.0	✓
pH by Meter	E108	174924	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	170488	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	172301	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	171020	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172855	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173848	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171018	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	172294	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	170010	1	8	12.5	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	175428	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	174925	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	172853	1	12	8.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	170486	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	170487	1	20	5.0	5.0	✓
Conductivity in Water	E100	174923	1	12	8.3	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	2	26	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	172528	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	170622	2	26	7.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173849	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169831	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	170485	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	170489	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	170490	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	170488	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	172301	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	171020	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172855	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173848	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171018	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	172294	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	170010	1	8	12.5	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	172853	1	12	8.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	170486	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	170487	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	170621	2	26	7.6	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Mercury in Water by CVAAS	E509	172528	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	170622	2	26	7.6	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	173849	1	11	9.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	169831	1	8	12.5	5.0	✔
Fluoride in Water by IC	E235.F	170485	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	170489	0	20	0.0	5.0	✖
Nitrite in Water by IC (Low Level)	E235.NO2-L	170490	0	20	0.0	5.0	✖
Sulfate in Water by IC	E235.SO4	170488	1	20	5.0	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	171020	1	4	25.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	172855	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	173848	1	18	5.5	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	171018	1	20	5.0	5.0	✔





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2100558**

**Page** : 1 of 17

**Amendment** : **1**

**Client** : Teck Coal Limited  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210325Q1GW  
**Sampler** : D.NICHOLAS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Mar-2021 08:45  
**Date Analysis Commenced** : 26-Mar-2021  
**Issue Date** : 12-Apr-2021 12:30

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
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Shirley Li		Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 170010)</b>											
CG2100557-002	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 172301)</b>											
CG2100540-021	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2990	3040	1.66%	20%	----
<b>Physical Tests (QC Lot: 173145)</b>											
CG2100557-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	401	404	0.944%	15%	----
<b>Physical Tests (QC Lot: 174923)</b>											
CG2100561-001	Anonymous	conductivity	----	E100	2.0	µS/cm	3550	3450	2.92%	10%	----
<b>Physical Tests (QC Lot: 174924)</b>											
CG2100561-001	Anonymous	pH	----	E108	0.10	pH units	7.52	7.51	0.133%	4%	----
<b>Physical Tests (QC Lot: 174925)</b>											
CG2100561-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	128	153	18.2%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	128	124	2.70%	20%	----
<b>Physical Tests (QC Lot: 175428)</b>											
CG2100560-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	4.8	5.0	0.3	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 169831)</b>											
CG2100557-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0012	0.0013	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170489)</b>											
CG2100540-011	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 170490)</b>											
CG2100540-011	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 171018)</b>											
CG2100552-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 171020)</b>											
CG2100558-001	EV_MCGWD_WG_2021_Q1_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0091	0.0080	0.0010	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172853)</b>											
CG2100557-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0097	0.0092	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172855)</b>											
CG2100557-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.095	0.079	0.016	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 173848)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Organic / Inorganic Carbon (QC Lot: 173848) - continued</b>											
CG2100558-001	EV_MCGWD_WG_2021_Q1_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.91	1.92	0.01	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 173849)</b>											
CG2100558-001	EV_MCGWD_WG_2021_Q1_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.45	1.36	0.09	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 170621)</b>											
CG2100548-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00018	0.00020	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 170622)</b>											
CG2100548-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0019	0.0007	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00012	0.000009	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.119	0.126	5.42%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0089 µg/L	0.0000079	0.0000010	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	68.4	66.0	3.59%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0050	0.0048	0.0001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.8	19.2	1.97%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00012	0.00025	0.00014	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00151	0.00137	9.33%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.638	0.642	0.701%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	10.8 µg/L	0.00976	10.4%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.75	2.62	4.55%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.41	2.47	2.38%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.224	0.211	5.95%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	23.6	22.1	6.73%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 170622) - continued</b>											
CG2100548-001	Anonymous	uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000855	0.000806	5.92%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 170625)</b>											
CG2100528-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00021	0.00024	0.00003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 170626)</b>											
CG2100528-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	<0.0010	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00017	0.00016	0.000009	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00073	0.00076	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0525	0.0511	2.64%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.048	0.047	0.0009	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0222 µg/L	0.0000210	0.0000012	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	302	297	1.68%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	4.80 µg/L	0.00486	1.03%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.286	0.289	1.15%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0685	0.0638	7.09%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	168	169	0.764%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.134	0.139	3.67%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00214	0.00213	0.641%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0162	0.0164	1.35%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	26.3	27.1	2.88%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	127 µg/L	0.133	4.49%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.93	4.00	1.71%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	284	291	2.48%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.371	0.357	3.90%	20%	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	316	326	2.96%	20%	----		
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----		
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----		
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----		
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00974	0.00946	2.87%	20%	----		



Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 170626) - continued</b>											
CG2100528-001	Anonymous	vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0048	0.0050	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 172528)</b>											
CG2100549-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 170010)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 172294)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 172301)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 174923)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 174925)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 175428)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 169831)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 170485)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 170486)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 170487)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 170488)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 170489)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 170490)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 171018)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 171020)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 172853)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 172853) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 172855)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 173848)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 173849)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 170621)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 170622)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 170622) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 170625)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 170626)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	MBRR
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 170626) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 172528)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

**Qualifiers**

Qualifier	Description
MBRR	Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 170010)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100	85.0	115	---
<b>Physical Tests (QCLot: 172294)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	92.7	85.0	115	---
<b>Physical Tests (QCLot: 172301)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.6	85.0	115	---
<b>Physical Tests (QCLot: 173145)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.5	95.4	104	---
<b>Physical Tests (QCLot: 174923)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	---
<b>Physical Tests (QCLot: 174924)</b>									
pH	---	E108	---	pH units	7 pH units	99.8	98.6	101	---
<b>Physical Tests (QCLot: 174925)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 175428)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	111	85.0	115	---
<b>Anions and Nutrients (QCLot: 169831)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 170485)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 170486)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	---
<b>Anions and Nutrients (QCLot: 170487)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 170488)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 170489)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 170490)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 171018)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	87.0	80.0	120	---
<b>Anions and Nutrients (QCLot: 171020)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 171020) - continued</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	93.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 172853)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	86.5	85.0	115	----
<b>Anions and Nutrients (QCLot: 172855)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	99.0	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 173848)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 173849)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	96.7	80.0	120	----
<b>Dissolved Metals (QCLot: 170621)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	95.7	80.0	120	----
<b>Dissolved Metals (QCLot: 170622)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	94.8	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.7	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	94.0	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	94.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.1	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	92.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	93.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.4	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.2	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 170622) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.5	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	90.9	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.0	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	95.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.9	80.0	120	----
<b>Dissolved Metals (QCLot: 170625)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 170626)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.7	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.9	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	95.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	107	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.3	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 170626) - continued</b>									
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.6	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.8	80.0	120	----





## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 169831)</b>										
CG2100558-001	EV_MCGWD_WG_2021_Q1_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0559 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 170485)</b>										
CG2100540-011	Anonymous	fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 170486)</b>										
CG2100540-011	Anonymous	bromide	24959-67-9	E235.Br-L	0.557 mg/L	0.5 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 170487)</b>										
CG2100540-011	Anonymous	chloride	16887-00-6	E235.Cl-L	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 170488)</b>										
CG2100540-011	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 171018)</b>										
CG2100552-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0705 mg/L	0.0676 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 171020)</b>										
CG2100558-002	EV_MW_MC10A_WG_2021_Q1_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0522 mg/L	0.0676 mg/L	77.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 172853)</b>										
CG2100558-001	EV_MCGWD_WG_2021_Q1_NP	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 172855)</b>										
CG2100557-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	3.00 mg/L	2.5 mg/L	120	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 173848)</b>										
CG2100558-002	EV_MW_MC10A_WG_2021_Q1_NP	carbon, total organic [TOC]	----	E355-L	23.4 mg/L	23.9 mg/L	98.0	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 173849)</b>										
CG2100558-002	EV_MW_MC10A_WG_2021_Q1_NP	carbon, dissolved organic [DOC]	----	E358-L	23.3 mg/L	23.9 mg/L	97.4	70.0	130	----
<b>Dissolved Metals (QCLot: 170621)</b>										
CG2100548-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
<b>Dissolved Metals (QCLot: 170622)</b>										
CG2100548-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.197 mg/L	0.2 mg/L	98.3	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 170622) - continued</b>										
CG2100548-001	Anonymous	antimony, dissolved	7440-36-0	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00801 mg/L	0.01 mg/L	80.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0183 mg/L	0.02 mg/L	91.6	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.01 mg/L	4 mg/L	100	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0441 mg/L	0.04 mg/L	110	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.66 mg/L	10 mg/L	96.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00396 mg/L	0.004 mg/L	99.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00383 mg/L	0.004 mg/L	95.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0389 mg/L	0.04 mg/L	97.4	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0996 mg/L	0.1 mg/L	99.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.395 mg/L	0.4 mg/L	98.8	70.0	130	----
<b>Dissolved Metals (QCLot: 170625)</b>										
CG2100528-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
<b>Dissolved Metals (QCLot: 170626)</b>										
CG2100528-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.215 mg/L	0.2 mg/L	108	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0223 mg/L	0.02 mg/L	111	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 170626) - continued</b>										
CG2100528-001	Anonymous	barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0435 mg/L	0.04 mg/L	109	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0161 mg/L	0.02 mg/L	80.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.096 mg/L	0.1 mg/L	95.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00352 mg/L	0.004 mg/L	88.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0176 mg/L	0.02 mg/L	88.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	98.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0169 mg/L	0.02 mg/L	84.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0219 mg/L	0.02 mg/L	109	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0353 mg/L	0.04 mg/L	88.2	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	10.3 mg/L	10 mg/L	103	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00297 mg/L	0.004 mg/L	74.3	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00338 mg/L	0.004 mg/L	84.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0462 mg/L	0.04 mg/L	115	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.113 mg/L	0.1 mg/L	113	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.339 mg/L	0.4 mg/L	84.7	70.0	130	----
<b>Dissolved Metals (QCLot: 172528)</b>										
CG2100549-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000107 mg/L	0.0001 mg/L	107	70.0	130	----

COC ID: 20210325Q1GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO		LABORATORY				OTHER INFO						
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary			Report Format / Distribution						
Job Description	Q1 Ground Water Sampling	Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X		
Project Manager	Kennedy Allen	Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larriee@teck.com	X	X	X		
Email	Kennedy.Allen@teck.com	Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X		
						Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X		
						Email 5:	teckcoal@equisonline.com			X		
		Province	BC	City	Calgary	Province	AB	Email 6:	Michael.Moore@teck.com	X	X	X
		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
				Phone Number	403-407-1800			PO number	VPO00741597			

Environmental Division  
Calgary  
Work Order Reference  
**CG2100558**



Telephone : +1 403 407 1800

MPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	No	Yes	Yes	No	No	No	No	Yes	Yes
EV_MCGWD_WG_2021_Q1_NP	EV_MCGWD	WG	N	03/25/21	14:00	G	5	TECKCOAL-ROUTINE-VA (E305.1) Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	1	1	1	1				1	
EV_MC10A_WG_2021_Q1_NP	EV_MC10A	WG	N	03/25/21	14:20	G	5	TECKCOAL-MET-D-VA (SW6020)	1	1	1	1				1	
EV_MC10B_WG_2021_Q1_NP	EV_MC10B	WG	N	03/25/21	14:40	G	5	DOC (APIA 5310)	1	1	1	1				1	
EV_MC10C_WG_2021_Q1_NP	EV_MC10C	WG	N	03/25/21	14:15	G	5	Dissolved Phosphorus	1	1	1	1				1	
								TKN/TOC (APHA 4500-NORG)									
								Total Nitrogen for BC (NO2 and NO3)									
								T-ULTRA MERCURY (SW6020)									
								D-ULTRA MERCURY (SW6020)									
								EPH (C10-C32)									
								D-Mercury									
								D-CrVI									
							<b>Total</b>										<b>20</b>

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION D.NICHOLAS	DATE/TIME March 25, 2021	ACCEPTED BY/AFFILIATION <i>[Signature]</i>	DATE/TIME 25/03 8:45
SERVICE REQUEST (rush - subject to availability)	Sampler's Name D.NICHOLAS	Mobile # 1-250-425-1101	Sampler's Signature	Date/Time March 25, 2021
Regular (default) <input checked="" type="checkbox"/>				
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

*po*

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100604**  
**Client** : **Teck Coal Limited**  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210329Q1GW  
**Sampler** : C. Emslie/T. Phillips  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 30-Mar-2021 09:00  
**Date Analysis Commenced** : 30-Mar-2021  
**Issue Date** : 12-Apr-2021 18:45

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angeli Marzan	Lab Analyst	Inorganics, Edmonton, Alberta
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
IB:INT	Ion Balance Reviewed: Imbalance is due to interference or non-measured component.



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_WF_SW_W	----	----	----	----
(Matrix: Water)					G_2021_Q1_NP					
					Client sampling date / time	29-Mar-2021 12:45	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100604-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	482	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	222	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	274	----	----	----	----	----
pH	----	E108	0.10	pH units	8.20	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	260 <sup>DLHC</sup>	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	57.2	----	----	----	----	----
turbidity	----	E121	0.10	NTU	50.4	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	87.9	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	87.9	----	----	----	----	----
bicarbonate	71-52-3	E290	2.0	mg/L	107	----	----	----	----	----
carbonate	3812-32-6	E290	2.0	mg/L	<2.0	----	----	----	----	----
hydroxide	14280-30-9	E290	2.0	mg/L	<2.0	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.166	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.05	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.134	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.977	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0103	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0421	----	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0033	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	181	----	----	----	----	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.987	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	5.40	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_WF_SW_W	----	----	----	----
(Matrix: Water)					G_2021_Q1_NP					
					Client sampling date / time	29-Mar-2021 12:45	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100604-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	17.0	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.62	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	4.73	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	84.2 <sup>IB:INT</sup>	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	8.60	----	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0017	----	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00044	----	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	----	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00232	----	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0055	----	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	12.3	----	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00021	----	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00074	----	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.053	----	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0113	----	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	46.4	----	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.203	----	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	----	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000817	----	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.18	----	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.066	----	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	----	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_WF_SW_W G_2021_Q1_NP	----	----	----	----
Client sampling date / time					29-Mar-2021 12:45	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100604-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.46	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.00739	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	56.2	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00013	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100604</b>	Page	: 1 of 12
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Kennedy Allen	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V1C 4C3	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 30-Mar-2021 09:00
PO	: VPO00741597	Issue Date	: 12-Apr-2021 18:46
C-O-C number	: 20210329Q1GW		
Sampler	: C. Emslie/T. Phillips		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

RIGHT SOLUTIONS | RIGHT PARTNER



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q1_NP	E298	29-Mar-2021	06-Apr-2021	28 days	7 days	✓	06-Apr-2021	20 days	0 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q1_NP	E235.Br-L	29-Mar-2021	----	----	----		01-Apr-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q1_NP	E235.Cl-L	29-Mar-2021	----	----	----		01-Apr-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q1_NP	E378-U	29-Mar-2021	----	----	----		31-Mar-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q1_NP	E235.F	29-Mar-2021	----	----	----		01-Apr-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q1_NP	E235.NO3-L	29-Mar-2021	----	----	----		01-Apr-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q1_NP	E235.NO2-L	29-Mar-2021	----	----	----		01-Apr-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_WF_SW_WG_2021_Q1_NP	E235.SO4	29-Mar-2021	----	----	----		01-Apr-2021	28 days	3 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_WF_SW_WG_2021_Q1_NP	E375-T	29-Mar-2021	06-Apr-2021	28 days	7 days	✔	06-Apr-2021	20 days	0 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q1_NP	E318	29-Mar-2021	05-Apr-2021	28 days	7 days	✔	05-Apr-2021	20 days	0 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q1_NP	E372-U	29-Mar-2021	03-Apr-2021	28 days	4 days	✔	03-Apr-2021	23 days	0 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> EV_WF_SW_WG_2021_Q1_NP	E421.Cr-L	29-Mar-2021	01-Apr-2021	180 days	3 days	✔	04-Apr-2021	176 days	2 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> EV_WF_SW_WG_2021_Q1_NP	E509	29-Mar-2021	07-Apr-2021	28 days	8 days	✔	07-Apr-2021	19 days	0 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_WF_SW_WG_2021_Q1_NP	E421	29-Mar-2021	01-Apr-2021	180 days	3 days	✔	04-Apr-2021	176 days	2 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_WF_SW_WG_2021_Q1_NP	E358-L	29-Mar-2021	07-Apr-2021	28 days	8 days	✔	07-Apr-2021	19 days	0 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q1_NP	E355-L	29-Mar-2021	07-Apr-2021	28 days	8 days	✔	07-Apr-2021	19 days	0 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_WF_SW_WG_2021_Q1_NP	E283	29-Mar-2021	----	----	----		09-Apr-2021	14 days	11 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_WF_SW_WG_2021_Q1_NP	E290	29-Mar-2021	----	----	----		08-Apr-2021	14 days	10 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_WF_SW_WG_2021_Q1_NP	E100	29-Mar-2021	----	----	----		08-Apr-2021	28 days	10 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_WF_SW_WG_2021_Q1_NP	E125	29-Mar-2021	----	----	----		07-Apr-2021	0.34 hrs	209 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_WF_SW_WG_2021_Q1_NP	E108	29-Mar-2021	----	----	----		08-Apr-2021	0.25 hrs	243 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_WF_SW_WG_2021_Q1_NP	E162	29-Mar-2021	----	----	----		05-Apr-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] EV_WF_SW_WG_2021_Q1_NP	E160-L	29-Mar-2021	----	----	----		05-Apr-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_WF_SW_WG_2021_Q1_NP	E121	29-Mar-2021	----	----	----		31-Mar-2021	3 days	1 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	176195	1	19	5.2	5.0	✔
Alkalinity Species by Titration	E290	175583	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	173847	1	18	5.5	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	172372	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	172373	1	20	5.0	5.0	✔
Conductivity in Water	E100	175582	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	172713	1	14	7.1	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	174575	1	19	5.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	172714	1	14	7.1	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	174569	1	18	5.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	171597	1	19	5.2	5.0	✔
Fluoride in Water by IC	E235.F	172371	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	172374	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	172375	1	20	5.0	5.0	✔
ORP by Electrode	E125	174449	1	17	5.8	5.0	✔
pH by Meter	E108	175581	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	172370	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	173568	1	19	5.2	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	173510	1	1	100.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	173610	1	10	10.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	174572	1	13	7.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	172263	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	173565	0	20	0.0	5.0	✖
Turbidity by Nephelometry	E121	171587	1	4	25.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	176195	1	19	5.2	5.0	✔
Alkalinity Species by Titration	E290	175583	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	173847	1	18	5.5	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	172372	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	172373	1	20	5.0	5.0	✔
Conductivity in Water	E100	175582	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	172713	1	14	7.1	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	174575	1	19	5.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	172714	1	14	7.1	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	174569	1	18	5.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	171597	1	19	5.2	5.0	✔
Fluoride in Water by IC	E235.F	172371	1	20	5.0	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrate in Water by IC (Low Level)	E235.NO3-L	172374	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	172375	1	20	5.0	5.0	✓
ORP by Electrode	E125	174449	1	17	5.8	5.0	✓
pH by Meter	E108	175581	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	172370	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	173568	1	19	5.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	173510	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	173610	1	10	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	174572	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	172263	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	173565	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	171587	1	4	25.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	176195	1	19	5.2	5.0	✓
Alkalinity Species by Titration	E290	175583	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	173847	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	172372	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	172373	1	20	5.0	5.0	✓
Conductivity in Water	E100	175582	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	172713	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	174575	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	172714	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	174569	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	171597	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	172371	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	172374	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	172375	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	172370	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	173568	1	19	5.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	173510	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	173610	1	10	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	174572	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	172263	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	173565	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	171587	1	4	25.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	173847	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	172372	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	172373	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	172713	1	14	7.1	5.0	✓





Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Mercury in Water by CVAAS	E509	174575	1	19	5.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	172714	1	14	7.1	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	174569	1	18	5.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	171597	1	19	5.2	5.0	✔
Fluoride in Water by IC	E235.F	172371	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	172374	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	172375	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	172370	1	20	5.0	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	173510	0	1	0.0	5.0	✖
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	173610	1	10	10.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	174572	1	13	7.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	172263	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Edmonton - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Edmonton - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Nitrate in Water by IC (Low Level)	E235.NO3-L  Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4  Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283  Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3
Alkalinity Species by Titration	E290  Edmonton - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298  Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L  Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L  Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U  Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T  Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U  Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.  Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2100604**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210329Q1GW  
**Sampler** : C. Emslie/T. Phillips  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 30-Mar-2021 09:00  
**Date Analysis Commenced** : 30-Mar-2021  
**Issue Date** : 12-Apr-2021 18:45

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angeli Marzan	Lab Analyst	Inorganics, Edmonton, Alberta
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2100604  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 171587)</b>											
CG2100603-003	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 173568)</b>											
CG2100592-001	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	3680	3340	9.62%	20%	----
<b>Physical Tests (QC Lot: 174449)</b>											
CG2100595-004	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	427	420	1.68%	15%	----
<b>Physical Tests (QC Lot: 175581)</b>											
CG2100620-001	Anonymous	pH	----	E108	0.10	pH units	8.16	8.16	0.00%	3%	----
<b>Physical Tests (QC Lot: 175582)</b>											
CG2100620-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2150	2160	0.464%	10%	----
<b>Physical Tests (QC Lot: 175583)</b>											
CG2100620-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	256	251	2.13%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	256	251	2.13%	20%	----
<b>Physical Tests (QC Lot: 176195)</b>											
CG2100595-004	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 171597)</b>											
CG2100595-006	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0062	0.0063	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172263)</b>											
CG2100595-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0027	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172370)</b>											
CG2100603-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172371)</b>											
CG2100603-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172372)</b>											
CG2100603-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172373)</b>											
CG2100603-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172374)</b>											
CG2100603-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 172375)</b>											





Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 172375) - continued</b>											
CG2100603-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 173510)</b>											
CG2100604-001	EV_WF_SW_WG_2021_Q 1_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0033	0.0042	0.0009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 173610)</b>											
CG2100597-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.180	0.162	0.018	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 173847)</b>											
CG2100595-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 174569)</b>											
CG2100595-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.18	1.20	0.02	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 174572)</b>											
CG2100595-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.05	1.03	0.02	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 172713)</b>											
CG2100604-001	EV_WF_SW_WG_2021_Q 1_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00021	0.00015	0.00006	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 172714)</b>											
CG2100604-001	EV_WF_SW_WG_2021_Q 1_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0017	0.0015	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00044	0.00044	0.000001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	0.00012	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00232	0.00224	3.64%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0055 µg/L	<0.0000050	0.0000005	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	12.3	11.5	6.60%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00074	0.00066	0.00008	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.053	0.050	0.003	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0113	0.0106	6.13%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	46.4	44.3	4.67%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.203	0.185	9.52%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000817	0.000794	2.85%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.18	2.89	9.33%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.066 µg/L	0.000067	0.000001	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 172714) - continued</b>											
CG2100604-001	EV_WF_SW_WG_2021_Q1_NP	silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.46	4.21	5.82%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.00739	0.00698	5.76%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	56.2	56.3	0.153%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00013	0.00013	0.0000006	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 174575)</b>											
CG2100604-001	EV_WF_SW_WG_2021_Q1_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 171587)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 173565)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 173568)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 175582)</b>						
conductivity	----	E100	1	µS/cm	1.0	----
<b>Physical Tests (QCLot: 175583)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 176195)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 171597)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 172263)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 172370)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 172371)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 172372)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 172373)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 172374)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 172375)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 173510)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 173610)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 173610) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 173847)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 174569)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 174572)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 172713)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 172714)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 172714) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 174575)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 171587)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 173565)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	96.2	85.0	115	---
<b>Physical Tests (QCLot: 173568)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 174449)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 175581)</b>									
pH	---	E108	---	pH units	6 pH units	101	97.0	103	---
<b>Physical Tests (QCLot: 175582)</b>									
conductivity	---	E100	1	µS/cm	1412 µS/cm	108	90.0	110	---
<b>Physical Tests (QCLot: 175583)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 176195)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 171597)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	98.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 172263)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	89.3	80.0	120	---
<b>Anions and Nutrients (QCLot: 172370)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 172371)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 172372)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 172373)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 172374)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 172375)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 173510)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 173510) - continued</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	99.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 173610)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	122	75.0	125	----
<b>Anions and Nutrients (QCLot: 173847)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	104	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 174569)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 174572)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Dissolved Metals (QCLot: 172713)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	92.9	80.0	120	----
<b>Dissolved Metals (QCLot: 172714)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.2	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.5	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	87.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	94.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	92.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	90.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	96.4	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.3	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	93.0	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.6	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	88.2	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	94.8	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	91.4	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 172714) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.3	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	94.7	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	92.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.0	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	97.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.5	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.6	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 171597)</b>										
CG2100595-007	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0508 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 172263)</b>										
CG2100595-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0530 mg/L	0.0676 mg/L	78.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 172370)</b>										
CG2100603-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 172371)</b>										
CG2100603-002	Anonymous	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 172372)</b>										
CG2100603-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.504 mg/L	0.5 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 172373)</b>										
CG2100603-002	Anonymous	chloride	16887-00-6	E235.Cl-L	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 172374)</b>										
CG2100603-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.52 mg/L	2.5 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 172375)</b>										
CG2100603-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.504 mg/L	0.5 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 173610)</b>										
CG2100597-005	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	3.16 mg/L	2.5 mg/L	126	70.0	130	----
<b>Anions and Nutrients (QCLot: 173847)</b>										
CG2100595-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 174569)</b>										
CG2100595-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.0 mg/L	23.9 mg/L	105	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 174572)</b>										
CG2100595-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.9 mg/L	23.9 mg/L	104	70.0	130	----
<b>Dissolved Metals (QCLot: 172713)</b>										
CG2100604-001	EV_WF_SW_WG_2021_Q1_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
<b>Dissolved Metals (QCLot: 172714)</b>										
CG2100604-001	EV_WF_SW_WG_2021_Q1_NP	aluminum, dissolved	7429-90-5	E421	0.201 mg/L	0.2 mg/L	101	70.0	130	----



Sub-Matrix: **Water**

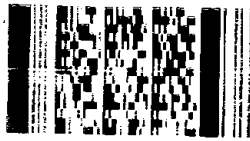
					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 172714) - continued</b>										
CG2100604-001	EV_WF_SW_WG_2021_Q1_NP	antimony, dissolved	7440-36-0	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00821 mg/L	0.01 mg/L	82.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	92.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00400 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0182 mg/L	0.02 mg/L	91.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0927 mg/L	0.1 mg/L	92.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.47 mg/L	4 mg/L	86.8	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0448 mg/L	0.04 mg/L	112	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.00 mg/L	10 mg/L	90.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00354 mg/L	0.004 mg/L	88.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00375 mg/L	0.004 mg/L	93.9	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.395 mg/L	0.4 mg/L	98.8	70.0	130	----		
<b>Dissolved Metals (QCLot: 174575)</b>										
CG2100616-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000968 mg/L	0.0001 mg/L	96.8	70.0	130	----



COC ID: 20210329Q1GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO		LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling	Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Kennedy Allen	Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com	X	X	X
Email	Kennedy.Allen@teck.com	Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3					Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
						Email 5:	teckcoal@equisonline.com			X
						Email 6:	Michael.Moore@teck.com	X	X	X
		Province	BC		City	Calgary				
		Country	Canada		Postal Code	T1Y 7B5				
					Phone Number	403-407-1800				
						PO number		VPO00741597		

Environmental Division  
Calgary  
Work Order Reference  
**CG2100604**



Telephone: 1-403-407-1800

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI
EV_WF_SW_WG_2021_Q1_NP	EV_WF_SW	WG	N	03/29/21	12:45	G	5	1		1	1		1					1	
Total							5												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
		C. Emslie/T. Phillips		March 29, 2021		<i>[Signature]</i>		3/30/2021	
SERVICE REQUEST (rush - subject to availability)		Sampler's Name		Mobile #		Sampler's Signature		Date/Time	
Regular (default) X		C. Emslie/T. Phillips		1-250-425-1101		<i>[Signature]</i>		March 29, 2021	
Priority (2-3 business days) - 50% surcharge									
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									



Teck Coal Ltd. (Elkview)  
ATTN: Annie Larrivee  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 21-JAN-21  
Report Date: 28-JAN-21 20:00 (MT)  
Version: DRAFT

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2550481  
Project P.O. #: VPO00741597  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20210120Q1GW  
Legal Site Desc:

DRAFT

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Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2550481-1 WG 20-JAN-21 13:42 EV_MW_MC4_WG _2021_Q1_NP	L2550481-2 WG 20-JAN-21 12:18 EV_MW_AQ1_WG _2021_Q1_NP	L2550481-3 WG 20-JAN-21 14:47 EV_MW_BC1A_W G_2021_Q1_NP		
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	865	854	2070		
	Hardness (as CaCO3) (mg/L)	541	551	1510		
	pH (pH)	7.48	7.40	7.52		
	ORP (mV)	386	394	350		
	Total Suspended Solids (mg/L)	<1.0	4.1	24.7		
	Total Dissolved Solids (mg/L)	516 <sup>DLHC</sup>	490 <sup>DLHC</sup>	1660 <sup>DLHC</sup>		
	Turbidity (NTU)	2.22 <sup>DLM</sup>	6.08 <sup>DLM</sup>	19.4 <sup>DLM</sup>		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	23	26	19		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	352	370	277		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	352	370	277		
	Ammonia as N (mg/L)	0.0077	<0.0050	<0.0050		
	Bicarbonate (HCO3) (mg/L)	430	451	338		
	Bromide (Br) (mg/L)	0.162	0.170	0.49		DLHC
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0		
	Chloride (Cl) (mg/L)	31.0	33.2	41.7		DLHC
	Fluoride (F) (mg/L)	0.176	0.198	0.19		DLHC
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0		
	Ion Balance (%)	109	110	97.8		
	Nitrate (as N) (mg/L)	0.0183	0.603	35.0		DLHC
	Nitrite (as N) (mg/L)	<0.0010	0.0010	0.0113		DLHC
	Total Kjeldahl Nitrogen (mg/L)	0.100	0.159	<0.050		TKNI
	Total Nitrogen (mg/L)	0.118	0.763	35.0		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0161 <sup>RRV</sup>	0.0134		
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	0.0125 <sup>RRV</sup>	0.0175		
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0240	0.0229		
	Sulfate (SO4) (mg/L)	118	91.3	1070		DLHC
Anion Sum (meq/L)	10.4	10.3	31.5			
Cation Sum (meq/L)	11.2	11.3	30.8			
Cation - Anion Balance (%)	4.1	4.6	-1.1			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00085		
	Arsenic (As)-Dissolved (mg/L)	0.00054	0.00010	0.00023		
	Barium (Ba)-Dissolved (mg/L)	0.132	0.193	0.0709		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2550481-1	L2550481-2	L2550481-3
		Description	WG	WG	WG
		Sampled Date	20-JAN-21	20-JAN-21	20-JAN-21
		Sampled Time	13:42	12:18	14:47
		Client ID	EV_MW_MC4_WG _2021_Q1_NP	EV_MW_AQ1_WG _2021_Q1_NP	EV_MW_BC1A_W G_2021_Q1_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.041	0.025	0.054
	Cadmium (Cd)-Dissolved (ug/L)		<0.0050	0.0419	0.243
	Calcium (Ca)-Dissolved (mg/L)		149	137	310
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	0.00013
	Cobalt (Co)-Dissolved (ug/L)		0.53	<0.10	0.18
	Copper (Cu)-Dissolved (mg/L)		0.00030	0.00033	0.00033
	Iron (Fe)-Dissolved (mg/L)		0.443	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0229	0.0226	0.188
	Magnesium (Mg)-Dissolved (mg/L)		41.0	50.7	178
	Manganese (Mn)-Dissolved (mg/L)		0.0719	0.00017	0.00528
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00356	0.000337	0.00580
	Nickel (Ni)-Dissolved (mg/L)		0.00304	<0.00050	0.00176
	Potassium (K)-Dissolved (mg/L)		2.41	1.62	7.12
	Selenium (Se)-Dissolved (ug/L)		<0.050	4.57	274
	Silicon (Si)-Dissolved (mg/L)		5.08	3.90	3.48
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		8.09	4.94	11.8
	Strontium (Sr)-Dissolved (mg/L)		0.639	0.414	1.28
	Thallium (Tl)-Dissolved (mg/L)		0.000023	<0.000010	0.000026
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00114	0.000461	0.00789
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0049	<0.0010	0.0051

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).		
RRV	Reported Result Verified By Repeat Analysis		
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC



## Reference Information

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Reference Information

VA

ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

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20210120Q1GW

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

DRAFT



## Quality Control Report

Workorder: L2550481

Report Date: 28-JAN-21

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
Batch	R5356898							
WG3477662-5	LCS							
Acidity (as CaCO3)			109.6		%		85-115	22-JAN-21
WG3477662-4	MB							
Acidity (as CaCO3)			1.1		mg/L		2	22-JAN-21
<b>ALK-MAN-CL</b>		<b>Water</b>						
Batch	R5356920							
WG3477676-8	LCS							
Alkalinity, Total (as CaCO3)			100.3		%		85-115	22-JAN-21
WG3477676-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JAN-21
<b>BE-D-L-CCMS-VA</b>		<b>Water</b>						
Batch	R5356925							
WG3477587-2	LCS							
Beryllium (Be)-Dissolved			107.7		%		80-120	23-JAN-21
WG3477587-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-JAN-21
<b>BIC-CL</b>		<b>Water</b>						
Batch	R5356920							
WG3477676-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	22-JAN-21
<b>BR-L-IC-N-CL</b>		<b>Water</b>						
Batch	R5357047							
WG3477790-2	LCS							
Bromide (Br)			103.3		%		85-115	21-JAN-21
WG3477790-6	LCS							
Bromide (Br)			103.5		%		85-115	21-JAN-21
WG3477790-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	21-JAN-21
WG3477790-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	21-JAN-21
<b>CL-L-IC-N-CL</b>		<b>Water</b>						
Batch	R5357047							
WG3477790-2	LCS							
Chloride (Cl)			100.6		%		85-115	21-JAN-21
WG3477790-6	LCS							
Chloride (Cl)			105.5		%		85-115	21-JAN-21

DRAFT



## Quality Control Report

Workorder: L2550481

Report Date: 28-JAN-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5357047							
<b>WG3477790-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	21-JAN-21
<b>WG3477790-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	21-JAN-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5356920							
<b>WG3477676-7</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	22-JAN-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5356920							
<b>WG3477676-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			96.7		%		90-110	22-JAN-21
<b>WG3477676-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	22-JAN-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5357047							
<b>WG3477790-2</b>	<b>LCS</b>							
Fluoride (F)			101.9		%		90-110	21-JAN-21
<b>WG3477790-6</b>	<b>LCS</b>							
Fluoride (F)			101.3		%		90-110	21-JAN-21
<b>WG3477790-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	21-JAN-21
<b>WG3477790-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	21-JAN-21
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R5356883							
<b>WG3477570-7</b>	<b>DUP</b>	<b>L2550481-3</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	23-JAN-21
<b>WG3477570-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			109.1		%		80-120	23-JAN-21
<b>WG3477570-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	23-JAN-21
<b>MET-D-CCMS-VA</b>	<b>Water</b>							

DRAFT



## Quality Control Report

Workorder: L2550481

Report Date: 28-JAN-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5356925</b>							
<b>WG3477587-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.7		%		80-120	23-JAN-21
Antimony (Sb)-Dissolved			107.4		%		80-120	23-JAN-21
Arsenic (As)-Dissolved			101.4		%		80-120	23-JAN-21
Barium (Ba)-Dissolved			106.1		%		80-120	23-JAN-21
Bismuth (Bi)-Dissolved			101.2		%		80-120	23-JAN-21
Boron (B)-Dissolved			101.8		%		80-120	23-JAN-21
Cadmium (Cd)-Dissolved			103.6		%		80-120	23-JAN-21
Calcium (Ca)-Dissolved			105.7		%		80-120	23-JAN-21
Chromium (Cr)-Dissolved			104.0		%		80-120	23-JAN-21
Cobalt (Co)-Dissolved			102.9		%		80-120	23-JAN-21
Copper (Cu)-Dissolved			101.7		%		80-120	23-JAN-21
Iron (Fe)-Dissolved			97.6		%		80-120	23-JAN-21
Lead (Pb)-Dissolved			97.6		%		80-120	23-JAN-21
Lithium (Li)-Dissolved			109.9		%		80-120	23-JAN-21
Magnesium (Mg)-Dissolved			104.3		%		80-120	23-JAN-21
Manganese (Mn)-Dissolved			103.7		%		80-120	23-JAN-21
Molybdenum (Mo)-Dissolved			104.4		%		80-120	23-JAN-21
Nickel (Ni)-Dissolved			103.3		%		80-120	23-JAN-21
Potassium (K)-Dissolved			101.7		%		80-120	23-JAN-21
Selenium (Se)-Dissolved			101.2		%		80-120	23-JAN-21
Silicon (Si)-Dissolved			100.7		%		60-140	23-JAN-21
Silver (Ag)-Dissolved			104.0		%		80-120	23-JAN-21
Sodium (Na)-Dissolved			104.6		%		80-120	23-JAN-21
Strontium (Sr)-Dissolved			102.9		%		80-120	23-JAN-21
Thallium (Tl)-Dissolved			97.8		%		80-120	23-JAN-21
Tin (Sn)-Dissolved			102.9		%		80-120	23-JAN-21
Titanium (Ti)-Dissolved			99.4		%		80-120	23-JAN-21
Uranium (U)-Dissolved			100.6		%		80-120	23-JAN-21
Vanadium (V)-Dissolved			105.0		%		80-120	23-JAN-21
Zinc (Zn)-Dissolved			105.7		%		80-120	23-JAN-21
<b>WG3477587-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-JAN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-21



## Quality Control Report

Workorder: L2550481

Report Date: 28-JAN-21

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5356925</b>							
<b>WG3477587-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-JAN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-JAN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-JAN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JAN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-JAN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JAN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-JAN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-JAN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JAN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-JAN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-JAN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JAN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-JAN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-JAN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-JAN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JAN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-JAN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-JAN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-JAN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-JAN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-JAN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-JAN-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358093</b>							
<b>WG3478544-15</b>	<b>DUP</b>	<b>L2550481-3</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	25-JAN-21
<b>WG3478544-14</b>	<b>LCS</b>							
Ammonia as N			107.1		%		85-115	25-JAN-21
<b>WG3478544-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	25-JAN-21





## Quality Control Report

Workorder: L2550481

Report Date: 28-JAN-21

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5357013							
<b>WG3477782-19 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-JAN-21
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R5357013							
<b>WG3477782-20 LCS</b>								
Phosphorus (P)-Total Dissolved			92.2		%		80-120	23-JAN-21
<b>WG3477782-19 MB</b>								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	23-JAN-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5356920							
<b>WG3477676-8 LCS</b>								
pH			7.00		pH		6.9-7.1	22-JAN-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5356303							
<b>WG3476855-10 LCS</b>								
Orthophosphate-Dissolved (as P)			97.7		%		80-120	21-JAN-21
<b>WG3476855-6 LCS</b>								
Orthophosphate-Dissolved (as P)			95.0		%		80-120	21-JAN-21
<b>WG3476855-5 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	21-JAN-21
<b>WG3476855-9 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	21-JAN-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5357047							
<b>WG3477790-2 LCS</b>								
Sulfate (SO4)			102.6		%		90-110	21-JAN-21
<b>WG3477790-6 LCS</b>								
Sulfate (SO4)			107.5		%		90-110	21-JAN-21
<b>WG3477790-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	21-JAN-21
<b>WG3477790-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	21-JAN-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							

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## Quality Control Report

Workorder: L2550481

Report Date: 28-JAN-21

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	Water							
Batch	R5358362							
<b>WG3478822-5</b>	<b>LCS</b>							
Total Dissolved Solids			99.8		%		85-115	26-JAN-21
<b>WG3478822-8</b>	<b>LCS</b>							
Total Dissolved Solids			87.4		%		85-115	26-JAN-21
<b>WG3478822-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	26-JAN-21
<b>WG3478822-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	26-JAN-21
<b>TKN-L-F-CL</b>								
	Water							
Batch	R5358763							
<b>WG3479286-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.1		%		75-125	27-JAN-21
<b>WG3479286-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-JAN-21
<b>TSS-L-CL</b>								
	Water							
Batch	R5358328							
<b>WG3478525-19</b>	<b>LCS</b>							
Total Suspended Solids			90.1		%		85-115	26-JAN-21
<b>WG3478525-18</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	26-JAN-21
<b>TURBIDITY-CL</b>								
	Water							
Batch	R5356310							
<b>WG3476966-6</b>	<b>DUP</b>	<b>L2550481-3</b>						
Turbidity		19.4	19.1		NTU	1.6	15	21-JAN-21
<b>WG3476966-5</b>	<b>LCS</b>							
Turbidity			97.5		%		85-115	21-JAN-21
<b>WG3476966-8</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	21-JAN-21
<b>WG3476966-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	21-JAN-21
<b>WG3476966-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	21-JAN-21

DRAFT

# Quality Control Report

Workorder: L2550481

Report Date: 28-JAN-21

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2550481

Report Date: 28-JAN-21

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	20-JAN-21 13:42	27-JAN-21 16:50	0.25	171	hours	EHTR-FM
	2	20-JAN-21 12:18	27-JAN-21 16:50	0.25	173	hours	EHTR-FM
	3	20-JAN-21 14:47	27-JAN-21 16:50	0.25	170	hours	EHTR-FM
pH							
	1	20-JAN-21 13:42	22-JAN-21 15:00	0.25	49	hours	EHTR-FM
	2	20-JAN-21 12:18	22-JAN-21 15:00	0.25	51	hours	EHTR-FM
	3	20-JAN-21 14:47	22-JAN-21 15:00	0.25	48	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2550481 were received on 21-JAN-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b> 20210120Q1GW		<b>TURNAROUND TIME:</b>				<b>RUSH:</b>				
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>				<b>OTHER INFO</b>		
Facility Name / Job# Elkview Operations		Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD		
Job Description Q1 Ground Water Sampling		Lab Contact Lyudmyla Shvets		Email 1: kimberley.Hackett@teck.com		X	X	X		
Project Manager Annie Larrivee		Email lyudmyla.shvets@alsglobal.com		Email 2: Annie.Larrivee@teck.com		X	X	X		
Email Annie.Larrivee@teck.com		Address 2559 29 Street NE		Email 3: kennedy.allan@teck.com		X	X	X		
Address RR#1 HWY# 3				Email 4: Teck.Lab.Results@sharepoint.teck.com		X	X	X		
				Email 5: teckcoal@equisonline.com				X		
City Sparwood	Province BC	City Calgary	Province AB							
Postal Code	Country Canada	Postal Code T1Y 7B5	Country Canada							
Phone Number 1-250-865-5289	Phone Number 403-407-1800		PO number		VPO00741597					

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FIL		PRESERV		ANALYSIS		No		Yes		Yes		No	
								TECK	COAL	Nitric	Sulphuric	TECK	COAL	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury
EV_MW_MC4_WG_2021_Q1_NP	EV_MW_MC4	WG	N	01/20/21	13:42	G	5	1	1	1	1										1
EV_MW_AQ1_WG_2021_Q1_NP	EV_MW_AQ1	WG	N	01/20/21	12:18	G	5	1	1	1	1										1
EV_MW_BC1A_WG_2021_Q1_NP	EV_MW_BC1A	WG	N	01/20/21	14:47	G	5	1	1	1	1										1
<b>Total</b>							<b>15</b>														



<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>		<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>	
		C. Emslie/D. Nicholas		January 20, 2021					
<b>SERVICE REQUEST (rush - subject to availability)</b>		<b>Sampler's Name</b>		<b>Mobile #</b>		<b>Sampler's Signature</b>		<b>Date/Time</b>	
Regular (default) <input checked="" type="checkbox"/>		C. Emslie/D. Nicholas						January 20, 2021	
Priority (2-3 business days) - 50% surcharge									
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									



Teck Coal Ltd. (Elkview)  
ATTN: Annie Larrivee  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 22-JAN-21  
Report Date: 29-JAN-21 15:41 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2550845  
Project P.O. #: VPO00741597  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20210121Q1GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2550845-1 WG 21-JAN-21 12:02 EV_MW_BC1B_W G_2021_Q1_NP	L2550845-2 WG 21-JAN-21 13:15 EV_MW_MC1A_W G_2021_Q1_NP	L2550845-3 WG 21-JAN-21 14:09 EV_MW_MC1B_W G_2021_Q1_NP	L2550845-4 WG 21-JAN-21 15:15 EV_MW_MC2A_W G_2021_Q1_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	2520	829	1110	882
	Hardness (as CaCO3) (mg/L)	1730	417	579	424
	pH (pH)	7.76	7.82	7.69	7.92
	ORP (mV)	425	299	401	364
	Total Suspended Solids (mg/L)	<1.0	1.3	22.5	2.3
	Total Dissolved Solids (mg/L)	2350 <sup>DLHC</sup>	458 <sup>DLHC</sup>	657 <sup>DLHC</sup>	476 <sup>DLHC</sup>
	Turbidity (NTU)	0.71	12.1	142	20.2
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	11.9	8.9	14.8	8.1
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	253	348	382	410
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	253	348	382	410
	Ammonia as N (mg/L)	<0.0050	1.59 <sup>DLM</sup>	0.285	0.942 <sup>DLM</sup>
	Bicarbonate (HCO3) (mg/L)	309 <sup>DLHC</sup>	424	466 <sup>DLHC</sup>	500
	Bromide (Br) (mg/L)	<0.25	0.582	0.92	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	43.6 <sup>DLHC</sup>	82.3	126 <sup>DLHC</sup>	77.9
	Fluoride (F) (mg/L)	0.27 <sup>DLHC</sup>	0.352	0.21 <sup>DLHC</sup>	0.307
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	92.9	103	104	104
	Nitrate (as N) (mg/L)	50.8 <sup>DLHC</sup>	<0.0050	0.052 <sup>DLHC</sup>	0.0065
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0050 <sup>DLHC</sup>	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.25	1.32	0.256	0.776
	Total Nitrogen (mg/L)	50.8	1.32	0.308	0.783
	Orthophosphate-Dissolved (as P) (mg/L)	0.0291 <sup>DLM</sup>	0.0279 <sup>DLM</sup>	<0.0010 <sup>DLM</sup>	<0.0010 <sup>DLM</sup>
	Phosphorus (P)-Total Dissolved (mg/L)	0.048 <sup>DLM</sup>	0.031 <sup>DLM</sup>	0.041 <sup>DLM</sup>	0.030 <sup>DLM</sup>
	Phosphorus (P)-Total (mg/L)	0.049 <sup>DLHC</sup>	0.029	0.037 <sup>DLHC</sup>	0.033
	Sulfate (SO4) (mg/L)	1340	<0.30	84.2	<0.30
	Anion Sum (meq/L)	37.9	9.29	13.0	10.4
	Cation Sum (meq/L)	35.2	9.56	13.5	10.8
Cation - Anion Balance (%)	-3.7	1.5	1.9	2.0	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.50	2.12	2.36	0.88
	Total Organic Carbon (mg/L)	1.38	1.85	2.02	1.01
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2550845-1 WG 21-JAN-21 12:02 EV_MW_BC1B_W G_2021_Q1_NP	L2550845-2 WG 21-JAN-21 13:15 EV_MW_MC1A_W G_2021_Q1_NP	L2550845-3 WG 21-JAN-21 14:09 EV_MW_MC1B_W G_2021_Q1_NP	L2550845-4 WG 21-JAN-21 15:15 EV_MW_MC2A_W G_2021_Q1_NP	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	0.00137	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00028	0.00063	0.00551	0.00099
	Barium (Ba)-Dissolved (mg/L)	0.0457	10.6	0.639	5.96
	Beryllium (Be)-Dissolved (ug/L)	<0.040 <sup>DLA</sup>	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.041	0.070	0.052	0.062
	Cadmium (Cd)-Dissolved (ug/L)	0.321	<0.0050	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	312	110	151	110
	Chromium (Cr)-Dissolved (mg/L)	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.20 <sup>DLA</sup>	<0.10	0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	0.00139	0.00022	<0.00020	0.00028
	Iron (Fe)-Dissolved (mg/L)	<0.020 <sup>DLA</sup>	1.10	12.0	1.60
	Lead (Pb)-Dissolved (mg/L)	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.172	0.126	0.146	0.268
	Magnesium (Mg)-Dissolved (mg/L)	231	34.8	49.3	36.5
	Manganese (Mn)-Dissolved (mg/L)	0.00048	0.111	0.505	0.0555
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.0101	0.000173	0.00221	0.000125
	Nickel (Ni)-Dissolved (mg/L)	0.0031	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	6.85	4.76	3.94	4.14
	Selenium (Se)-Dissolved (ug/L)	384	<0.050	0.055	<0.050
	Silicon (Si)-Dissolved (mg/L)	2.43	3.48	5.18	4.05
	Silver (Ag)-Dissolved (mg/L)	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	9.61	21.4	25.4	48.1
	Strontium (Sr)-Dissolved (mg/L)	1.43	1.88	0.893	1.71
	Thallium (Tl)-Dissolved (mg/L)	0.000039	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.0152	0.000219	0.000671	0.000014
	Vanadium (V)-Dissolved (mg/L)	<0.0010 <sup>DLA</sup>	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0078	0.0086	<0.0010	0.0034

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2550845-4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2550845-4
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2550845-4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2550845-4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2550845-4
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2550845-4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2550845-4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2550845-4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration



## Reference Information

<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20210121Q1GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2550845

Report Date: 29-JAN-21

Page 1 of 12

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5356898</b>							
<b>WG3477662-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.4		%		85-115	22-JAN-21
<b>WG3477662-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.1		mg/L		2	22-JAN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5356920</b>							
<b>WG3477676-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			103.2		%		85-115	22-JAN-21
<b>WG3477676-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JAN-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5357644</b>							
<b>WG3477929-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			100.5		%		80-120	26-JAN-21
<b>WG3477929-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-JAN-21
<b>WG3477929-4</b>	<b>MS</b>	<b>L2550845-4</b>						
Beryllium (Be)-Dissolved			93.6		%		70-130	26-JAN-21
<b>Batch</b>	<b>R5358035</b>							
<b>WG3477923-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.1		%		80-120	26-JAN-21
<b>WG3477923-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-JAN-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5356920</b>							
<b>WG3477676-10</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	22-JAN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358912</b>							
<b>WG3479928-7</b>	<b>DUP</b>	<b>L2550845-4</b>						
Bromide (Br)			<0.050		mg/L	RPD-NA	N/A	20
<b>WG3479928-6</b>	<b>LCS</b>							
Bromide (Br)			97.3		%		85-115	22-JAN-21
<b>WG3479928-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	22-JAN-21
<b>WG3479928-8</b>	<b>MS</b>	<b>L2550845-4</b>						



## Quality Control Report

Workorder: L2550845

Report Date: 29-JAN-21

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5358912							
<b>WG3479928-8 MS</b>		<b>L2550845-4</b>						
Bromide (Br)			96.4		%		75-125	22-JAN-21
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5359729							
<b>WG3480880-2 LCS</b>								
Dissolved Organic Carbon			97.8		%		80-120	29-JAN-21
<b>WG3480880-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-JAN-21
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5359729							
<b>WG3480880-2 LCS</b>								
Total Organic Carbon			100.3		%		80-120	29-JAN-21
<b>WG3480880-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	29-JAN-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5358912							
<b>WG3479928-7 DUP</b>		<b>L2550845-4</b>						
Chloride (Cl)		77.9	78.1		mg/L	0.2	20	22-JAN-21
<b>WG3479928-6 LCS</b>								
Chloride (Cl)			102.5		%		85-115	22-JAN-21
<b>WG3479928-5 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	22-JAN-21
<b>WG3479928-8 MS</b>		<b>L2550845-4</b>						
Chloride (Cl)			90.7		%		75-125	22-JAN-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5356920							
<b>WG3477676-10 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	22-JAN-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5356920							
<b>WG3477676-11 LCS</b>								
Conductivity (@ 25C)			98.0		%		90-110	22-JAN-21
<b>WG3477676-10 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	22-JAN-21
<b>F-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2550845

Report Date: 29-JAN-21

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5358912</b>							
<b>WG3479928-7</b>	<b>DUP</b>	<b>L2550845-4</b>						
Fluoride (F)		0.307	0.320		mg/L	4.1	20	22-JAN-21
<b>WG3479928-6</b>	<b>LCS</b>							
Fluoride (F)			102.0		%		90-110	22-JAN-21
<b>WG3479928-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	22-JAN-21
<b>WG3479928-8</b>	<b>MS</b>	<b>L2550845-4</b>						
Fluoride (F)			93.6		%		75-125	22-JAN-21
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5357593</b>							
<b>WG3478195-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.4		%		80-120	25-JAN-21
<b>WG3478195-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	25-JAN-21
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5357644</b>							
<b>WG3477929-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			103.9		%		80-120	26-JAN-21
Antimony (Sb)-Dissolved			109.4		%		80-120	26-JAN-21
Arsenic (As)-Dissolved			102.1		%		80-120	26-JAN-21
Barium (Ba)-Dissolved			104.6		%		80-120	26-JAN-21
Bismuth (Bi)-Dissolved			114.1		%		80-120	26-JAN-21
Boron (B)-Dissolved			92.0		%		80-120	26-JAN-21
Cadmium (Cd)-Dissolved			102.9		%		80-120	26-JAN-21
Calcium (Ca)-Dissolved			101.3		%		80-120	26-JAN-21
Chromium (Cr)-Dissolved			102.4		%		80-120	26-JAN-21
Cobalt (Co)-Dissolved			101.9		%		80-120	26-JAN-21
Copper (Cu)-Dissolved			100.4		%		80-120	26-JAN-21
Iron (Fe)-Dissolved			100.2		%		80-120	26-JAN-21
Lead (Pb)-Dissolved			102.8		%		80-120	26-JAN-21
Lithium (Li)-Dissolved			106.9		%		80-120	26-JAN-21
Magnesium (Mg)-Dissolved			100.6		%		80-120	26-JAN-21
Manganese (Mn)-Dissolved			103.5		%		80-120	26-JAN-21
Molybdenum (Mo)-Dissolved			102.3		%		80-120	26-JAN-21
Nickel (Ni)-Dissolved			100.0		%		80-120	26-JAN-21
Potassium (K)-Dissolved			105.3		%		80-120	26-JAN-21



## Quality Control Report

Workorder: L2550845

Report Date: 29-JAN-21

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5357644</b>							
<b>WG3477929-2</b>	<b>LCS</b>							
Selenium (Se)-Dissolved			105.7		%		80-120	26-JAN-21
Silicon (Si)-Dissolved			96.6		%		60-140	26-JAN-21
Silver (Ag)-Dissolved			104.3		%		80-120	26-JAN-21
Sodium (Na)-Dissolved			112.8		%		80-120	26-JAN-21
Strontium (Sr)-Dissolved			109.1		%		80-120	26-JAN-21
Thallium (Tl)-Dissolved			111.0		%		80-120	26-JAN-21
Tin (Sn)-Dissolved			100.9		%		80-120	26-JAN-21
Titanium (Ti)-Dissolved			96.4		%		80-120	26-JAN-21
Uranium (U)-Dissolved			110.5		%		80-120	26-JAN-21
Vanadium (V)-Dissolved			102.2		%		80-120	26-JAN-21
Zinc (Zn)-Dissolved			101.2		%		80-120	26-JAN-21
<b>WG3477929-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-JAN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-JAN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-JAN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-JAN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-JAN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-JAN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-JAN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-JAN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-JAN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-JAN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-JAN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-21



## Quality Control Report

Workorder: L2550845

Report Date: 29-JAN-21

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5357644</b>							
<b>WG3477929-1</b>	<b>MB</b>	<b>NP</b>						
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-JAN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-JAN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-JAN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-JAN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-JAN-21
<b>WG3477929-4</b>	<b>MS</b>	<b>L2550845-4</b>						
Aluminum (Al)-Dissolved			97.3		%		70-130	26-JAN-21
Antimony (Sb)-Dissolved			98.1		%		70-130	26-JAN-21
Arsenic (As)-Dissolved			96.3		%		70-130	26-JAN-21
Barium (Ba)-Dissolved			N/A	MS-B	%		-	26-JAN-21
Bismuth (Bi)-Dissolved			84.6		%		70-130	26-JAN-21
Boron (B)-Dissolved			83.4		%		70-130	26-JAN-21
Cadmium (Cd)-Dissolved			97.1		%		70-130	26-JAN-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	26-JAN-21
Chromium (Cr)-Dissolved			96.0		%		70-130	26-JAN-21
Cobalt (Co)-Dissolved			91.1		%		70-130	26-JAN-21
Copper (Cu)-Dissolved			88.5		%		70-130	26-JAN-21
Iron (Fe)-Dissolved			93.4		%		70-130	26-JAN-21
Lead (Pb)-Dissolved			89.3		%		70-130	26-JAN-21
Lithium (Li)-Dissolved			N/A	MS-B	%		-	26-JAN-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	26-JAN-21
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	26-JAN-21
Molybdenum (Mo)-Dissolved			96.7		%		70-130	26-JAN-21
Nickel (Ni)-Dissolved			89.2		%		70-130	26-JAN-21
Potassium (K)-Dissolved			N/A	MS-B	%		-	26-JAN-21
Selenium (Se)-Dissolved			101.3		%		70-130	26-JAN-21
Silicon (Si)-Dissolved			84.8		%		70-130	26-JAN-21
Silver (Ag)-Dissolved			83.3		%		70-130	26-JAN-21
Sodium (Na)-Dissolved			N/A	MS-B	%		-	26-JAN-21
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	26-JAN-21
Thallium (Tl)-Dissolved			90.2		%		70-130	26-JAN-21



## Quality Control Report

Workorder: L2550845

Report Date: 29-JAN-21

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5357644</b>							
<b>WG3477929-4</b>	<b>MS</b>	<b>L2550845-4</b>						
Tin (Sn)-Dissolved			95.7		%		70-130	26-JAN-21
Titanium (Ti)-Dissolved			97.0		%		70-130	26-JAN-21
Uranium (U)-Dissolved			99.3		%		70-130	26-JAN-21
Vanadium (V)-Dissolved			98.3		%		70-130	26-JAN-21
Zinc (Zn)-Dissolved			91.9		%		70-130	26-JAN-21
<b>Batch</b>	<b>R5358035</b>							
<b>WG3477923-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			105.9		%		80-120	26-JAN-21
Antimony (Sb)-Dissolved			103.4		%		80-120	26-JAN-21
Arsenic (As)-Dissolved			109.3		%		80-120	26-JAN-21
Barium (Ba)-Dissolved			104.1		%		80-120	26-JAN-21
Bismuth (Bi)-Dissolved			100.7		%		80-120	26-JAN-21
Boron (B)-Dissolved			96.8		%		80-120	26-JAN-21
Cadmium (Cd)-Dissolved			103.9		%		80-120	26-JAN-21
Calcium (Ca)-Dissolved			102.5		%		80-120	26-JAN-21
Chromium (Cr)-Dissolved			105.0		%		80-120	26-JAN-21
Cobalt (Co)-Dissolved			108.3		%		80-120	26-JAN-21
Copper (Cu)-Dissolved			102.5		%		80-120	26-JAN-21
Iron (Fe)-Dissolved			112.4		%		80-120	26-JAN-21
Lead (Pb)-Dissolved			106.3		%		80-120	26-JAN-21
Lithium (Li)-Dissolved			94.8		%		80-120	26-JAN-21
Magnesium (Mg)-Dissolved			102.4		%		80-120	26-JAN-21
Manganese (Mn)-Dissolved			107.8		%		80-120	26-JAN-21
Molybdenum (Mo)-Dissolved			105.8		%		80-120	26-JAN-21
Nickel (Ni)-Dissolved			104.8		%		80-120	26-JAN-21
Potassium (K)-Dissolved			104.9		%		80-120	26-JAN-21
Selenium (Se)-Dissolved			104.0		%		80-120	26-JAN-21
Silicon (Si)-Dissolved			99.3		%		60-140	26-JAN-21
Silver (Ag)-Dissolved			105.1		%		80-120	26-JAN-21
Sodium (Na)-Dissolved			105.0		%		80-120	26-JAN-21
Strontium (Sr)-Dissolved			109.2		%		80-120	26-JAN-21
Thallium (Tl)-Dissolved			102.4		%		80-120	26-JAN-21
Tin (Sn)-Dissolved			102.2		%		80-120	26-JAN-21
Titanium (Ti)-Dissolved			103.0		%		80-120	26-JAN-21





## Quality Control Report

Workorder: L2550845

Report Date: 29-JAN-21

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5358035</b>							
<b>WG3477923-2</b>	<b>LCS</b>							
Uranium (U)-Dissolved			108.0		%		80-120	26-JAN-21
Vanadium (V)-Dissolved			107.3		%		80-120	26-JAN-21
Zinc (Zn)-Dissolved			107.7		%		80-120	26-JAN-21
<b>WG3477923-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-JAN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-JAN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-JAN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-JAN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-JAN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-JAN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-JAN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-JAN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-JAN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-JAN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-JAN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-JAN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-JAN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-JAN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-JAN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-JAN-21



## Quality Control Report

Workorder: L2550845

Report Date: 29-JAN-21

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch R5358093								
WG3478544-18 LCS								
Ammonia as N			100.9		%		85-115	25-JAN-21
WG3478544-17 MB								
Ammonia as N			<0.0050		mg/L		0.005	25-JAN-21
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch R5358912								
WG3479928-7 DUP								
Nitrite (as N)		L2550845-4 <0.0010	0.0015	RPD-NA	mg/L	N/A	20	22-JAN-21
WG3479928-6 LCS								
Nitrite (as N)			102.7		%		90-110	22-JAN-21
WG3479928-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JAN-21
WG3479928-8 MS								
Nitrite (as N)		L2550845-4	96.9		%		75-125	22-JAN-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch R5358912								
WG3479928-7 DUP								
Nitrate (as N)		L2550845-4 0.0065	0.0099	J	mg/L	0.0034	0.01	22-JAN-21
WG3479928-6 LCS								
Nitrate (as N)			102.8		%		90-110	22-JAN-21
WG3479928-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	22-JAN-21
WG3479928-8 MS								
Nitrate (as N)		L2550845-4	91.9		%		75-125	22-JAN-21
<b>OH-CL</b>								
<b>Water</b>								
Batch R5356920								
WG3477676-10 MB								
Hydroxide (OH)			<5.0		mg/L		5	22-JAN-21
<b>ORP-CL</b>								
<b>Water</b>								
Batch R5358797								
WG3479813-5 CRM								
ORP		CL-ORP	226		mV		210-230	27-JAN-21
WG3479813-7 CRM								
ORP		CL-ORP	227		mV		210-230	27-JAN-21
<b>P-T-L-COL-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2550845

Report Date: 29-JAN-21

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b> <b>Water</b>								
Batch	R5357453							
<b>WG3478145-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			93.5		%		80-120	25-JAN-21
<b>WG3478145-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-JAN-21
<b>P-TD-L-COL-CL</b> <b>Water</b>								
Batch	R5357453							
<b>WG3478145-2</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			93.5		%		80-120	25-JAN-21
<b>WG3478145-1</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	25-JAN-21
<b>PH-CL</b> <b>Water</b>								
Batch	R5356920							
<b>WG3477676-11</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	22-JAN-21
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R5356836							
<b>WG3477468-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			95.8		%		80-120	22-JAN-21
<b>WG3477468-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-JAN-21
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R5358912							
<b>WG3479928-7</b>	<b>DUP</b>	<b>L2550845-3</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	22-JAN-21
<b>WG3479928-6</b>	<b>LCS</b>							
Sulfate (SO4)			101.8		%		90-110	22-JAN-21
<b>WG3479928-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	22-JAN-21
<b>WG3479928-8</b>	<b>MS</b>	<b>L2550845-4</b>						
Sulfate (SO4)			87.6		%		75-125	22-JAN-21
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R5358906							
<b>WG3479268-2</b>	<b>LCS</b>							
Total Dissolved Solids			96.1		%		85-115	27-JAN-21
<b>WG3479268-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	27-JAN-21



## Quality Control Report

Workorder: L2550845

Report Date: 29-JAN-21

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5359001</b>							
<b>WG3479919-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.4		%		75-125	28-JAN-21
<b>WG3479919-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			88.8		%		75-125	28-JAN-21
<b>WG3479919-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JAN-21
<b>WG3479919-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JAN-21
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5358430</b>							
<b>WG3479267-2</b>	<b>LCS</b>							
Total Suspended Solids			102.8		%		85-115	27-JAN-21
<b>WG3479267-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	27-JAN-21
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5357084</b>							
<b>WG3477779-3</b>	<b>DUP</b>	<b>L2550845-2</b>						
Turbidity		12.1	12.0		NTU	0.8	15	23-JAN-21
<b>WG3477779-2</b>	<b>LCS</b>							
Turbidity			98.5		%		85-115	23-JAN-21
<b>WG3477779-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	23-JAN-21

# Quality Control Report

Workorder: L2550845

Report Date: 29-JAN-21

Page 11 of 12

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2550845

Report Date: 29-JAN-21

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	21-JAN-21 12:02	27-JAN-21 20:00	0.25	152	hours	EHTR-FM
	2	21-JAN-21 13:15	27-JAN-21 20:00	0.25	151	hours	EHTR-FM
	3	21-JAN-21 14:09	27-JAN-21 20:00	0.25	150	hours	EHTR-FM
	4	21-JAN-21 15:15	27-JAN-21 20:00	0.25	149	hours	EHTR-FM
pH							
	1	21-JAN-21 12:02	22-JAN-21 15:00	0.25	27	hours	EHTR-FM
	2	21-JAN-21 13:15	22-JAN-21 15:00	0.25	26	hours	EHTR-FM
	3	21-JAN-21 14:09	22-JAN-21 15:00	0.25	25	hours	EHTR-FM
	4	21-JAN-21 15:15	22-JAN-21 15:00	0.25	24	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2550845 were received on 22-JAN-21 08:20.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b> 20210121Q1GW		<b>TURNAROUND TIME:</b>				<b>RUSH:</b>								
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>				<b>OTHER INFO</b>						
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com			X	X	X
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com			X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com			X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com			X	X	X
								Email 5:	teckcoal@equisonline.com					X
City	Sparwood		Province	BC		City	Calgary		Province	AB				
Postal Code			Country	Canada		Postal Code	T1Y 7B5		Country	Canada				
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597					

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	Yes	Yes	No	No	No	No	Yes	Yes	
								TECK COAL-ROUTINE-VA (E305.1)		Nitric	Sulphuric	Sulphuric			NO	Sodium Bisulphate	
								Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL								HCl	
								TECK COAL-MET-D-VA (SW6020)									
								DOC (APHA 5310)									
								Dissolved Phosphorus									
								TKN/TOC (APHA 4500-NORG)									
								Total Nitrogen for BC (NO2 and NO3)									
								T-ULTRA MERCURY (SW6020)									
								D-ULTRA MERCURY (SW6020)									
								EPH (C10-C32)									
								D-Mercury									
								D-CrVI									
							<b>Total</b>										

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>		<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>	
		C. Emslie/D. Nicholas		January 21, 2021		[Signature]		1/22/20	
<b>SERVICE REQUEST (rush - subject to availability)</b>		<b>Sampler's Name</b>		<b>Mobile #</b>		<b>Sampler's Signature</b>		<b>Date/Time</b>	
Regular (default) X		C. Emslie/D. Nicholas				[Signature]		January 21, 2021	
Priority (2-3 business days) - 50% surcharge									
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									



L2550845-COFC



Teck Coal Ltd. (Elkview)  
ATTN: Annie Larrivee  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 27-JAN-21  
Report Date: 03-FEB-21 17:23 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2552305  
Project P.O. #: VPO00741597  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20210126Q1GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2552305-1 WG 26-JAN-21 13:31 EV_MW_MC2B_W G_2021_Q1_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1080			
	Hardness (as CaCO3) (mg/L)	705			
	pH (pH)	7.56			
	ORP (mV)	373			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	757	DLHC		
	Turbidity (NTU)	<0.10			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5.3			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	244			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	244			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	298	DLHC		
	Bromide (Br) (mg/L)	<0.25			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	23.8	DLHC		
	Fluoride (F) (mg/L)	0.10	DLHC		
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	104			
	Nitrate (as N) (mg/L)	7.41	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Total Nitrogen (mg/L)	7.41			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0035			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0086	DLM		
	Phosphorus (P)-Total (mg/L)	0.0107	DLM		
	Sulfate (SO4) (mg/L)	380	DLHC		
	Anion Sum (meq/L)	14.0			
	Cation Sum (meq/L)	14.6			
	Cation - Anion Balance (%)	2.2			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.65			
	Total Organic Carbon (mg/L)	0.99			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2552305-1 WG 26-JAN-21 13:31 EV_MW_MC2B_W G_2021_Q1_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0548			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.025			
	Cadmium (Cd)-Dissolved (ug/L)	0.105			
	Calcium (Ca)-Dissolved (mg/L)	171			
	Chromium (Cr)-Dissolved (mg/L)	0.00018			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00046			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0524			
	Magnesium (Mg)-Dissolved (mg/L)	67.1			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000619			
	Nickel (Ni)-Dissolved (mg/L)	0.00051			
	Potassium (K)-Dissolved (mg/L)	2.15			
	Selenium (Se)-Dissolved (ug/L)	53.9			
	Silicon (Si)-Dissolved (mg/L)	3.19			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	11.5			
	Strontium (Sr)-Dissolved (mg/L)	0.371			
	Thallium (Tl)-Dissolved (mg/L)	0.000011			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00164			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0012			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2552305-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2552305-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2552305-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2552305-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2552305-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2552305-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

20210126Q1GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2552305

Report Date: 03-FEB-21

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R5360148							
<b>WG3481282-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			107.4		%		85-115	29-JAN-21
<b>WG3481282-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	29-JAN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R5359316							
<b>WG3480419-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.6		%		85-115	27-JAN-21
<b>WG3480419-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-JAN-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R5360084							
<b>WG3480929-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.8		%		80-120	30-JAN-21
<b>WG3480929-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-JAN-21
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R5359316							
<b>WG3480419-4</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	27-JAN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R5359142							
<b>WG3480142-6</b>	<b>LCS</b>							
Bromide (Br)			103.9		%		85-115	27-JAN-21
<b>WG3480142-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-JAN-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R5361615							
<b>WG3483022-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			110.7		%		80-120	02-FEB-21
<b>WG3483022-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-FEB-21
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2552305

Report Date: 03-FEB-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5361615							
<b>WG3483022-2</b>	<b>LCS</b>							
Total Organic Carbon			114.7		%		80-120	02-FEB-21
<b>WG3483022-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	02-FEB-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5359142							
<b>WG3480142-6</b>	<b>LCS</b>							
Chloride (Cl)			102.1		%		85-115	27-JAN-21
<b>WG3480142-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	27-JAN-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5359316							
<b>WG3480419-4</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	27-JAN-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5359316							
<b>WG3480419-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			93.8		%		90-110	27-JAN-21
<b>WG3480419-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-JAN-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5359142							
<b>WG3480142-6</b>	<b>LCS</b>							
Fluoride (F)			98.3		%		90-110	27-JAN-21
<b>WG3480142-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	27-JAN-21
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R5359943							
<b>WG3481065-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			104.3		%		80-120	30-JAN-21
<b>WG3481065-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-JAN-21
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2552305

Report Date: 03-FEB-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360084</b>							
<b>WG3480929-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.7		%		80-120	30-JAN-21
Antimony (Sb)-Dissolved			101.8		%		80-120	30-JAN-21
Arsenic (As)-Dissolved			101.4		%		80-120	30-JAN-21
Barium (Ba)-Dissolved			110.4		%		80-120	30-JAN-21
Bismuth (Bi)-Dissolved			112.3		%		80-120	30-JAN-21
Boron (B)-Dissolved			101.8		%		80-120	30-JAN-21
Cadmium (Cd)-Dissolved			99.2		%		80-120	30-JAN-21
Calcium (Ca)-Dissolved			102.0		%		80-120	30-JAN-21
Chromium (Cr)-Dissolved			98.1		%		80-120	30-JAN-21
Cobalt (Co)-Dissolved			99.0		%		80-120	30-JAN-21
Copper (Cu)-Dissolved			98.6		%		80-120	30-JAN-21
Iron (Fe)-Dissolved			94.4		%		80-120	30-JAN-21
Lead (Pb)-Dissolved			106.8		%		80-120	30-JAN-21
Lithium (Li)-Dissolved			97.3		%		80-120	30-JAN-21
Magnesium (Mg)-Dissolved			100.9		%		80-120	30-JAN-21
Manganese (Mn)-Dissolved			96.7		%		80-120	30-JAN-21
Molybdenum (Mo)-Dissolved			101.1		%		80-120	30-JAN-21
Nickel (Ni)-Dissolved			98.7		%		80-120	30-JAN-21
Potassium (K)-Dissolved			102.3		%		80-120	30-JAN-21
Selenium (Se)-Dissolved			102.6		%		80-120	30-JAN-21
Silicon (Si)-Dissolved			87.4		%		60-140	30-JAN-21
Silver (Ag)-Dissolved			105.1		%		80-120	30-JAN-21
Sodium (Na)-Dissolved			102.6		%		80-120	30-JAN-21
Strontium (Sr)-Dissolved			106.5		%		80-120	30-JAN-21
Thallium (Tl)-Dissolved			107.2		%		80-120	30-JAN-21
Tin (Sn)-Dissolved			95.2		%		80-120	30-JAN-21
Titanium (Ti)-Dissolved			95.7		%		80-120	30-JAN-21
Uranium (U)-Dissolved			114.7		%		80-120	30-JAN-21
Vanadium (V)-Dissolved			99.8		%		80-120	30-JAN-21
Zinc (Zn)-Dissolved			101.8		%		80-120	30-JAN-21
<b>WG3480929-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-JAN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21





## Quality Control Report

Workorder: L2552305

Report Date: 03-FEB-21

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360084</b>							
<b>WG3480929-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-JAN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-JAN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-JAN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-JAN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-JAN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-JAN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-JAN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-JAN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-JAN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-JAN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-JAN-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-JAN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-JAN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-JAN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-JAN-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5359246</b>							
<b>WG3479771-6</b>	<b>LCS</b>							
Ammonia as N			106.5		%		85-115	27-JAN-21
<b>WG3479771-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	27-JAN-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2552305

Report Date: 03-FEB-21

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5359142							
<b>WG3480142-6</b>	<b>LCS</b>							
Nitrite (as N)			105.6		%		90-110	27-JAN-21
<b>WG3480142-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	27-JAN-21
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5359142							
<b>WG3480142-6</b>	<b>LCS</b>							
Nitrate (as N)			102.8		%		90-110	27-JAN-21
<b>WG3480142-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	27-JAN-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5359316							
<b>WG3480419-4</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	27-JAN-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5360910							
<b>WG3482167-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			228		mV		210-230	02-FEB-21
<b>WG3482167-4</b>	<b>DUP</b>	<b>L2552305-1</b>						
ORP		373	369	J	mV	4.1	15	02-FEB-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5358926							
<b>WG3479942-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			89.8		%		80-120	28-JAN-21
<b>WG3479942-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-JAN-21
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R5358926							
<b>WG3479942-6</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			89.8		%		80-120	28-JAN-21
<b>WG3479942-5</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	28-JAN-21
<b>PH-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2552305

Report Date: 03-FEB-21

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R5359316							
WG3480419-5	LCS							
pH			7.00		pH		6.9-7.1	27-JAN-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5358734							
WG3479587-6	LCS							
Orthophosphate-Dissolved (as P)			92.0		%		80-120	27-JAN-21
WG3479587-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-JAN-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5359142							
WG3480142-6	LCS							
Sulfate (SO4)			103.8		%		90-110	27-JAN-21
WG3480142-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	27-JAN-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5361634							
WG3482002-2	LCS							
Total Dissolved Solids			99.4		%		85-115	02-FEB-21
WG3482002-1	MB							
Total Dissolved Solids			<10		mg/L		10	02-FEB-21
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5360065							
WG3480865-36	LCS							
Total Kjeldahl Nitrogen			89.5		%		75-125	30-JAN-21
WG3480865-35	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JAN-21
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5361451							
WG3482003-2	LCS							
Total Suspended Solids			105.3		%		85-115	02-FEB-21
WG3482003-1	MB							
Total Suspended Solids			<1.0		mg/L		1	02-FEB-21
<b>TURBIDITY-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2552305

Report Date: 03-FEB-21

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5358756</b>							
<b>WG3479678-5</b>	<b>LCS</b>							
Turbidity			98.5		%		85-115	27-JAN-21
<b>WG3479678-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	27-JAN-21

# Quality Control Report

Workorder: L2552305

Report Date: 03-FEB-21

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

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# Quality Control Report

Workorder: L2552305

Report Date: 03-FEB-21

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	26-JAN-21 13:31	02-FEB-21 08:40	0.25	163	hours	EHTR-FM
pH	1	26-JAN-21 13:31	27-JAN-21 15:00	0.25	25	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2552305 were received on 27-JAN-21 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20210126Q1GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution				
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.Hackett@teck.com	Excel	PDF	EDD
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com	X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

SAMPLE DETAILS								ANALYSIS REQUESTED								Filtered	F	Field	L	Lab	FL	Field & Lab	N	None						
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	No	Yes	Yes	No	No	No	No	Yes	Yes	
EV_MW_MC2B_WG_2021_Q1_NP	EV_MW_MC2B	WG	N	01/26/21	13:31	G	5		1	1	1	1							1											
							Total																							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Emslie/D. Nicholas	January 26, 2021		27/01 8:50

SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name	C. Emslie/D. Nicholas		Mobile #
Priority (2-3 business days) - 50% surcharge	Sampler's Signature			Date/Time
Emergency (1 Business Day) - 100% surcharge			January 26, 2021	
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

40



Teck Coal Ltd. (Elkview)  
ATTN: Annie Larrivee  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 29-JAN-21  
Report Date: 05-FEB-21 15:04 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2552846  
Project P.O. #: VPO00741597  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20210128Q1GW  
Legal Site Desc:

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Lyudmyla Shvets, B.Sc.  
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2552846-1 WG 28-JAN-21 10:05 EV_GCGW_WG_2 021_Q1_NP	L2552846-2 WG 28-JAN-21 11:47 EV_MW_GT1A_W G_2021_Q1_NP	L2552846-3 WG 28-JAN-21 11:40 EV_MW_GT1B_W G_2021_Q1_NP	L2552846-4 WG 28-JAN-21 12:54 EV_BCGW_WG_2 021_Q1_NP	L2552846-5 WG 28-JAN-21 14:33 EV_MW_MC3_WG _2021_Q1_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	421	490	597	539	613
	Hardness (as CaCO3) (mg/L)	240	275	331	300	128
	pH (pH)	8.28	8.29	8.32	8.26	8.52
	ORP (mV)	464	441	455	455	435
	Total Suspended Solids (mg/L)	1.6	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	267 <sup>DLHC</sup>	326 <sup>DLHC</sup>	394 <sup>DLHC</sup>	346 <sup>DLHC</sup>	386 <sup>DLHC</sup>
	Turbidity (NTU)	4.62	1.11	0.27	0.19	3.46
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	1.4	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	178	179	183	173	288
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	1.2	2.8	<1.0	13.8
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	178	180	186	173	302
	Ammonia as N (mg/L)	0.0304	0.0916	0.0060	<0.0050	0.0226
	Bicarbonate (HCO3) (mg/L)	217	218	223	211	351
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	0.103
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	8.3
	Chloride (Cl) (mg/L)	4.07	2.03	2.87	2.69	5.84
	Fluoride (F) (mg/L)	0.453	0.123	0.149	0.138	1.62
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	99.9	96.0	96.1	97.3	102
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	2.37	1.48	0.221
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0097
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	0.348	0.425	<0.050
	Total Nitrogen (mg/L)	<0.050	<0.050	2.72	1.90	0.231
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0052	0.0084	0.0033	<0.0010 <sup>HTD</sup>
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	0.0065	0.0081	0.0028	0.0118
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0068	0.0071	0.0038	0.0205
	Sulfate (SO4) (mg/L)	63.7	106	151	130	40.4
	Anion Sum (meq/L)	5.02	5.88	7.12	6.35	7.14
	Cation Sum (meq/L)	5.01	5.65	6.84	6.18	7.31
Cation - Anion Balance (%)	-0.1	-2.0	-2.0	-1.4	1.2	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.73	0.97	0.70	1.06
	Total Organic Carbon (mg/L)	<0.50	0.62	0.94	0.58	1.18
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2552846-1 WG 28-JAN-21 10:05 EV_GCGW_WG_2 021_Q1_NP	L2552846-2 WG 28-JAN-21 11:47 EV_MW_GT1A_W G_2021_Q1_NP	L2552846-3 WG 28-JAN-21 11:40 EV_MW_GT1B_W G_2021_Q1_NP	L2552846-4 WG 28-JAN-21 12:54 EV_BCGW_WG_2 021_Q1_NP	L2552846-5 WG 28-JAN-21 14:33 EV_MW_MC3_WG _2021_Q1_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00034	0.00012	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00228	0.00023	0.00017	0.00010	0.00095
	Barium (Ba)-Dissolved (mg/L)	0.0679	0.0645	0.0223	0.0323	0.123
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.014	0.011	0.013	0.012	0.069
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	0.0325	0.0247	<0.020 <sup>DLM</sup>
	Calcium (Ca)-Dissolved (mg/L)	68.3	75.1	74.7	76.2	34.1
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	0.18	<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	0.00028	<0.00020	0.00029	0.00117	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.333	0.128	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0083	0.0101	0.0232	0.0170	0.0886
	Magnesium (Mg)-Dissolved (mg/L)	17.0	21.2	35.1	26.6	10.5
	Manganese (Mn)-Dissolved (mg/L)	0.0840	0.0792	<0.00010	<0.00010	0.0314
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00242	0.00140	0.00218	0.00109	0.0319
	Nickel (Ni)-Dissolved (mg/L)	0.00053	<0.00050	0.00356	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	0.674	0.732	1.34	0.871	0.856
	Selenium (Se)-Dissolved (ug/L)	<0.050	0.203	22.6	13.5	3.95
	Silicon (Si)-Dissolved (mg/L)	4.24	2.64	2.07	2.49	2.68
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.87	2.86	4.43	3.93	109
	Strontium (Sr)-Dissolved (mg/L)	0.269	0.125	0.215	0.145	0.119
	Thallium (Tl)-Dissolved (mg/L)	0.000020	<0.000010	<0.000010	<0.000010	0.000013
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00116	0.000452	0.00236	0.00119	0.000738
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0012	<0.0010	0.0013	0.0018	0.0015

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Ammonia as N	MS-B	L2552846-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA**                      Water                      Diss. Mercury in Water by CVAAS or CVAFS                      APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL**                      Water                      Ion Balance Calculation                      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA**                      Water                      Dissolved Metals in Water by CRC ICPMS                      APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL**                      Water                      Total Nitrogen (Calculation)                      APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL**                      Water                      Ammonia, Total (as N)                      J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL**                      Water                      Nitrite in Water by IC (Low Level)                      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**                      Water                      Nitrate in Water by IC (Low Level)                      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL**                      Water                      Hydroxide in Water                      APHA 2320 B-Potentiometric Titration

**ORP-CL**                      Water                      Oxidation reduction potential by elect.                      ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**                      Water                      Phosphorus (P)-Total                      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL**                      Water                      Phosphorus (P)-Total Dissolved                      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL**                      Water                      pH                      APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**                      Water                      Orthophosphate-Dissolved (as P)                      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**                      Water                      Sulfate in Water by IC                      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**                      Water                      Total Dissolved Solids                      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**                      Water                      Ion Balance Calculation                      APHA 1030E

## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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**Chain of Custody Numbers:**

20210128Q1GW

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2552846

Report Date: 05-FEB-21

Page 1 of 10

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360148</b>							
<b>WG3481282-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.9		%		85-115	29-JAN-21
<b>WG3481282-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	29-JAN-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360145</b>							
<b>WG3481273-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	29-JAN-21
<b>WG3481273-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-JAN-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360182</b>							
<b>WG3481239-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			107.2		%		80-120	30-JAN-21
<b>WG3481239-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-JAN-21
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360145</b>							
<b>WG3481273-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	29-JAN-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360005</b>							
<b>WG3481134-2</b>	<b>LCS</b>							
Bromide (Br)			102.1		%		85-115	29-JAN-21
<b>WG3481134-6</b>	<b>LCS</b>							
Bromide (Br)			104.0		%		85-115	29-JAN-21
<b>WG3481134-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	29-JAN-21
<b>WG3481134-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	29-JAN-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5362860</b>							
<b>WG3483719-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.6		%		80-120	03-FEB-21
<b>WG3483719-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-FEB-21



## Quality Control Report

Workorder: L2552846

Report Date: 05-FEB-21

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5363043							
<b>WG3483790-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			96.8		%		80-120	04-FEB-21
<b>WG3483790-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-FEB-21
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5362860							
<b>WG3483719-2</b>	<b>LCS</b>							
Total Organic Carbon			105.5		%		80-120	03-FEB-21
<b>WG3483719-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	03-FEB-21
Batch	R5363043							
<b>WG3483790-2</b>	<b>LCS</b>							
Total Organic Carbon			103.8		%		80-120	04-FEB-21
<b>WG3483790-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	04-FEB-21
<b>CL-L-IC-N-CL</b> <b>Water</b>								
Batch	R5360005							
<b>WG3481134-2</b>	<b>LCS</b>							
Chloride (Cl)			101.9		%		85-115	29-JAN-21
<b>WG3481134-6</b>	<b>LCS</b>							
Chloride (Cl)			100.5		%		85-115	29-JAN-21
<b>WG3481134-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	29-JAN-21
<b>WG3481134-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	29-JAN-21
<b>CO3-CL</b> <b>Water</b>								
Batch	R5360145							
<b>WG3481273-13</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	29-JAN-21
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R5360145							
<b>WG3481273-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.2		%		90-110	29-JAN-21
<b>WG3481273-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	29-JAN-21
<b>F-IC-N-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2552846

Report Date: 05-FEB-21

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360005</b>							
<b>WG3481134-2</b>	<b>LCS</b>							
Fluoride (F)			95.2		%		90-110	29-JAN-21
<b>WG3481134-6</b>	<b>LCS</b>							
Fluoride (F)			96.2		%		90-110	29-JAN-21
<b>WG3481134-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	29-JAN-21
<b>WG3481134-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	29-JAN-21
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360216</b>							
<b>WG3481307-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			106.0		%		80-120	31-JAN-21
<b>WG3481307-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	31-JAN-21
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360182</b>							
<b>WG3481239-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.3		%		80-120	30-JAN-21
Antimony (Sb)-Dissolved			96.8		%		80-120	30-JAN-21
Arsenic (As)-Dissolved			93.3		%		80-120	30-JAN-21
Barium (Ba)-Dissolved			100.8		%		80-120	30-JAN-21
Bismuth (Bi)-Dissolved			108.7		%		80-120	30-JAN-21
Boron (B)-Dissolved			99.5		%		80-120	30-JAN-21
Cadmium (Cd)-Dissolved			95.1		%		80-120	30-JAN-21
Calcium (Ca)-Dissolved			103.6		%		80-120	30-JAN-21
Chromium (Cr)-Dissolved			96.0		%		80-120	30-JAN-21
Cobalt (Co)-Dissolved			97.1		%		80-120	30-JAN-21
Copper (Cu)-Dissolved			94.4		%		80-120	30-JAN-21
Iron (Fe)-Dissolved			93.1		%		80-120	30-JAN-21
Lead (Pb)-Dissolved			109.5		%		80-120	30-JAN-21
Magnesium (Mg)-Dissolved			96.3		%		80-120	30-JAN-21
Manganese (Mn)-Dissolved			95.3		%		80-120	30-JAN-21
Molybdenum (Mo)-Dissolved			98.3		%		80-120	30-JAN-21
Nickel (Ni)-Dissolved			96.2		%		80-120	30-JAN-21
Potassium (K)-Dissolved			94.1		%		80-120	30-JAN-21
Selenium (Se)-Dissolved			100.3		%		80-120	30-JAN-21





## Quality Control Report

Workorder: L2552846

Report Date: 05-FEB-21

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360182</b>							
<b>WG3481239-2</b>	<b>LCS</b>							
Silicon (Si)-Dissolved			95.3		%		60-140	30-JAN-21
Silver (Ag)-Dissolved			100.2		%		80-120	30-JAN-21
Sodium (Na)-Dissolved			101.7		%		80-120	30-JAN-21
Strontium (Sr)-Dissolved			98.8		%		80-120	30-JAN-21
Thallium (Tl)-Dissolved			109.5		%		80-120	30-JAN-21
Tin (Sn)-Dissolved			94.9		%		80-120	30-JAN-21
Titanium (Ti)-Dissolved			94.9		%		80-120	30-JAN-21
Uranium (U)-Dissolved			108.7		%		80-120	30-JAN-21
Vanadium (V)-Dissolved			96.5		%		80-120	30-JAN-21
Zinc (Zn)-Dissolved			96.7		%		80-120	30-JAN-21
<b>WG3481239-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-JAN-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-JAN-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-JAN-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-JAN-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-JAN-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-JAN-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-JAN-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-JAN-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-JAN-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-JAN-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-JAN-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-JAN-21



## Quality Control Report

Workorder: L2552846

Report Date: 05-FEB-21

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360182</b>							
<b>WG3481239-1</b>	<b>MB</b>	<b>NP</b>						
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-JAN-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-JAN-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-JAN-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-JAN-21
<b>Batch</b>	<b>R5360395</b>							
<b>WG3481239-2</b>	<b>LCS</b>							
Lithium (Li)-Dissolved			114.5		%		80-120	01-FEB-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5359949</b>							
<b>WG3481041-3</b>	<b>DUP</b>	<b>L2552846-5</b>						
Ammonia as N		0.0226	0.0227		mg/L	0.4	20	29-JAN-21
<b>WG3481041-2</b>	<b>LCS</b>							
Ammonia as N			104.6		%		85-115	29-JAN-21
<b>WG3481041-6</b>	<b>LCS</b>							
Ammonia as N			104.6		%		85-115	29-JAN-21
<b>WG3481041-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-JAN-21
<b>WG3481041-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-JAN-21
<b>WG3481041-4</b>	<b>MS</b>	<b>L2552846-5</b>						
Ammonia as N			104.4		%		75-125	29-JAN-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360005</b>							
<b>WG3481134-2</b>	<b>LCS</b>							
Nitrite (as N)			103.2		%		90-110	29-JAN-21
<b>WG3481134-6</b>	<b>LCS</b>							
Nitrite (as N)			101.8		%		90-110	29-JAN-21
<b>WG3481134-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	29-JAN-21
<b>WG3481134-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	29-JAN-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2552846

Report Date: 05-FEB-21

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5360005							
<b>WG3481134-2 LCS</b>								
Nitrate (as N)			101.7		%		90-110	29-JAN-21
<b>WG3481134-6 LCS</b>								
Nitrate (as N)			100.8		%		90-110	29-JAN-21
<b>WG3481134-1 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	29-JAN-21
<b>WG3481134-5 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	29-JAN-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5360145							
<b>WG3481273-13 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	29-JAN-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5363218							
<b>WG3483843-1 CRM</b>		<b>CL-ORP</b>						
ORP			227		mV		210-230	04-FEB-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5361600							
<b>WG3482841-18 LCS</b>								
Phosphorus (P)-Total			94.4		%		80-120	03-FEB-21
<b>WG3482841-17 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	03-FEB-21
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R5361600							
<b>WG3482841-18 LCS</b>								
Phosphorus (P)-Total Dissolved			94.4		%		80-120	03-FEB-21
<b>WG3482841-17 MB</b>								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	03-FEB-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5360145							
<b>WG3481273-14 LCS</b>								
pH			7.00		pH		6.9-7.1	29-JAN-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2552846

Report Date: 05-FEB-21

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5359932</b>							
<b>WG3480895-12</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			95.1		%		80-120	29-JAN-21
<b>WG3480895-3</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-JAN-21
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5360005</b>							
<b>WG3481134-2</b>	<b>LCS</b>							
Sulfate (SO4)			104.1		%		90-110	29-JAN-21
<b>WG3481134-6</b>	<b>LCS</b>							
Sulfate (SO4)			103.2		%		90-110	29-JAN-21
<b>WG3481134-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	29-JAN-21
<b>WG3481134-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	29-JAN-21
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5362885</b>							
<b>WG3483073-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.7		%		85-115	03-FEB-21
<b>WG3483073-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	03-FEB-21
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5361752</b>							
<b>WG3483074-11</b>	<b>DUP</b>	<b>L2552846-5</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	03-FEB-21
<b>WG3483074-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			86.8		%		75-125	03-FEB-21
<b>WG3483074-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			84.5		%		75-125	03-FEB-21
<b>WG3483074-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			83.9		%		75-125	03-FEB-21
<b>WG3483074-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-FEB-21
<b>WG3483074-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-FEB-21
<b>WG3483074-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-FEB-21
<b>WG3483074-12</b>	<b>MS</b>	<b>L2552846-5</b>						
Total Kjeldahl Nitrogen			98.5		%		70-130	03-FEB-21



## Quality Control Report

Workorder: L2552846

Report Date: 05-FEB-21

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5362724							
<b>WG3482565-2</b>	<b>LCS</b>							
Total Suspended Solids			96.4		%		85-115	03-FEB-21
<b>WG3482565-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	03-FEB-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5359904							
<b>WG3480902-8</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	29-JAN-21
<b>WG3480902-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	29-JAN-21

# Quality Control Report

Workorder: L2552846

Report Date: 05-FEB-21

Page 9 of 10

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2552846

Report Date: 05-FEB-21

Page 10 of 10

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	28-JAN-21 10:05	04-FEB-21 13:45	0.25	172	hours	EHTR-FM
	2	28-JAN-21 11:47	04-FEB-21 13:45	0.25	170	hours	EHTR-FM
	3	28-JAN-21 11:40	04-FEB-21 13:45	0.25	170	hours	EHTR-FM
	4	28-JAN-21 12:54	04-FEB-21 13:45	0.25	169	hours	EHTR-FM
	5	28-JAN-21 14:33	04-FEB-21 13:45	0.25	167	hours	EHTR-FM
pH							
	1	28-JAN-21 10:05	29-JAN-21 09:00	0.25	23	hours	EHTR-FM
	2	28-JAN-21 11:47	29-JAN-21 09:00	0.25	21	hours	EHTR-FM
	3	28-JAN-21 11:40	29-JAN-21 09:00	0.25	21	hours	EHTR-FM
	4	28-JAN-21 12:54	29-JAN-21 09:00	0.25	20	hours	EHTR-FM
	5	28-JAN-21 14:33	29-JAN-21 09:00	0.25	18	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Orthophosphate-Dissolved (as P)							
	5	28-JAN-21 14:33	03-FEB-21 15:00	3	6	days	EHT

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2552846 were received on 29-JAN-21 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20210128Q1GW**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.Hackett@teck.com	X	X	X
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com	X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_GCGW_WG_2021_Q1_NP	EV_GCGW	WG	N	01/28/21	10:05	G	5	1	1	1	1	1	1	1				1		
EV_MW_GT1A_WG_2021_Q1_NP	EV_MW_GT1A	WG	N	01/28/21	11:47	G	5	1	1	1	1	1	1	1				1		
EV_MW_GT1B_WG_2021_Q1_NP	EV_MW_GT1B	WG	N	01/28/21	11:40	G	5	1	1	1	1	1	1	1				1		
EV_BCGW_WG_2021_Q1_NP	EV_BCGW	WG	N	01/28/21	12:54	G	5	1	1	1	1	1	1	1				1		
EV_MW_MC3_WG_2021_Q1_NP	EV_MW_MC3	WG	N	01/28/21	14:33	G	5	1	1	1	1	1	1	1				1		
<b>Total</b>							<b>25</b>													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Emslie/D. Nicholas	January 28, 2021	<i>[Signature]</i>	29/01 8:45

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	X			
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	C. Emslie/D. Nicholas	Mobile #	
	Sampler's Signature	<i>[Signature]</i>	Date/Time	January 28, 2021

60





Teck Coal Ltd. (Elkview)  
ATTN: Annie Larrivee  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 03-FEB-21  
Report Date: 11-FEB-21 11:35 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2554454  
Project P.O. #: VPO00741597  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 202100202Q1GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2554454-1 WG 02-FEB-21 14:30 EV_MW_MCGWB_ WG_2021_Q1_NP	L2554454-2 WG 02-FEB-21 14:36 EV_MW_MCGWA_ WG_2021_Q1_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	755	725		
	Hardness (as CaCO3) (mg/L)	409	391		
	pH (pH)	7.86	7.78		
	ORP (mV)	385	340		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	448 <sup>DLHC</sup>	401 <sup>DLHC</sup>		
	Turbidity (NTU)	0.16	1.01		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	9.6	11.2		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	345	346		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	345	346		
	Ammonia as N (mg/L)	<0.0050	0.0105		
	Bicarbonate (HCO3) (mg/L)	421	422		
	Bromide (Br) (mg/L)	0.114	0.241		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	36.0	41.7		
	Fluoride (F) (mg/L)	0.211	0.218		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	98.0	97.6		
	Nitrate (as N) (mg/L)	4.32	0.635		
	Nitrite (as N) (mg/L)	<0.0010	0.0015		
	Total Kjeldahl Nitrogen (mg/L)	0.178	0.160		
	Total Nitrogen (mg/L)	4.50	0.796		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0052 <sup>RRV</sup>	0.0016		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0035 <sup>RRV</sup>	<0.0020		
	Phosphorus (P)-Total (mg/L)	0.0043	<0.0020		
	Sulfate (SO4) (mg/L)	44.9	28.9		
	Anion Sum (meq/L)	9.17	8.75		
	Cation Sum (meq/L)	8.99	8.53		
Cation - Anion Balance (%)	-1.0	-1.2			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.57	<0.50		
	Total Organic Carbon (mg/L)	0.63	<0.50		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2554454-1 WG 02-FEB-21 14:30 EV_MW_MCGWB_ WG_2021_Q1_NP	L2554454-2 WG 02-FEB-21 14:36 EV_MW_MCGWA_ WG_2021_Q1_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00013		
	Arsenic (As)-Dissolved (mg/L)	0.00012	0.00017		
	Barium (Ba)-Dissolved (mg/L)	0.252	0.489		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.044	0.035		
	Cadmium (Cd)-Dissolved (ug/L)	0.0791	0.0226		
	Calcium (Ca)-Dissolved (mg/L)	110	102		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	0.11	0.15		
	Copper (Cu)-Dissolved (mg/L)	0.00060	0.00020		
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.092		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0174	0.0223		
	Magnesium (Mg)-Dissolved (mg/L)	33.0	33.4		
	Manganese (Mn)-Dissolved (mg/L)	0.00022	0.0301		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00299	0.00297		
	Nickel (Ni)-Dissolved (mg/L)	0.00202	0.00143		
	Potassium (K)-Dissolved (mg/L)	2.41	2.25		
	Selenium (Se)-Dissolved (ug/L)	1.96	0.990		
	Silicon (Si)-Dissolved (mg/L)	5.01	5.36		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	17.1	14.9		
	Strontium (Sr)-Dissolved (mg/L)	0.311	0.420		
	Sulfur (S)-Dissolved (mg/L)	17.2	11.4		
	Thallium (Tl)-Dissolved (mg/L)	0.000017	0.000013		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000694	0.000593		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2554454-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2554454-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2554454-1, -2
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2554454-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2554454-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2554454-1, -2
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2554454-1, -2

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C

## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

202100202Q1GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2554454

Report Date: 11-FEB-21

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R5365521							
<b>WG3484737-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.9		%		85-115	06-FEB-21
<b>WG3484737-13</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	06-FEB-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R5365518							
<b>WG3484732-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.9		%		85-115	06-FEB-21
<b>WG3484732-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-FEB-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R5364436							
<b>WG3483926-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			100.4		%		80-120	06-FEB-21
<b>WG3483926-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-FEB-21
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R5365518							
<b>WG3484732-4</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	06-FEB-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R5370559							
<b>WG3486538-2</b>	<b>LCS</b>							
Bromide (Br)			100.5		%		85-115	05-FEB-21
<b>WG3486538-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	05-FEB-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R5369039							
<b>WG3485995-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			105.1		%		80-120	08-FEB-21
<b>WG3485995-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-FEB-21
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2554454

Report Date: 11-FEB-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5369039							
<b>WG3485995-6 LCS</b>								
Total Organic Carbon			109.8		%		80-120	08-FEB-21
<b>WG3485995-5 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	08-FEB-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5370559							
<b>WG3486538-2 LCS</b>								
Chloride (Cl)			101.4		%		85-115	05-FEB-21
<b>WG3486538-1 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	05-FEB-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5365518							
<b>WG3484732-4 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	06-FEB-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5365518							
<b>WG3484732-5 LCS</b>								
Conductivity (@ 25C)			99.0		%		90-110	06-FEB-21
<b>WG3484732-4 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	06-FEB-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5370559							
<b>WG3486538-2 LCS</b>								
Fluoride (F)			105.0		%		90-110	05-FEB-21
<b>WG3486538-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	05-FEB-21
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R5365819							
<b>WG3484757-11 DUP</b>		<b>L2554454-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	07-FEB-21
<b>WG3484757-10 LCS</b>								
Mercury (Hg)-Dissolved			100.5		%		80-120	07-FEB-21
<b>WG3484757-9 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	07-FEB-21
<b>WG3484757-12 MS</b>		<b>L2554454-2</b>						
Mercury (Hg)-Dissolved			99.7		%		70-130	07-FEB-21





## Quality Control Report

Workorder: L2554454

Report Date: 11-FEB-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5364436</b>							
<b>WG3483926-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			108.8		%		80-120	06-FEB-21
Antimony (Sb)-Dissolved			106.1		%		80-120	06-FEB-21
Arsenic (As)-Dissolved			106.9		%		80-120	06-FEB-21
Barium (Ba)-Dissolved			103.5		%		80-120	06-FEB-21
Bismuth (Bi)-Dissolved			105.7		%		80-120	06-FEB-21
Boron (B)-Dissolved			90.3		%		80-120	06-FEB-21
Cadmium (Cd)-Dissolved			105.2		%		80-120	06-FEB-21
Calcium (Ca)-Dissolved			103.4		%		80-120	06-FEB-21
Chromium (Cr)-Dissolved			104.6		%		80-120	06-FEB-21
Cobalt (Co)-Dissolved			107.1		%		80-120	06-FEB-21
Copper (Cu)-Dissolved			105.6		%		80-120	06-FEB-21
Iron (Fe)-Dissolved			95.1		%		80-120	06-FEB-21
Lead (Pb)-Dissolved			109.5		%		80-120	06-FEB-21
Lithium (Li)-Dissolved			107.4		%		80-120	06-FEB-21
Magnesium (Mg)-Dissolved			100.0		%		80-120	06-FEB-21
Manganese (Mn)-Dissolved			110.8		%		80-120	06-FEB-21
Molybdenum (Mo)-Dissolved			95.4		%		80-120	06-FEB-21
Nickel (Ni)-Dissolved			105.9		%		80-120	06-FEB-21
Potassium (K)-Dissolved			106.2		%		80-120	06-FEB-21
Selenium (Se)-Dissolved			104.6		%		80-120	06-FEB-21
Silicon (Si)-Dissolved			98.7		%		60-140	06-FEB-21
Silver (Ag)-Dissolved			109.0		%		80-120	06-FEB-21
Sodium (Na)-Dissolved			117.4		%		80-120	06-FEB-21
Strontium (Sr)-Dissolved			99.5		%		80-120	06-FEB-21
Sulfur (S)-Dissolved			100.8		%		80-120	06-FEB-21
Thallium (Tl)-Dissolved			111.5		%		80-120	06-FEB-21
Tin (Sn)-Dissolved			103.2		%		80-120	06-FEB-21
Titanium (Ti)-Dissolved			91.4		%		80-120	06-FEB-21
Uranium (U)-Dissolved			98.7		%		80-120	06-FEB-21
Vanadium (V)-Dissolved			108.0		%		80-120	06-FEB-21
Zinc (Zn)-Dissolved			107.4		%		80-120	06-FEB-21
<b>WG3483926-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-FEB-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-FEB-21



## Quality Control Report

Workorder: L2554454

Report Date: 11-FEB-21

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5364436</b>							
<b>WG3483926-1</b>	<b>MB</b>	<b>NP</b>						
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-FEB-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-FEB-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-FEB-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-FEB-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-FEB-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-FEB-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-FEB-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-FEB-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-FEB-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-FEB-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-FEB-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-FEB-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-FEB-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-FEB-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-FEB-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-FEB-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-FEB-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-FEB-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-FEB-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-FEB-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-FEB-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-FEB-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	06-FEB-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-FEB-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-FEB-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-FEB-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-FEB-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-FEB-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-FEB-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5366816</b>							
<b>WG3485215-10</b>	<b>LCS</b>							
Ammonia as N			89.4		%		85-115	08-FEB-21
<b>WG3485215-9</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2554454

Report Date: 11-FEB-21

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>	<b>Water</b>							
Batch	R5366816							
<b>WG3485215-9 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	08-FEB-21
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5370559							
<b>WG3486538-2 LCS</b>								
Nitrite (as N)			101.3		%		90-110	05-FEB-21
<b>WG3486538-1 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	05-FEB-21
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5370559							
<b>WG3486538-2 LCS</b>								
Nitrate (as N)			101.8		%		90-110	05-FEB-21
<b>WG3486538-1 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	05-FEB-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5365518							
<b>WG3484732-4 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	06-FEB-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5369822							
<b>WG3486333-3 CRM</b>		<b>CL-ORP</b>						
ORP			227		mV		210-230	10-FEB-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5368521							
<b>WG3485757-6 LCS</b>								
Phosphorus (P)-Total			92.3		%		80-120	09-FEB-21
<b>WG3485757-5 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	09-FEB-21
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R5368521							
<b>WG3485757-6 LCS</b>								
Phosphorus (P)-Total Dissolved			92.3		%		80-120	09-FEB-21
<b>WG3485757-5 MB</b>								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	09-FEB-21



## Quality Control Report

Workorder: L2554454

Report Date: 11-FEB-21

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R5365518							
WG3484732-5	LCS							
pH			7.01		pH		6.9-7.1	06-FEB-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5364298							
WG3483660-2	LCS							
Orthophosphate-Dissolved (as P)			95.5		%		80-120	04-FEB-21
WG3483660-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-FEB-21
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R5370559							
WG3486538-2	LCS							
Sulfate (SO4)			100.6		%		90-110	05-FEB-21
WG3486538-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	05-FEB-21
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R5368179							
WG3485154-5	LCS							
Total Dissolved Solids			98.2		%		85-115	08-FEB-21
WG3485154-4	MB							
Total Dissolved Solids			<10		mg/L		10	08-FEB-21
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5365079							
WG3484540-2	LCS							
Total Kjeldahl Nitrogen			81.9		%		75-125	06-FEB-21
WG3484540-4	LCS							
Total Kjeldahl Nitrogen			79.6		%		75-125	06-FEB-21
WG3484540-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-FEB-21
WG3484540-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-FEB-21
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5367956							
WG3485153-4	LCS							
Total Suspended Solids			99.3		%		85-115	08-FEB-21
WG3485153-3	MB							
Total Suspended Solids			<1.0		mg/L		1	08-FEB-21



## Quality Control Report

Workorder: L2554454

Report Date: 11-FEB-21

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R5362873</b>							
<b>WG3483643-11 LCS</b>								
Turbidity			103.5		%		85-115	04-FEB-21
<b>WG3483643-10 MB</b>								
Turbidity			<0.10		NTU		0.1	04-FEB-21

# Quality Control Report

Workorder: L2554454

Report Date: 11-FEB-21

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2554454

Report Date: 11-FEB-21

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	02-FEB-21 14:30	10-FEB-21 07:30	0.25	185	hours	EHTR-FM
	2	02-FEB-21 14:36	10-FEB-21 07:30	0.25	185	hours	EHTR-FM
pH	1	02-FEB-21 14:30	06-FEB-21 11:00	0.25	92	hours	EHTR-FM
	2	02-FEB-21 14:36	06-FEB-21 11:00	0.25	92	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2554454 were received on 03-FEB-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

**COC ID:** 202100202Q1GW      **TURNAROUND TIME:**      **RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com	X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PH	PRESERV.	ANALYSIS	No	Yes	Yes	No	No	No	No	Yes	Yes
							<b>Total</b>												

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

C. Emslie/D. Nicholas

February 2, 2021

*[Signature]*

02/03 8:50

**SERVICE REQUEST (rush - subject to availability)**

Regular (default)

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

**Sampler's Name**

C. Emslie/D. Nicholas

**Mobile #**

**Sampler's Signature**

**Date/Time**

February 2, 2021

20





Teck Coal Ltd. (Elkview)  
ATTN: Annie Larrivee  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 24-FEB-21  
Report Date: 03-MAR-21 18:45 (MT)  
Version: DRAFT

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2560760  
Project P.O. #: VPO00741597  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 202100223Q1GW  
Legal Site Desc:

DRAFT

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Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2560760-1 WG 23-FEB-21 14:38 EV_RCSGW_WG_ 2021_Q1_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	2400			
	Hardness (as CaCO3) (mg/L)	1820			
	pH (pH)	7.60			
	ORP (mV)	444			
	Total Suspended Solids (mg/L)	3.1			
	Total Dissolved Solids (mg/L)	2410	DLHC		
	Turbidity (NTU)	2.35			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	20.9			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	281			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	281			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	343	DLHC		
	Bromide (Br) (mg/L)	<0.25			
	Carbonate (CO3) (mg/L)	<5.0	DLHC		
	Chloride (Cl) (mg/L)	15.6	DLHC		
	Fluoride (F) (mg/L)	0.13	DLHC		
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	106	DLHC		
	Nitrate (as N) (mg/L)	31.7	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	0.236			
	Total Nitrogen (mg/L)	31.9			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0020			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020			
	Phosphorus (P)-Total (mg/L)	<0.0020	DLHC		
	Sulfate (SO4) (mg/L)	1260	DLHC		
	Anion Sum (meq/L)	34.6			
	Cation Sum (meq/L)	36.9			
	Cation - Anion Balance (%)	3.1			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.93			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00028			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	Description	Sampled Date	Sampled Time	Client ID
		L2560760-1	WG	23-FEB-21	14:38	EV_RCSGW_WG_2021_Q1_NP
<b>WATER</b>						
<b>Dissolved Metals</b>	Arsenic (As)-Dissolved (mg/L)					<sup>DLA</sup> <0.00020
	Barium (Ba)-Dissolved (mg/L)					0.0449
	Beryllium (Be)-Dissolved (ug/L)					<sup>DLA</sup> <0.040
	Bismuth (Bi)-Dissolved (mg/L)					0.00022
	Boron (B)-Dissolved (mg/L)					0.024
	Cadmium (Cd)-Dissolved (ug/L)					0.306
	Calcium (Ca)-Dissolved (mg/L)					390
	Chromium (Cr)-Dissolved (mg/L)					<sup>DLA</sup> <0.00020
	Cobalt (Co)-Dissolved (ug/L)					<sup>DLA</sup> <0.20
	Copper (Cu)-Dissolved (mg/L)					0.412
	Iron (Fe)-Dissolved (mg/L)					<sup>DLA</sup> <0.020
	Lead (Pb)-Dissolved (mg/L)					0.00240
	Lithium (Li)-Dissolved (mg/L)					0.0782
	Magnesium (Mg)-Dissolved (mg/L)					206
	Manganese (Mn)-Dissolved (mg/L)					0.00927
	Mercury (Hg)-Dissolved (mg/L)					<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)					0.00147
	Nickel (Ni)-Dissolved (mg/L)					0.0154
	Potassium (K)-Dissolved (mg/L)					3.87
	Selenium (Se)-Dissolved (ug/L)					272
	Silicon (Si)-Dissolved (mg/L)					4.63
	Silver (Ag)-Dissolved (mg/L)					<sup>DLA</sup> <0.000020
	Sodium (Na)-Dissolved (mg/L)					8.13
	Strontium (Sr)-Dissolved (mg/L)					0.490
	Sulfur (S)-Dissolved (mg/L)					478
	Thallium (Tl)-Dissolved (mg/L)					<sup>DLA</sup> <0.000020
	Tin (Sn)-Dissolved (mg/L)					<sup>DLA</sup> <0.00020
	Titanium (Ti)-Dissolved (mg/L)					<0.010
	Uranium (U)-Dissolved (mg/L)					0.00864
	Vanadium (V)-Dissolved (mg/L)					<sup>DLA</sup> <0.0010
	Zinc (Zn)-Dissolved (mg/L)					0.148

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2560760-1
Matrix Spike	Boron (B)-Dissolved	MS-B	L2560760-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2560760-1
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2560760-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2560760-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2560760-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2560760-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2560760-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2560760-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2560760-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2560760-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2560760-1
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2560760-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2560760-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			
TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) =  $[\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

202100223Q1GW

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

< - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2560760

Report Date: 03-MAR-21

Page 1 of 8

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
Batch	R5395885							
<b>WG3496047-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.9		%		85-115	02-MAR-21
<b>WG3496047-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.1		mg/L		2	02-MAR-21
<b>ALK-MAN-CL</b>		<b>Water</b>						
Batch	R5390892							
<b>WG3493171-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			104.1		%		85-115	24-FEB-21
<b>WG3493171-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-FEB-21
<b>BE-D-L-CCMS-VA</b>		<b>Water</b>						
Batch	R5392821							
<b>WG3493492-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.8		%		80-120	25-FEB-21
<b>WG3493492-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-FEB-21
<b>BIC-CL</b>		<b>Water</b>						
Batch	R5390892							
<b>WG3493171-10</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	24-FEB-21
<b>BR-L-IC-N-CL</b>		<b>Water</b>						
Batch	R5393121							
<b>WG3494338-2</b>	<b>LCS</b>							
Bromide (Br)			98.7		%		85-115	26-FEB-21
<b>WG3494338-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	26-FEB-21
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						
Batch	R5396063							
<b>WG3496389-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			108.7		%		80-120	01-MAR-21
<b>WG3496389-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-MAR-21
<b>CL-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2560760

Report Date: 03-MAR-21

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5393121							
<b>WG3494338-2</b>	<b>LCS</b>							
Chloride (Cl)			101.3		%		85-115	26-FEB-21
<b>WG3494338-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	26-FEB-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5390892							
<b>WG3493171-10</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	24-FEB-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5390892							
<b>WG3493171-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.3		%		90-110	24-FEB-21
<b>WG3493171-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	24-FEB-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5393121							
<b>WG3494338-2</b>	<b>LCS</b>							
Fluoride (F)			103.0		%		90-110	26-FEB-21
<b>WG3494338-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	26-FEB-21
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R5394998							
<b>WG3494525-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.5		%		80-120	01-MAR-21
<b>WG3494525-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	01-MAR-21
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R5392821							
<b>WG3493492-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.3		%		80-120	25-FEB-21
Antimony (Sb)-Dissolved			101.5		%		80-120	25-FEB-21
Arsenic (As)-Dissolved			99.3		%		80-120	25-FEB-21
Barium (Ba)-Dissolved			101.9		%		80-120	25-FEB-21
Bismuth (Bi)-Dissolved			94.3		%		80-120	25-FEB-21
Boron (B)-Dissolved			94.6		%		80-120	25-FEB-21
Cadmium (Cd)-Dissolved			89.4		%		80-120	25-FEB-21

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## Quality Control Report

Workorder: L2560760

Report Date: 03-MAR-21

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5392821</b>							
<b>WG3493492-2</b>	<b>LCS</b>							
Calcium (Ca)-Dissolved			105.2		%		80-120	25-FEB-21
Chromium (Cr)-Dissolved			101.0		%		80-120	25-FEB-21
Cobalt (Co)-Dissolved			101.5		%		80-120	25-FEB-21
Copper (Cu)-Dissolved			98.6		%		80-120	25-FEB-21
Iron (Fe)-Dissolved			94.0		%		80-120	25-FEB-21
Lead (Pb)-Dissolved			95.9		%		80-120	25-FEB-21
Lithium (Li)-Dissolved			91.5		%		80-120	25-FEB-21
Magnesium (Mg)-Dissolved			102.5		%		80-120	25-FEB-21
Manganese (Mn)-Dissolved			99.4		%		80-120	25-FEB-21
Molybdenum (Mo)-Dissolved			98.0		%		80-120	25-FEB-21
Nickel (Ni)-Dissolved			100.4		%		80-120	25-FEB-21
Potassium (K)-Dissolved			100.8		%		80-120	25-FEB-21
Selenium (Se)-Dissolved			102.2		%		80-120	25-FEB-21
Silicon (Si)-Dissolved			97.7		%		60-140	25-FEB-21
Silver (Ag)-Dissolved			92.3		%		80-120	25-FEB-21
Sodium (Na)-Dissolved			110.5		%		80-120	25-FEB-21
Strontium (Sr)-Dissolved			107.1		%		80-120	25-FEB-21
Sulfur (S)-Dissolved			95.6		%		80-120	25-FEB-21
Thallium (Tl)-Dissolved			98.5		%		80-120	25-FEB-21
Tin (Sn)-Dissolved			86.1		%		80-120	25-FEB-21
Titanium (Ti)-Dissolved			96.1		%		80-120	25-FEB-21
Uranium (U)-Dissolved			101.4		%		80-120	25-FEB-21
Vanadium (V)-Dissolved			101.6		%		80-120	25-FEB-21
Zinc (Zn)-Dissolved			93.7		%		80-120	25-FEB-21
<b>WG3493492-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-FEB-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-FEB-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-FEB-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-FEB-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-FEB-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-21



## Quality Control Report

Workorder: L2560760

Report Date: 03-MAR-21

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5392821</b>							
<b>WG3493492-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-FEB-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-FEB-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-FEB-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-FEB-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-FEB-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-FEB-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-FEB-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-FEB-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-FEB-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-FEB-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-FEB-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-FEB-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-FEB-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	25-FEB-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-FEB-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-FEB-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-FEB-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-FEB-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-FEB-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5394698</b>							
<b>WG3495028-6</b>	<b>LCS</b>							
Ammonia as N			100.7		%		85-115	01-MAR-21
<b>WG3495028-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	01-MAR-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5393121</b>							
<b>WG3494338-2</b>	<b>LCS</b>							
Nitrite (as N)			100.4		%		90-110	26-FEB-21
<b>WG3494338-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	26-FEB-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2560760

Report Date: 03-MAR-21

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5393121							
<b>WG3494338-2</b>	<b>LCS</b>							
Nitrate (as N)			101.6		%		90-110	26-FEB-21
<b>WG3494338-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	26-FEB-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5390892							
<b>WG3493171-10</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	24-FEB-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5396106							
<b>WG3496469-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			222		mV		210-230	03-MAR-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5394399							
<b>WG3494943-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			100.1		%		80-120	01-MAR-21
<b>WG3494943-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	01-MAR-21
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R5394399							
<b>WG3494943-2</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			100.1		%		80-120	01-MAR-21
<b>WG3494943-1</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	01-MAR-21
<b>PH-CL</b>	<b>Water</b>							
Batch	R5390892							
<b>WG3493171-11</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	24-FEB-21
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R5389382							
<b>WG3492706-14</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			103.0		%		80-120	24-FEB-21
<b>WG3492706-13</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-FEB-21

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## Quality Control Report

Workorder: L2560760

Report Date: 03-MAR-21

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
<b>Batch R5393121</b>								
<b>WG3494338-2</b>	<b>LCS</b>							
Sulfate (SO4)			102.7		%		90-110	26-FEB-21
<b>WG3494338-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	26-FEB-21
<b>SOLIDS-TDS-CL</b>								
<b>Batch R5395946</b>								
<b>WG3495459-5</b>	<b>LCS</b>							
Total Dissolved Solids			94.1		%		85-115	02-MAR-21
<b>WG3495459-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	02-MAR-21
<b>TKN-L-F-CL</b>								
<b>Batch R5395650</b>								
<b>WG3495761-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			82.5		%		75-125	02-MAR-21
<b>WG3495761-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			82.5		%		75-125	02-MAR-21
<b>WG3495761-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			82.5		%		75-125	02-MAR-21
<b>WG3495761-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-MAR-21
<b>WG3495761-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-MAR-21
<b>WG3495761-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-MAR-21
<b>TSS-L-CL</b>								
<b>Batch R5395873</b>								
<b>WG3495458-4</b>	<b>LCS</b>							
Total Suspended Solids			94.3		%		85-115	02-MAR-21
<b>WG3495458-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	02-MAR-21
<b>TURBIDITY-CL</b>								
<b>Batch R5390496</b>								
<b>WG3493122-5</b>	<b>LCS</b>							
Turbidity			102.0		%		85-115	25-FEB-21
<b>WG3493122-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	25-FEB-21

# Quality Control Report

Workorder: L2560760

Report Date: 03-MAR-21

Page 7 of 8

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2560760

Report Date: 03-MAR-21

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	23-FEB-21 14:38	03-MAR-21 09:00	0.25	186	hours	EHTR-FM
pH	1	23-FEB-21 14:38	24-FEB-21 13:00	0.25	22	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2560760 were received on 24-FEB-21 08:25.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **202100223Q1GW**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com	X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**      Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	PRESERV.		Yes		No		No		Yes		Yes	
									No	Yes	Yes	No	No	No	No	Yes	Yes			
EV_RCSGW_WG_2021_Q1_NP	EV_RCSGW	WG	N	02/23/21	14:38	G	5	TECKCOAL-ROUTINE-VA (E305.1) Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL		Nitric	Sulphuric	Sulphuric			NO	Sodium Bisulphate	HCl	NaOH		
									1	1	1	1				1				
							Total													5

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Emslie/D. Nicholas	February 23, 2021	<i>[Signature]</i>	2/23/21

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	X			
Priority (2-3 business days) - 50% surcharge	Sampler's Name	C. Emslie/D. Nicholas	Mobile #	1-250-425-1101
Emergency (1 Business Day) - 100% surcharge	Sampler's Signature		Date/Time	February 23, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

5



Teck Coal Ltd. (Elkview)  
ATTN: Annie Larrivee  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 25-FEB-21  
Report Date: 05-MAR-21 16:36 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2561156  
Project P.O. #: VPO00741597  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 202100224Q1GW  
Legal Site Desc:

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Lyudmyla Shvets, B.Sc.  
Account Manager

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2561156-1 WG 24-FEB-21 15:41 EV_HW1_WG_202 1_Q1_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1060			
	Hardness (as CaCO3) (mg/L)	658			
	pH (pH)	7.98			
	ORP (mV)	393			
	Total Suspended Solids (mg/L)	1.0			
	Total Dissolved Solids (mg/L)	757 <sup>DLHC</sup>			
	Turbidity (NTU)	<0.10			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	7.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	232			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	232			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	282			
	Bromide (Br) (mg/L)	0.37 <sup>DLHC</sup>			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	23.4 <sup>DLHC</sup>			
	Fluoride (F) (mg/L)	<0.10 <sup>DLHC</sup>			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	106			
	Nitrate (as N) (mg/L)	7.02 <sup>DLHC</sup>			
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>			
	Total Kjeldahl Nitrogen (mg/L)	0.147			
	Total Nitrogen (mg/L)	7.17			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0024			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020			
	Phosphorus (P)-Total (mg/L)	<0.0020 <sup>DLHC</sup>			
	Sulfate (SO4) (mg/L)	341			
	Anion Sum (meq/L)	12.9			
	Cation Sum (meq/L)	13.7			
Cation - Anion Balance (%)	3.0				
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2561156-1 WG 24-FEB-21 15:41 EV_HW1_WG_202 1_Q1_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	0.00011			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0526			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.024			
	Cadmium (Cd)-Dissolved (ug/L)	0.0690			
	Calcium (Ca)-Dissolved (mg/L)	159			
	Chromium (Cr)-Dissolved (mg/L)	0.00011			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.0136			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000063			
	Lithium (Li)-Dissolved (mg/L)	0.0500			
	Magnesium (Mg)-Dissolved (mg/L)	63.3			
	Manganese (Mn)-Dissolved (mg/L)	0.00027			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000690			
	Nickel (Ni)-Dissolved (mg/L)	0.00066			
	Potassium (K)-Dissolved (mg/L)	2.21			
	Selenium (Se)-Dissolved (ug/L)	54.0			
	Silicon (Si)-Dissolved (mg/L)	3.39			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	10.9			
	Strontium (Sr)-Dissolved (mg/L)	0.333			
	Sulfur (S)-Dissolved (mg/L)	125			
	Thallium (Tl)-Dissolved (mg/L)	0.000012			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00165			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0145			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2561156-1
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2561156-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2561156-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2561156-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2561156-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2561156-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2561156-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2561156-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2561156-1
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2561156-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2561156-1
Matrix Spike	Ammonia as N	MS-B	L2561156-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			

## Reference Information

**CO3-CL** Water Carbonate (CO<sub>3</sub>) APHA 2320 B-Potentiometric Titration

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

## Reference Information

<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

202100224Q1GW

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2561156

Report Date: 05-MAR-21

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R5395885							
<b>WG3496047-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.7		%		85-115	02-MAR-21
<b>WG3496047-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.1		mg/L		2	02-MAR-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R5395928							
<b>WG3496251-15</b>	<b>DUP</b>	<b>L2561156-1</b>						
Alkalinity, Total (as CaCO3)		232	235		mg/L	1.5	20	02-MAR-21
<b>WG3496251-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.7		%		85-115	02-MAR-21
<b>WG3496251-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-MAR-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R5395037							
<b>WG3494221-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			100.9		%		80-120	26-FEB-21
<b>WG3494221-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-FEB-21
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R5395928							
<b>WG3496251-15</b>	<b>DUP</b>	<b>L2561156-1</b>						
Bicarbonate (HCO3)		282	287		mg/L	1.5	20	02-MAR-21
<b>WG3496251-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-MAR-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R5392767							
<b>WG3493851-7</b>	<b>LCS</b>							
Bromide (Br)			93.3		%		85-115	25-FEB-21
<b>WG3493851-6</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	25-FEB-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R5397288							
<b>WG3497575-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			105.5		%		80-120	04-MAR-21
<b>WG3497575-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-MAR-21
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2561156

Report Date: 05-MAR-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R5397288							
<b>WG3497575-2 LCS</b>								
Total Organic Carbon			107.5		%		80-120	04-MAR-21
<b>WG3497575-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	04-MAR-21
<b>CL-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5392767							
<b>WG3493851-7 LCS</b>								
Chloride (Cl)			105.0		%		85-115	25-FEB-21
<b>WG3493851-6 MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	25-FEB-21
<b>CO3-CL</b>	<b>Water</b>							
Batch	R5395928							
<b>WG3496251-15 DUP</b>		<b>L2561156-1</b>						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	02-MAR-21
<b>WG3496251-13 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	02-MAR-21
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R5395928							
<b>WG3496251-15 DUP</b>		<b>L2561156-1</b>						
Conductivity (@ 25C)		1060	1060		uS/cm	0.1	10	02-MAR-21
<b>WG3496251-14 LCS</b>								
Conductivity (@ 25C)			97.3		%		90-110	02-MAR-21
<b>WG3496251-13 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	02-MAR-21
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R5392767							
<b>WG3493851-6 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	25-FEB-21
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R5395143							
<b>WG3495225-2 LCS</b>								
Mercury (Hg)-Dissolved			96.9		%		80-120	02-MAR-21
<b>WG3495225-1 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	02-MAR-21
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2561156

Report Date: 05-MAR-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5395037</b>							
<b>WG3494221-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			108.9		%		80-120	26-FEB-21
Antimony (Sb)-Dissolved			100.4		%		80-120	26-FEB-21
Arsenic (As)-Dissolved			102.0		%		80-120	26-FEB-21
Barium (Ba)-Dissolved			105.0		%		80-120	26-FEB-21
Bismuth (Bi)-Dissolved			103.2		%		80-120	26-FEB-21
Boron (B)-Dissolved			98.1		%		80-120	26-FEB-21
Cadmium (Cd)-Dissolved			102.8		%		80-120	26-FEB-21
Calcium (Ca)-Dissolved			103.6		%		80-120	26-FEB-21
Chromium (Cr)-Dissolved			100.9		%		80-120	26-FEB-21
Cobalt (Co)-Dissolved			101.2		%		80-120	26-FEB-21
Copper (Cu)-Dissolved			100.2		%		80-120	26-FEB-21
Iron (Fe)-Dissolved			97.6		%		80-120	26-FEB-21
Lead (Pb)-Dissolved			102.5		%		80-120	26-FEB-21
Lithium (Li)-Dissolved			100.7		%		80-120	26-FEB-21
Magnesium (Mg)-Dissolved			102.0		%		80-120	26-FEB-21
Manganese (Mn)-Dissolved			104.1		%		80-120	26-FEB-21
Molybdenum (Mo)-Dissolved			100.1		%		80-120	26-FEB-21
Nickel (Ni)-Dissolved			102.4		%		80-120	26-FEB-21
Potassium (K)-Dissolved			101.7		%		80-120	26-FEB-21
Selenium (Se)-Dissolved			103.1		%		80-120	26-FEB-21
Silicon (Si)-Dissolved			97.0		%		60-140	26-FEB-21
Silver (Ag)-Dissolved			101.3		%		80-120	26-FEB-21
Sodium (Na)-Dissolved			98.7		%		80-120	26-FEB-21
Strontium (Sr)-Dissolved			101.6		%		80-120	26-FEB-21
Sulfur (S)-Dissolved			93.3		%		80-120	26-FEB-21
Thallium (Tl)-Dissolved			102.8		%		80-120	26-FEB-21
Tin (Sn)-Dissolved			97.1		%		80-120	26-FEB-21
Titanium (Ti)-Dissolved			96.1		%		80-120	26-FEB-21
Uranium (U)-Dissolved			106.4		%		80-120	26-FEB-21
Vanadium (V)-Dissolved			104.0		%		80-120	26-FEB-21
Zinc (Zn)-Dissolved			96.9		%		80-120	26-FEB-21
<b>WG3494221-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-FEB-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-FEB-21





## Quality Control Report

Workorder: L2561156

Report Date: 05-MAR-21

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5395037</b>							
<b>WG3494221-1</b>	<b>MB</b>	<b>NP</b>						
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-FEB-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-FEB-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-FEB-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-FEB-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-FEB-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-FEB-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-FEB-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-FEB-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-FEB-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-FEB-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-FEB-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-FEB-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-FEB-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-FEB-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-FEB-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-FEB-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-FEB-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-FEB-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-FEB-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-FEB-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-FEB-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-FEB-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	26-FEB-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-FEB-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-FEB-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-FEB-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-FEB-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-FEB-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-FEB-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5395852</b>							
<b>WG3496039-14</b>	<b>LCS</b>							
Ammonia as N			94.9		%		85-115	02-MAR-21
<b>WG3496039-13</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2561156

Report Date: 05-MAR-21

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>	<b>Water</b>							
Batch	R5395852							
<b>WG3496039-13 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	02-MAR-21
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5392767							
<b>WG3493851-7 LCS</b>								
Nitrite (as N)			104.4		%		90-110	25-FEB-21
<b>WG3493851-6 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	25-FEB-21
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R5392767							
<b>WG3493851-7 LCS</b>								
Nitrate (as N)			103.7		%		90-110	25-FEB-21
<b>WG3493851-6 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	25-FEB-21
<b>OH-CL</b>	<b>Water</b>							
Batch	R5395928							
<b>WG3496251-15 DUP</b>		<b>L2561156-1</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	02-MAR-21
<b>WG3496251-13 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	02-MAR-21
<b>ORP-CL</b>	<b>Water</b>							
Batch	R5396740							
<b>WG3497196-3 CRM</b>		<b>CL-ORP</b>						
ORP			224		mV		210-230	04-MAR-21
<b>WG3497196-4 DUP</b>		<b>L2561156-1</b>						
ORP		393	387	J	mV	5.8	15	04-MAR-21
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R5394399							
<b>WG3494943-14 LCS</b>								
Phosphorus (P)-Total			101.0		%		80-120	01-MAR-21
<b>WG3494943-13 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	01-MAR-21
<b>P-TD-L-COL-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2561156

Report Date: 05-MAR-21

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-TD-L-COL-CL</b> <b>Water</b>								
Batch	R5394399							
<b>WG3494943-14</b>	<b>LCS</b>							
Phosphorus (P)-Total	Dissolved		101.0		%		80-120	01-MAR-21
Batch	R5394943-13 MB							
Phosphorus (P)-Total	Dissolved		<0.0020		mg/L		0.002	01-MAR-21
<b>PH-CL</b> <b>Water</b>								
Batch	R5395928							
<b>WG3496251-15</b>	<b>DUP</b>	<b>L2561156-1</b>						
pH		7.98	8.01	J	pH	0.03	0.2	02-MAR-21
Batch	R5396251-14 LCS							
pH			6.97		pH		6.9-7.1	02-MAR-21
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R5391722							
<b>WG3493345-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			96.9		%		80-120	25-FEB-21
Batch	R5393345-1 MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	25-FEB-21
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R5392767							
<b>WG3493851-7</b>	<b>LCS</b>							
Sulfate (SO4)			102.4		%		90-110	25-FEB-21
Batch	R5393851-6 MB							
Sulfate (SO4)			<0.30		mg/L		0.3	25-FEB-21
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R5396477							
<b>WG3496300-2</b>	<b>LCS</b>							
Total Dissolved Solids			90.4		%		85-115	03-MAR-21
Batch	R5396300-1 MB							
Total Dissolved Solids			<10		mg/L		10	03-MAR-21
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R5396802							
<b>WG3497252-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.0		%		75-125	04-MAR-21
Batch	R5397252-6 LCS							
Total Kjeldahl Nitrogen			97.0		%		75-125	04-MAR-21
Batch	R5397252-1 MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-MAR-21
Batch	R5397252-5 MB							



## Quality Control Report

Workorder: L2561156

Report Date: 05-MAR-21

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R5396802							
<b>WG3497252-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-MAR-21
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R5395873							
<b>WG3495458-6 LCS</b>								
Total Suspended Solids			106.5		%		85-115	02-MAR-21
<b>WG3495458-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	02-MAR-21
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R5392873							
<b>WG3494119-11 LCS</b>								
Turbidity			101.0		%		85-115	26-FEB-21
<b>WG3494119-10 MB</b>								
Turbidity			<0.10		NTU		0.1	26-FEB-21

# Quality Control Report

Workorder: L2561156

Report Date: 05-MAR-21

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2561156

Report Date: 05-MAR-21

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	24-FEB-21 15:41	04-MAR-21 07:45	0.25	184	hours	EHTR-FM
pH	1	24-FEB-21 15:41	02-MAR-21 14:00	0.25	142	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2561156 were received on 25-FEB-21 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

**COC ID:** 202100224Q1GW

**TURNAROUND TIME:**

**RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com	X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BF-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI		
EV_HW1_WG_2021_Q1_NP	EV_HW1	WG	N	02/24/21	15:41	G	5	1		1	1		1					1			
Total							5														



L2561156-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Emslie/T. Phillips	February 24, 2021	<i>[Signature]</i>	2/25/22 8:45

SERVICE REQUEST (rush - subject to availability)					
Regular (default)	X	Sampler's Name	C. Emslie/T. Phillips	Mobile #	1-250-425-1101
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time	February 24, 2021
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

*[Handwritten signature]*  
70



Teck Coal Ltd. (Elkview)  
ATTN: Annie Larrivee  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 26-FEB-21  
Report Date: 05-MAR-21 14:06 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2561760  
Project P.O. #: VPO00741597  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 202100225Q1GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2561760-1	L2561760-2	L2561760-3
		Description	WG	WG	WG
		Sampled Date	25-FEB-21	25-FEB-21	25-FEB-21
		Sampled Time	13:05	11:50	14:50
		Client ID	EV_BRGW_WG_2 021_Q1_NP	EV_WH50_WG_20 21_Q1_NP	EV_MW_AQ2_WG _2021_Q1_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		1070	528	1050
	Hardness (as CaCO3) (mg/L)		694	323	676
	pH (pH)		7.78	8.06	7.69
	ORP (mV)		346	425	448
	Total Suspended Solids (mg/L)		1.0	1.2	4.3
	Total Dissolved Solids (mg/L)		786 <sup>DLHC</sup>	333 <sup>DLHC</sup>	668 <sup>DLHC</sup>
	Turbidity (NTU)		0.57	1.22	5.01
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		12.4	2.1	23.9
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		274	179	482
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		274	179	482
	Ammonia as N (mg/L)		0.0054	0.0053	0.0571
	Bicarbonate (HCO3) (mg/L)		334	218	588
	Bromide (Br) (mg/L)		0.454	0.063	<0.050
	Carbonate (CO3) (mg/L)		<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)		24.4	2.89	14.4
	Fluoride (F) (mg/L)		0.086	0.091	0.121
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0
	Ion Balance (%)		112	111	110
	Nitrate (as N) (mg/L)		2.26	1.12	0.0079
	Nitrite (as N) (mg/L)		0.0016	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		1.02	0.333	0.068
	Total Nitrogen (mg/L)		3.28	1.46	0.076
	Orthophosphate-Dissolved (as P) (mg/L)		0.0017	0.0034	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)		<0.0020	0.0044	<0.0020
	Phosphorus (P)-Total (mg/L)		0.0089	0.0060	0.0023
	Sulfate (SO4) (mg/L)		311	111	153
	Anion Sum (meq/L)		12.8	6.05	13.2
	Cation Sum (meq/L)		14.3	6.69	14.5
Cation - Anion Balance (%)		5.6	5.1	4.6	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		<0.50	0.57	1.08
	Total Organic Carbon (mg/L)		<0.50	0.60	1.34
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0043	<0.0030	<0.0030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2561760-1	L2561760-2	L2561760-3
		Description	WG	WG	WG
		Sampled Date	25-FEB-21	25-FEB-21	25-FEB-21
		Sampled Time	13:05	11:50	14:50
		Client ID	EV_BRGW_WG_2 021_Q1_NP	EV_WH50_WG_20 21_Q1_NP	EV_MW_AQ2_WG _2021_Q1_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00011	0.00012	0.00014
	Barium (Ba)-Dissolved (mg/L)		0.0600	0.105	0.0188
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.037	<0.010	0.100
	Cadmium (Cd)-Dissolved (ug/L)		0.0538	0.0237	<0.0050
	Calcium (Ca)-Dissolved (mg/L)		175	80.1	165
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	0.00012	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)		0.00043	0.00044	0.00031
	Iron (Fe)-Dissolved (mg/L)		0.030	0.010	0.489
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0509	0.0079	0.0613
	Magnesium (Mg)-Dissolved (mg/L)		62.4	30.0	64.3
	Manganese (Mn)-Dissolved (mg/L)		0.00283	0.00109	0.0762
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000603	0.000931	0.000235
	Nickel (Ni)-Dissolved (mg/L)		0.00221	<0.00050	0.00081
	Potassium (K)-Dissolved (mg/L)		2.20	0.798	2.09
	Selenium (Se)-Dissolved (ug/L)		19.0	11.2	<0.050
	Silicon (Si)-Dissolved (mg/L)		3.33	2.00	6.33
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		9.40	4.90	21.2
	Strontium (Sr)-Dissolved (mg/L)		0.326	0.182	1.19
	Sulfur (S)-Dissolved (mg/L)		122	40.7	58.3
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00172	0.00146	0.000120
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0021	<0.0010	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2561760-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2561760-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2561760-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2561760-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2561760-1, -2, -3
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2561760-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

202100225Q1GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2561760

Report Date: 05-MAR-21

Page 1 of 11

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
Batch	R5397139							
<b>WG3497669-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.7		%		85-115	04-MAR-21
<b>WG3497669-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.6		%		85-115	04-MAR-21
<b>WG3497669-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	04-MAR-21
<b>WG3497669-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.3		mg/L		2	04-MAR-21
<b>ALK-MAN-CL</b>		<b>Water</b>						
Batch	R5397117							
<b>WG3497653-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	04-MAR-21
<b>WG3497653-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.5		%		85-115	04-MAR-21
<b>WG3497653-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-MAR-21
<b>WG3497653-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-MAR-21
<b>BE-D-L-CCMS-VA</b>		<b>Water</b>						
Batch	R5396006							
<b>WG3495706-3</b>	<b>DUP</b>	<b>L2561760-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	03-MAR-21
<b>WG3495706-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			112.9		%		80-120	03-MAR-21
<b>WG3495706-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-MAR-21
<b>WG3495706-4</b>	<b>MS</b>	<b>L2561760-2</b>						
Beryllium (Be)-Dissolved			107.4		%		70-130	03-MAR-21
<b>BIC-CL</b>		<b>Water</b>						
Batch	R5397117							
<b>WG3497653-4</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	04-MAR-21
<b>WG3497653-7</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	04-MAR-21
<b>BR-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2561760

Report Date: 05-MAR-21

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b> <b>Water</b>								
Batch	R5395409							
<b>WG3495593-6</b>	<b>LCS</b>							
Bromide (Br)			106.4		%		85-115	27-FEB-21
<b>WG3495593-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-FEB-21
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R5397137							
<b>WG3497572-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			115.4		%		80-120	04-MAR-21
<b>WG3497572-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-MAR-21
<b>CL-L-IC-N-CL</b> <b>Water</b>								
Batch	R5395409							
<b>WG3495593-6</b>	<b>LCS</b>							
Chloride (Cl)			102.4		%		85-115	27-FEB-21
<b>WG3495593-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	27-FEB-21
<b>CO3-CL</b> <b>Water</b>								
Batch	R5397117							
<b>WG3497653-4</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	04-MAR-21
<b>WG3497653-7</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	04-MAR-21
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R5397117							
<b>WG3497653-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			96.3		%		90-110	04-MAR-21
<b>WG3497653-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.3		%		90-110	04-MAR-21
<b>WG3497653-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	04-MAR-21
<b>WG3497653-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	04-MAR-21
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R5395409							
<b>WG3495593-6</b>	<b>LCS</b>							
Fluoride (F)			108.0		%		90-110	27-FEB-21
<b>WG3495593-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2561760

Report Date: 05-MAR-21

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R5395409</b>								
<b>WG3495593-5 MB</b>								
Fluoride (F)								
			<0.020		mg/L		0.02	27-FEB-21
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch R5395776</b>								
<b>WG3495961-10 LCS</b>								
Mercury (Hg)-Dissolved								
			99.4		%		80-120	03-MAR-21
<b>WG3495961-9 MB</b>								
Mercury (Hg)-Dissolved								
		<b>NP</b>	<0.0000050		mg/L		0.000005	03-MAR-21
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch R5396006</b>								
<b>WG3495706-3 DUP</b>								
<b>L2561760-1</b>								
Aluminum (Al)-Dissolved								
		0.0043	<0.0030	RPD-NA	mg/L	N/A	20	03-MAR-21
Antimony (Sb)-Dissolved								
		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAR-21
Arsenic (As)-Dissolved								
		0.00011	0.00011		mg/L	0.2	20	03-MAR-21
Barium (Ba)-Dissolved								
		0.0600	0.0623		mg/L	3.6	20	03-MAR-21
Bismuth (Bi)-Dissolved								
		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-MAR-21
Boron (B)-Dissolved								
		0.037	0.036		mg/L	3.6	20	03-MAR-21
Cadmium (Cd)-Dissolved								
		0.0000538	0.0000479		mg/L	12	20	03-MAR-21
Calcium (Ca)-Dissolved								
		175	169		mg/L	3.6	20	03-MAR-21
Chromium (Cr)-Dissolved								
		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAR-21
Cobalt (Co)-Dissolved								
		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAR-21
Copper (Cu)-Dissolved								
		0.00043	0.00053	J	mg/L	0.00010	0.0004	03-MAR-21
Iron (Fe)-Dissolved								
		0.030	0.030		mg/L	0.9	20	03-MAR-21
Lead (Pb)-Dissolved								
		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-MAR-21
Lithium (Li)-Dissolved								
		0.0509	0.0485		mg/L	4.9	20	03-MAR-21
Magnesium (Mg)-Dissolved								
		62.4	61.6		mg/L	1.3	20	03-MAR-21
Manganese (Mn)-Dissolved								
		0.00283	0.00290		mg/L	2.2	20	03-MAR-21
Molybdenum (Mo)-Dissolved								
		0.000603	0.000565		mg/L	6.5	20	03-MAR-21
Nickel (Ni)-Dissolved								
		0.00221	0.00214		mg/L	3.4	20	03-MAR-21
Potassium (K)-Dissolved								
		2.20	2.19		mg/L	0.6	20	03-MAR-21
Selenium (Se)-Dissolved								
		0.0190	0.0190		mg/L	0.2	20	03-MAR-21
Silicon (Si)-Dissolved								
		3.33	3.41		mg/L	2.6	20	03-MAR-21
Silver (Ag)-Dissolved								
		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-MAR-21
Sodium (Na)-Dissolved								
		9.40	8.91		mg/L	5.3	20	03-MAR-21
Strontium (Sr)-Dissolved								
		0.326	0.328		mg/L	0.7	20	03-MAR-21





## Quality Control Report

Workorder: L2561760

Report Date: 05-MAR-21

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5396006</b>							
<b>WG3495706-3</b>	<b>DUP</b>	<b>L2561760-1</b>						
Sulfur (S)-Dissolved		122	122		mg/L	0.4	20	03-MAR-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-MAR-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-MAR-21
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-MAR-21
Uranium (U)-Dissolved		0.00172	0.00166		mg/L	3.6	20	03-MAR-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-MAR-21
Zinc (Zn)-Dissolved		0.0021	0.0020		mg/L	2.6	20	03-MAR-21
<b>WG3495706-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			109.3		%		80-120	03-MAR-21
Antimony (Sb)-Dissolved			104.9		%		80-120	03-MAR-21
Arsenic (As)-Dissolved			109.6		%		80-120	03-MAR-21
Barium (Ba)-Dissolved			106.6		%		80-120	03-MAR-21
Bismuth (Bi)-Dissolved			104.3		%		80-120	03-MAR-21
Boron (B)-Dissolved			106.9		%		80-120	03-MAR-21
Cadmium (Cd)-Dissolved			107.5		%		80-120	03-MAR-21
Calcium (Ca)-Dissolved			109.2		%		80-120	03-MAR-21
Chromium (Cr)-Dissolved			105.0		%		80-120	03-MAR-21
Cobalt (Co)-Dissolved			104.7		%		80-120	03-MAR-21
Copper (Cu)-Dissolved			103.9		%		80-120	03-MAR-21
Iron (Fe)-Dissolved			99.99		%		80-120	03-MAR-21
Lead (Pb)-Dissolved			109.7		%		80-120	03-MAR-21
Lithium (Li)-Dissolved			106.0		%		80-120	03-MAR-21
Magnesium (Mg)-Dissolved			108.0		%		80-120	03-MAR-21
Manganese (Mn)-Dissolved			108.3		%		80-120	03-MAR-21
Molybdenum (Mo)-Dissolved			104.1		%		80-120	03-MAR-21
Nickel (Ni)-Dissolved			103.2		%		80-120	03-MAR-21
Potassium (K)-Dissolved			107.0		%		80-120	03-MAR-21
Selenium (Se)-Dissolved			109.7		%		80-120	03-MAR-21
Silicon (Si)-Dissolved			97.7		%		60-140	03-MAR-21
Silver (Ag)-Dissolved			106.5		%		80-120	03-MAR-21
Sodium (Na)-Dissolved			110.6		%		80-120	03-MAR-21
Strontium (Sr)-Dissolved			107.7		%		80-120	03-MAR-21
Sulfur (S)-Dissolved			105.8		%		80-120	03-MAR-21
Thallium (Tl)-Dissolved			106.3		%		80-120	03-MAR-21



## Quality Control Report

Workorder: L2561760

Report Date: 05-MAR-21

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5396006</b>							
<b>WG3495706-2</b>	<b>LCS</b>							
Tin (Sn)-Dissolved			100.7		%		80-120	03-MAR-21
Titanium (Ti)-Dissolved			101.1		%		80-120	03-MAR-21
Uranium (U)-Dissolved			111.0		%		80-120	03-MAR-21
Vanadium (V)-Dissolved			107.5		%		80-120	03-MAR-21
Zinc (Zn)-Dissolved			106.7		%		80-120	03-MAR-21
<b>WG3495706-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-MAR-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-MAR-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-MAR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-MAR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-MAR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-MAR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-MAR-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-MAR-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	03-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-MAR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-MAR-21



## Quality Control Report

Workorder: L2561760

Report Date: 05-MAR-21

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5396006</b>							
<b>WG3495706-1</b>	<b>MB</b>	<b>NP</b>						
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-MAR-21
<b>WG3495706-4</b>	<b>MS</b>	<b>L2561760-2</b>						
Aluminum (Al)-Dissolved			103.8		%		70-130	03-MAR-21
Antimony (Sb)-Dissolved			100.7		%		70-130	03-MAR-21
Arsenic (As)-Dissolved			110.2		%		70-130	03-MAR-21
Barium (Ba)-Dissolved			N/A	MS-B	%		-	03-MAR-21
Bismuth (Bi)-Dissolved			93.5		%		70-130	03-MAR-21
Boron (B)-Dissolved			100.6		%		70-130	03-MAR-21
Cadmium (Cd)-Dissolved			103.4		%		70-130	03-MAR-21
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	03-MAR-21
Chromium (Cr)-Dissolved			104.3		%		70-130	03-MAR-21
Cobalt (Co)-Dissolved			98.8		%		70-130	03-MAR-21
Copper (Cu)-Dissolved			97.7		%		70-130	03-MAR-21
Iron (Fe)-Dissolved			102.3		%		70-130	03-MAR-21
Lead (Pb)-Dissolved			99.2		%		70-130	03-MAR-21
Lithium (Li)-Dissolved			102.6		%		70-130	03-MAR-21
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	03-MAR-21
Manganese (Mn)-Dissolved			102.8		%		70-130	03-MAR-21
Molybdenum (Mo)-Dissolved			100.4		%		70-130	03-MAR-21
Nickel (Ni)-Dissolved			98.1		%		70-130	03-MAR-21
Potassium (K)-Dissolved			104.0		%		70-130	03-MAR-21
Selenium (Se)-Dissolved			115.3		%		70-130	03-MAR-21
Silicon (Si)-Dissolved			91.0		%		70-130	03-MAR-21
Silver (Ag)-Dissolved			96.3		%		70-130	03-MAR-21
Sodium (Na)-Dissolved			N/A	MS-B	%		-	03-MAR-21
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	03-MAR-21
Sulfur (S)-Dissolved			N/A	MS-B	%		-	03-MAR-21
Thallium (Tl)-Dissolved			99.0		%		70-130	03-MAR-21
Tin (Sn)-Dissolved			96.1		%		70-130	03-MAR-21
Titanium (Ti)-Dissolved			99.8		%		70-130	03-MAR-21
Uranium (U)-Dissolved			106.3		%		70-130	03-MAR-21
Vanadium (V)-Dissolved			106.8		%		70-130	03-MAR-21



## Quality Control Report

Workorder: L2561760

Report Date: 05-MAR-21

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
Water								
Batch	R5396006							
WG3495706-4	MS	L2561760-2						
Zinc (Zn)-Dissolved			101.6		%		70-130	03-MAR-21
<b>NH3-L-F-CL</b>								
Water								
Batch	R5396041							
WG3496385-2	LCS							
Ammonia as N			110.6		%		85-115	03-MAR-21
WG3496385-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	03-MAR-21
<b>NO2-L-IC-N-CL</b>								
Water								
Batch	R5395409							
WG3495593-6	LCS							
Nitrite (as N)			100.5		%		90-110	27-FEB-21
WG3495593-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	27-FEB-21
<b>NO3-L-IC-N-CL</b>								
Water								
Batch	R5395409							
WG3495593-6	LCS							
Nitrate (as N)			102.6		%		90-110	27-FEB-21
WG3495593-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	27-FEB-21
<b>OH-CL</b>								
Water								
Batch	R5397117							
WG3497653-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	04-MAR-21
WG3497653-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	04-MAR-21
<b>ORP-CL</b>								
Water								
Batch	R5397163							
WG3497725-3	CRM	CL-ORP						
ORP			226		mV		210-230	05-MAR-21
WG3497725-5	CRM	CL-ORP						
ORP			220		mV		210-230	05-MAR-21
WG3497725-6	DUP	L2561760-3						
ORP		448	449	J	mV	1.3	15	05-MAR-21
<b>P-T-L-COL-CL</b>								
Water								



## Quality Control Report

Workorder: L2561760

Report Date: 05-MAR-21

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b> <b>Water</b>								
Batch	R5396601							
<b>WG3496916-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			89.5		%		80-120	04-MAR-21
<b>WG3496916-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-MAR-21
<b>P-TD-L-COL-CL</b> <b>Water</b>								
Batch	R5396601							
<b>WG3496916-6</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			89.5		%		80-120	04-MAR-21
<b>WG3496916-5</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	04-MAR-21
<b>PH-CL</b> <b>Water</b>								
Batch	R5397117							
<b>WG3497653-5</b>	<b>LCS</b>							
pH			6.98		pH		6.9-7.1	04-MAR-21
<b>WG3497653-8</b>	<b>LCS</b>							
pH			6.96		pH		6.9-7.1	04-MAR-21
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R5392942							
<b>WG3494113-7</b>	<b>DUP</b>	<b>L2561760-1</b>						
Orthophosphate-Dissolved (as P)		0.0017	0.0018		mg/L	5.7	20	26-FEB-21
<b>WG3494113-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			93.8		%		80-120	26-FEB-21
<b>WG3494113-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-FEB-21
<b>WG3494113-8</b>	<b>MS</b>	<b>L2561760-1</b>						
Orthophosphate-Dissolved (as P)			97.6		%		70-130	26-FEB-21
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R5395409							
<b>WG3495593-6</b>	<b>LCS</b>							
Sulfate (SO4)			103.7		%		90-110	27-FEB-21
<b>WG3495593-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	27-FEB-21
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R5397046							
<b>WG3496934-8</b>	<b>LCS</b>							
Total Dissolved Solids			98.3		%		85-115	04-MAR-21
<b>WG3496934-7</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2561760

Report Date: 05-MAR-21

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R5397046							
WG3496934-7	MB							
Total Dissolved Solids			<10		mg/L		10	04-MAR-21
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R5396802							
WG3497252-2	LCS							
Total Kjeldahl Nitrogen			97.0		%		75-125	04-MAR-21
WG3497252-6	LCS							
Total Kjeldahl Nitrogen			97.0		%		75-125	04-MAR-21
WG3497252-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-MAR-21
WG3497252-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-MAR-21
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch	R5396992							
WG3496933-4	LCS							
Total Suspended Solids			94.4		%		85-115	04-MAR-21
WG3496933-6	LCS							
Total Suspended Solids			96.2		%		85-115	04-MAR-21
WG3496933-3	MB							
Total Suspended Solids			<1.0		mg/L		1	04-MAR-21
WG3496933-5	MB							
Total Suspended Solids			<1.0		mg/L		1	04-MAR-21
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch	R5393327							
WG3494553-5	LCS							
Turbidity			101.5		%		85-115	28-FEB-21
WG3494553-4	MB							
Turbidity			<0.10		NTU		0.1	28-FEB-21

# Quality Control Report

Workorder: L2561760

Report Date: 05-MAR-21

Page 10 of 11

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2561760

Report Date: 05-MAR-21

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	25-FEB-21 13:05	05-MAR-21 09:15	0.25	188	hours	EHTR-FM
	2	25-FEB-21 11:50	05-MAR-21 11:00	0.25	191	hours	EHTR-FM
	3	25-FEB-21 14:50	05-MAR-21 11:00	0.25	188	hours	EHTR-FM
pH	1	25-FEB-21 13:05	04-MAR-21 13:00	0.25	168	hours	EHTR-FM
	2	25-FEB-21 11:50	04-MAR-21 13:00	0.25	169	hours	EHTR-FM
	3	25-FEB-21 14:50	04-MAR-21 13:00	0.25	166	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2561760 were received on 26-FEB-21 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Teck

<b>COC ID:</b>	<b>202100225Q1GW</b>	<b>TURNAROUND TIME:</b>		<b>RUSH:</b>	
<b>PROJECT/CLIENT INFO</b>			<b>LABORATORY</b>		<b>OTHER INFO</b>
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary		Report Format / Distribution
Job Description	Q1 Ground Water Sampling	Lab Contact	Lyudmyla Shvets		Email 1: kimberley.hackett@teck.com
Project Manager	Annie Larrivee	Email	lyudmyla.shvets@alsglobal.com		Email 2: Annie.Larrivee@teck.com
Email	Annie.Larrivee@teck.com	Address	2559 29 Street NE		Email 3: kennedy.allan@teck.com
Address	RR#1 HWY# 3				Email 4: Teck.Lab.Results@sharepoint.teck.com
					Email 5: teckcoal@equisonline.com
City	Sparwood	Province	BC	City	Calgary
Postal Code		Country	Canada	Province	AB
Phone Number	1-250-865-5289	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403-407-1800	PO number	VPO00741597

**SAMPLE DETAILS** Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED														
								TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI			
EV_BRGW_WG_2021_Q1_NP	EV_BRGW	WG	N	02/25/21	13:05	G	5	1	1	1	1											
EV_WH50_WG_2021_Q1_NP	EV_WH50GW	WG	N	02/25/21	11:50	G	5	1	1	1	1											
EV_MW_AQ2_WG_2021_Q1_NP	EV_MW_AQ2	WG	N	02/25/21	14:50	G	5	1	1	1	1											
<b>Total</b>							<b>15</b>															

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
	T. Phillips	February 25, 2021	<i>[Signature]</i>	26/02/21 8:50

<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default)	<input checked="" type="checkbox"/>			
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<b>Sampler's Name</b>	<b>Mobile #</b>	<b>1-250-425-1101</b>	
	<b>Sampler's Signature</b>	<b>Date/Time</b>	<b>February 25, 2021</b>	

30



Teck Coal Ltd. (Elkview)  
ATTN: Annie Larrivee  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 27-FEB-21  
Report Date: 08-MAR-21 14:09 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2561868  
Project P.O. #: VPO00741597  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 202100225Q1GW  
Legal Site Desc:

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Lyudmyla Shvets, B.Sc.  
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2561868-1 WG 26-FEB-21 10:17 EV_MW_ER1GWS _WG_2021_Q1_N	L2561868-2 WG 26-FEB-21 11:10 EV_MW_ER1GWD _WG_2021_Q1_N	L2561868-3 WG 26-FEB-21 12:40 EV_MW_SPR1A_ WG_2021_Q1_NP	L2561868-4 WG 26-FEB-21 13:05 EV_MW_SPR1B_ WG_2021_Q1_NP	L2561868-5 WG 26-FEB-21 13:50 EV_MW_SPR1C_ WG_2021_Q1_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	520	468	576	419	692
	Hardness (as CaCO3) (mg/L)	312	285	362	153	411
	pH (pH)	8.03	8.16	7.98	8.17	7.99
	ORP (mV)	448	454	405	419	468
	Total Suspended Solids (mg/L)	<1.0	13.0	1.7	10.7	<1.0
	Total Dissolved Solids (mg/L)	323 <sup>DLHC</sup>	287 <sup>DLHC</sup>	338 <sup>DLHC</sup>	247 <sup>DLHC</sup>	437 <sup>DLHC</sup>
	Turbidity (NTU)	0.11	5.44	3.13	6.87	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	3.9	<1.0	7.8	<1.0	6.1
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	193	190	290	189	236
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	193	190	290	189	236
	Ammonia as N (mg/L)	<0.0050	0.0233	0.0544	0.161	<0.0050
	Bicarbonate (HCO3) (mg/L)	235	231	354	231	288
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	0.265
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	8.65	4.95	14.0	0.74	25.8
	Fluoride (F) (mg/L)	0.134	0.149	0.195	0.961	0.100
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	108	107	110	106	106
	Nitrate (as N) (mg/L)	2.11	1.75	<0.0050	<0.0050	1.19
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	0.0013	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.433	1.08	0.057	<0.050	0.364
	Total Nitrogen (mg/L)	2.54	2.83	0.057	<0.050	1.55
	Orthophosphate-Dissolved (as P) (mg/L)	0.0023	0.0028	<0.0010	<0.0010	0.0024
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	0.0024	<0.0020	<0.0020	<0.0020
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0076	0.0046	0.0091	<0.0020
	Sulfate (SO4) (mg/L)	86.0	68.7	30.3	48.7	126
	Anion Sum (meq/L)	6.04	5.49	6.83	4.87	8.16
	Cation Sum (meq/L)	6.55	5.87	7.49	5.16	8.64
Cation - Anion Balance (%)	4.1	3.3	4.6	2.9	2.9	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	1.12	1.54	1.12
	Total Organic Carbon (mg/L)	<0.50	<0.50	1.03	1.66	1.06
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0066	<0.0030	<0.0030	<0.0030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2561868-1 WG 26-FEB-21 10:17 EV_MW_ER1GWS _WG_2021_Q1_N	L2561868-2 WG 26-FEB-21 11:10 EV_MW_ER1GWD _WG_2021_Q1_N	L2561868-3 WG 26-FEB-21 12:40 EV_MW_SPR1A_ WG_2021_Q1_NP	L2561868-4 WG 26-FEB-21 13:05 EV_MW_SPR1B_ WG_2021_Q1_NP	L2561868-5 WG 26-FEB-21 13:50 EV_MW_SPR1C_ WG_2021_Q1_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00011	<0.00010	0.00095	0.00078	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.117	0.0840	0.392	0.0383	0.163
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.010	<0.010	0.023	0.139	0.016
	Cadmium (Cd)-Dissolved (ug/L)	0.0143	<0.0050	<0.0050	<0.015	0.0538
	Calcium (Ca)-Dissolved (mg/L)	82.1	73.7	93.0	36.4	110
	Chromium (Cr)-Dissolved (mg/L)	0.00035	0.00036	<0.00010	<0.00010	0.00012
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	0.63	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	0.00035	0.00037	<0.00020	<0.00020	0.00034
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	0.319	0.181	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0074	0.0069	0.0152	0.0101	0.0152
	Magnesium (Mg)-Dissolved (mg/L)	26.1	24.5	31.6	15.2	33.0
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.00156	0.319	0.100	0.00029
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000987	0.00127	0.00120	0.0277	0.000668
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00187	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	0.789	0.652	1.57	1.20	1.29
	Selenium (Se)-Dissolved (ug/L)	13.0	10.0	<0.050	<0.050	14.8
	Silicon (Si)-Dissolved (mg/L)	2.31	2.55	4.33	4.16	2.70
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	6.73	3.59	4.14	46.8	8.86
	Strontium (Sr)-Dissolved (mg/L)	0.224	0.226	0.327	0.708	0.233
	Sulfur (S)-Dissolved (mg/L)	30.8	24.5	10.6	17.2	45.6
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000012	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00120	0.00147	0.000961	0.00147	0.00112
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2561868-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2561868-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2561868-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2561868-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2561868-1, -2, -3, -4, -5
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2561868-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA**      Water      Hardness      APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA**      Water      Diss. Mercury in Water by CVAAS or CVAFS      APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA**      Water      Dissolved Metals in Water by CRC ICPMS      APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL**      Water      Total Nitrogen (Calculation)      APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL**      Water      Ammonia, Total (as N)      J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL**      Water      Nitrite in Water by IC (Low Level)      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**      Water      Nitrate in Water by IC (Low Level)      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL**      Water      Hydroxide in Water      APHA 2320 B-Potentiometric Titration

**ORP-CL**      Water      Oxidation reduction potential by elect.      ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**      Water      Phosphorus (P)-Total      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL**      Water      Phosphorus (P)-Total Dissolved      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL**      Water      pH      APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**      Water      Orthophosphate-Dissolved (as P)      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**      Water      Sulfate in Water by IC      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**      Water      Total Dissolved Solids      APHA 2540 C

## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

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Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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### Chain of Custody Numbers:

202100225Q1GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2561868

Report Date: 08-MAR-21

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R5398081							
<b>WG3498722-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.8		%		85-115	05-MAR-21
<b>WG3498722-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.0		mg/L		2	05-MAR-21
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R5398071							
<b>WG3498706-3</b>	<b>DUP</b>	<b>L2561868-1</b>						
Alkalinity, Total (as CaCO3)		193	195		mg/L	1.1	20	05-MAR-21
<b>WG3498706-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.5		%		85-115	05-MAR-21
<b>WG3498706-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	05-MAR-21
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R5396006							
<b>WG3495706-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			112.9		%		80-120	03-MAR-21
<b>WG3495706-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-MAR-21
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R5398071							
<b>WG3498706-3</b>	<b>DUP</b>	<b>L2561868-1</b>						
Bicarbonate (HCO3)		235	238		mg/L	1.1	20	05-MAR-21
<b>WG3498706-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	05-MAR-21
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R5395409							
<b>WG3495593-6</b>	<b>LCS</b>							
Bromide (Br)			106.4		%		85-115	27-FEB-21
<b>WG3495593-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-FEB-21
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R5397680							
<b>WG3498263-3</b>	<b>DUP</b>	<b>L2561868-5</b>						
Dissolved Organic Carbon		1.12	1.14		mg/L	2.0	20	06-MAR-21
<b>WG3498263-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			96.0		%		80-120	06-MAR-21
<b>WG3498263-1</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2561868

Report Date: 08-MAR-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>									
Batch	R5397680								
<b>WG3498263-1</b>	<b>MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	06-MAR-21	
<b>WG3498263-4</b>	<b>MS</b>	<b>L2561868-5</b>							
Dissolved Organic Carbon			91.9		%		70-130	06-MAR-21	
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>									
Batch	R5397680								
<b>WG3498263-3</b>	<b>DUP</b>	<b>L2561868-5</b>							
Total Organic Carbon			1.06	0.97	mg/L	8.6	20	06-MAR-21	
<b>WG3498263-2</b>	<b>LCS</b>								
Total Organic Carbon				101.4	%		80-120	06-MAR-21	
<b>WG3498263-1</b>	<b>MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	06-MAR-21	
<b>WG3498263-4</b>	<b>MS</b>	<b>L2561868-5</b>							
Total Organic Carbon			97.3		%		70-130	06-MAR-21	
<b>CL-L-IC-N-CL</b> <b>Water</b>									
Batch	R5395409								
<b>WG3495593-6</b>	<b>LCS</b>								
Chloride (Cl)			102.4		%		85-115	27-FEB-21	
<b>WG3495593-5</b>	<b>MB</b>								
Chloride (Cl)			<0.10		mg/L		0.1	27-FEB-21	
<b>CO3-CL</b> <b>Water</b>									
Batch	R5398071								
<b>WG3498706-3</b>	<b>DUP</b>	<b>L2561868-1</b>							
Carbonate (CO3)			<5.0	<5.0	mg/L	RPD-NA	N/A	20	05-MAR-21
<b>WG3498706-1</b>	<b>MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	05-MAR-21	
<b>EC-L-PCT-CL</b> <b>Water</b>									
Batch	R5398071								
<b>WG3498706-3</b>	<b>DUP</b>	<b>L2561868-1</b>							
Conductivity (@ 25C)			520	520	uS/cm	0.0	10	05-MAR-21	
<b>WG3498706-2</b>	<b>LCS</b>								
Conductivity (@ 25C)			96.9		%		90-110	05-MAR-21	
<b>WG3498706-1</b>	<b>MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	05-MAR-21	
<b>F-IC-N-CL</b> <b>Water</b>									



## Quality Control Report

Workorder: L2561868

Report Date: 08-MAR-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5395409</b>							
<b>WG3495593-6</b>	<b>LCS</b>							
Fluoride (F)			108.0		%		90-110	27-FEB-21
<b>WG3495593-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	27-FEB-21
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5395776</b>							
<b>WG3495961-15</b>	<b>DUP</b>	<b>L2561868-5</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	03-MAR-21
<b>WG3495961-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.4		%		80-120	03-MAR-21
<b>WG3495961-14</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.5		%		80-120	03-MAR-21
<b>WG3495961-13</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	03-MAR-21
<b>WG3495961-9</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	03-MAR-21
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5396006</b>							
<b>WG3495706-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			109.3		%		80-120	03-MAR-21
Antimony (Sb)-Dissolved			104.9		%		80-120	03-MAR-21
Arsenic (As)-Dissolved			109.6		%		80-120	03-MAR-21
Barium (Ba)-Dissolved			106.6		%		80-120	03-MAR-21
Bismuth (Bi)-Dissolved			104.3		%		80-120	03-MAR-21
Boron (B)-Dissolved			106.9		%		80-120	03-MAR-21
Cadmium (Cd)-Dissolved			107.5		%		80-120	03-MAR-21
Calcium (Ca)-Dissolved			109.2		%		80-120	03-MAR-21
Chromium (Cr)-Dissolved			105.0		%		80-120	03-MAR-21
Cobalt (Co)-Dissolved			104.7		%		80-120	03-MAR-21
Copper (Cu)-Dissolved			103.9		%		80-120	03-MAR-21
Iron (Fe)-Dissolved			99.99		%		80-120	03-MAR-21
Lead (Pb)-Dissolved			109.7		%		80-120	03-MAR-21
Lithium (Li)-Dissolved			106.0		%		80-120	03-MAR-21
Magnesium (Mg)-Dissolved			108.0		%		80-120	03-MAR-21
Manganese (Mn)-Dissolved			108.3		%		80-120	03-MAR-21
Molybdenum (Mo)-Dissolved			104.1		%		80-120	03-MAR-21



## Quality Control Report

Workorder: L2561868

Report Date: 08-MAR-21

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5396006</b>							
<b>WG3495706-2</b>	<b>LCS</b>							
Nickel (Ni)-Dissolved			103.2		%		80-120	03-MAR-21
Potassium (K)-Dissolved			107.0		%		80-120	03-MAR-21
Selenium (Se)-Dissolved			109.7		%		80-120	03-MAR-21
Silicon (Si)-Dissolved			97.7		%		60-140	03-MAR-21
Silver (Ag)-Dissolved			106.5		%		80-120	03-MAR-21
Sodium (Na)-Dissolved			110.6		%		80-120	03-MAR-21
Strontium (Sr)-Dissolved			107.7		%		80-120	03-MAR-21
Sulfur (S)-Dissolved			105.8		%		80-120	03-MAR-21
Thallium (Tl)-Dissolved			106.3		%		80-120	03-MAR-21
Tin (Sn)-Dissolved			100.7		%		80-120	03-MAR-21
Titanium (Ti)-Dissolved			101.1		%		80-120	03-MAR-21
Uranium (U)-Dissolved			111.0		%		80-120	03-MAR-21
Vanadium (V)-Dissolved			107.5		%		80-120	03-MAR-21
Zinc (Zn)-Dissolved			106.7		%		80-120	03-MAR-21
<b>WG3495706-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-MAR-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-MAR-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-MAR-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-MAR-21
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-MAR-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-MAR-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-MAR-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-MAR-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-MAR-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-MAR-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-MAR-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-MAR-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-MAR-21



## Quality Control Report

Workorder: L2561868

Report Date: 08-MAR-21

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5396006</b>							
<b>WG3495706-1</b>	<b>MB</b>	<b>NP</b>						
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-MAR-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-MAR-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-MAR-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-MAR-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-MAR-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	03-MAR-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-MAR-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-MAR-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-MAR-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-MAR-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-MAR-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5396952</b>							
<b>WG3497174-6</b>	<b>LCS</b>							
Ammonia as N			87.5		%		85-115	04-MAR-21
<b>WG3497174-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	04-MAR-21
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5395409</b>							
<b>WG3495593-6</b>	<b>LCS</b>							
Nitrite (as N)			100.5		%		90-110	27-FEB-21
<b>WG3495593-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	27-FEB-21
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5395409</b>							
<b>WG3495593-6</b>	<b>LCS</b>							
Nitrate (as N)			102.6		%		90-110	27-FEB-21
<b>WG3495593-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	27-FEB-21
<b>OH-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5398071</b>							
<b>WG3498706-3</b>	<b>DUP</b>	<b>L2561868-1</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	05-MAR-21
<b>WG3498706-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2561868

Report Date: 08-MAR-21

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>OH-CL</b>								
<b>Water</b>								
Batch	R5398071							
WG3498706-1	MB							
Hydroxide (OH)			<5.0		mg/L		5	05-MAR-21
<b>ORP-CL</b>								
<b>Water</b>								
Batch	R5397784							
WG3498294-1	CRM	CL-ORP						
ORP			216		mV		210-230	07-MAR-21
WG3498294-2	DUP	L2561868-1						
ORP		448	451	J	mV	2.9	15	07-MAR-21
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch	R5396601							
WG3496916-10	LCS							
Phosphorus (P)-Total			89.3		%		80-120	04-MAR-21
WG3496916-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-MAR-21
<b>P-TD-L-COL-CL</b>								
<b>Water</b>								
Batch	R5396601							
WG3496916-10	LCS							
Phosphorus (P)-Total Dissolved			89.4		%		80-120	04-MAR-21
WG3496916-9	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	04-MAR-21
<b>PH-CL</b>								
<b>Water</b>								
Batch	R5398071							
WG3498706-3	DUP	L2561868-1						
pH		8.03	8.05	J	pH	0.02	0.2	05-MAR-21
WG3498706-2	LCS							
pH			6.98		pH		6.9-7.1	05-MAR-21
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch	R5392942							
WG3494113-14	LCS							
Orthophosphate-Dissolved (as P)			94.3		%		80-120	26-FEB-21
WG3494113-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-FEB-21
<b>SO4-IC-N-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2561868

Report Date: 08-MAR-21

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>		<b>Water</b>						
Batch	R5395409							
<b>WG3495593-6</b>	<b>LCS</b>							
Sulfate (SO4)			103.7		%		90-110	27-FEB-21
<b>WG3495593-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	27-FEB-21
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R5397046							
<b>WG3496934-11</b>	<b>LCS</b>							
Total Dissolved Solids			93.4		%		85-115	04-MAR-21
<b>WG3496934-8</b>	<b>LCS</b>							
Total Dissolved Solids			98.3		%		85-115	04-MAR-21
<b>WG3496934-10</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	04-MAR-21
<b>WG3496934-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	04-MAR-21
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R5397575							
<b>WG3498114-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.4		%		75-125	06-MAR-21
<b>WG3498114-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			122.0		%		75-125	06-MAR-21
<b>WG3498114-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-MAR-21
<b>WG3498114-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-MAR-21
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R5396992							
<b>WG3496933-6</b>	<b>LCS</b>							
Total Suspended Solids			96.2		%		85-115	04-MAR-21
<b>WG3496933-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	04-MAR-21
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R5393327							
<b>WG3494553-8</b>	<b>LCS</b>							
Turbidity			103.0		%		85-115	28-FEB-21
<b>WG3494553-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	28-FEB-21

# Quality Control Report

Workorder: L2561868

Report Date: 08-MAR-21

Page 8 of 9

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2561868

Report Date: 08-MAR-21

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	26-FEB-21 10:17	07-MAR-21 08:30	0.25	214	hours	EHTR-FM
	2	26-FEB-21 11:10	07-MAR-21 08:30	0.25	213	hours	EHTR-FM
	3	26-FEB-21 12:40	07-MAR-21 08:30	0.25	212	hours	EHTR-FM
	4	26-FEB-21 13:05	07-MAR-21 08:30	0.25	211	hours	EHTR-FM
	5	26-FEB-21 13:50	07-MAR-21 08:30	0.25	211	hours	EHTR-FM
pH	1	26-FEB-21 10:17	05-MAR-21 14:00	0.25	172	hours	EHTR-FM
	2	26-FEB-21 11:10	05-MAR-21 14:00	0.25	171	hours	EHTR-FM
	3	26-FEB-21 12:40	05-MAR-21 14:00	0.25	169	hours	EHTR-FM
	4	26-FEB-21 13:05	05-MAR-21 14:00	0.25	169	hours	EHTR-FM
	5	26-FEB-21 13:50	05-MAR-21 14:00	0.25	168	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2561868 were received on 27-FEB-21 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>COC ID:</b> 202100225Q1GW		<b>TURNAROUND TIME:</b>				<b>RUSH:</b>					
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>				<b>OTHER INFO</b>			
Facility Name / Job# Elkview Operations		Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD			
Job Description Q1 Ground Water Sampling		Lab Contact Lyudmyla Shvets		Email 1: kimberley.hackett@teck.com		X	X	X			
Project Manager Annie Larrivee		Email lyudmyla.shvets@alsglobal.com		Email 2: Annie.Larrivee@teck.com		X	X	X			
Email Annie.Larrivee@teck.com		Address 2559 29 Street NE		Email 3: kennedy.allan@teck.com		X	X	X			
Address RR#1 HWY# 3				Email 4: Teck.Lab.Results@sharepoint.teck.com		X	X	X			
				Email 5: teckcoal@equisonline.com					X		
City Sparwood		Province BC	City Calgary	Province AB							
Postal Code		Country Canada	Postal Code T1Y 7B5	Country Canada							
Phone Number 1-250-865-5289		Phone Number 403-407-1800		PO number		VPO00741597					

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CVI	
EV_MW_ERIGWS_WG_2021_Q1_N	EV_MW_ERIGWS	WG	N	02/26/21	10:17	G	5	1	1	1	1	1	1	1				1		
EV_MW_ERIGWD_WG_2021_Q1_N	EV_MW_ERIGWS	WG	N	02/26/21	11:10	G	5	1	1	1	1	1	1	1				1		
EV_MW_SPR1A_WG_2021_Q1_NP	EV_SP1A	WG	N	02/26/21	12:40	G	5	1	1	1	1	1	1	1				1		
EV_MW_SPR1B_WG_2021_Q1_NP	EV_SP1B	WG	N	02/26/21	13:05	G	5	1	1	1	1	1	1	1				1		
EV_MW_SPR1C_WG_2021_Q1_NP	EV_SP1C	WG	N	02/26/21	13:50	G	5	1	1	1	1	1	1	1				1		
							<b>Total</b>	25												

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>		<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>	
		T. Phillips		February 26, 2021		DK		2/27 0845	
<b>SERVICE REQUEST (rush - subject to availability)</b>									
Regular (default) X		<b>Sampler's Name</b>		T. Phillips		<b>Mobile #</b>		1-250-425-1101	
Priority (2-3 business days) - 50% surcharge		<b>Sampler's Signature</b>		<i>T. Phillips</i>		<b>Date/Time</b>		February 26, 2021	
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									

20



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101893**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : Regional Effects Program  
**PO** : VPO00762695  
**C-O-C number** : COC\_02-20\_Q2-2021  
**Sampler** : mb  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Jun-2021 08:45  
**Date Analysis Commenced** : 09-Jun-2021  
**Issue Date** : 07-Dec-2021 18:28

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-02-20_	---	---	---	---
(Matrix: Water)					WP_Q2-2021_N					
					P					
					Client sampling date / time	08-Jun-2021	---	---	---	---
						11:06				
Analyte	CAS Number	Method	LOR	Unit	CG2101893-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	2.1	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	176	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	176	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	527	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	295	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	449	---	---	---	---	---
pH	---	E108	0.10	pH units	8.20	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	344	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	---	---	---	---	---
turbidity	---	E121	0.10	NTU	0.63	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	215	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0482	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.74	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.143	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	<0.050	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	4.55	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	105	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	0.66	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	0.72	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-02-20_ WP_Q2-2021_N P	----	----	----	----
Client sampling date / time					08-Jun-2021 11:06	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101893-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.14	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	6.04	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	98.4	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.821	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.107	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0090	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	72.8	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00018	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.0162	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.069	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000085	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0079	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	23.3	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00176	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00102	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00584	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	0.642	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	17.8	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.31	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	2.91	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.260	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-02-20_ WP_Q2-2021_N P	----	----	----	----
Client sampling date / time					08-Jun-2021 11:06	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101893-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	38.0	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00111	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0106	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.110	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0070	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	77.0	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00017	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00242	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000059	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0082	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	24.9	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00126	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00101	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.693	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	18.7	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.27	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-02-20_	----	----	----	----
					WP_Q2-2021_N					
					P					
					Client sampling date / time	08-Jun-2021	----	----	----	----
						11:06				
Analyte	CAS Number	Method	LOR	Unit	CG2101893-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.89	----	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.288	----	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	32.8	----	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00117	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0060	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101893</b>	Page	: 1 of 10
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Spanwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: Regional Effects Program	Date Samples Received	: 09-Jun-2021 08:45
PO	: VPO00762695	Issue Date	: 07-Dec-2021 18:28
C-O-C number	: COC_02-20_Q2-2021		
Sampler	: mb		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-20_WP_Q2-2021_NP	E298	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q2-2021_NP	E235.Br-L	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q2-2021_NP	E235.Cl-L	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q2-2021_NP	E378-U	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q2-2021_NP	E235.F	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q2-2021_NP	E235.NO3-L	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q2-2021_NP	E235.NO2-L	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Container / Client Sample ID(s)				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q2-2021_NP	E235.SO4	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-20_WP_Q2-2021_NP	E318	08-Jun-2021	14-Jun-2021	----	----		14-Jun-2021	28 days	6 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-20_WP_Q2-2021_NP	E372-U	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> RG_DW-02-20_WP_Q2-2021_NP	E421.Cr-L	08-Jun-2021	10-Jun-2021	----	----		11-Jun-2021	180 days	3 days	✓
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> RG_DW-02-20_WP_Q2-2021_NP	E421	08-Jun-2021	10-Jun-2021	----	----		11-Jun-2021	180 days	3 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-02-20_WP_Q2-2021_NP	E358-L	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-20_WP_Q2-2021_NP	E355-L	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q2-2021_NP	E283	08-Jun-2021	----	----	----		15-Jun-2021	14 days	7 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q2-2021_NP	E290	08-Jun-2021	----	----	----		15-Jun-2021	14 days	7 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
	Rec	Actual		Rec	Actual					
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_DW-02-20_WP_Q2-2021_NP	E100	08-Jun-2021	----	----	----		15-Jun-2021	28 days	7 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_DW-02-20_WP_Q2-2021_NP	E125	08-Jun-2021	----	----	----		15-Jun-2021	0.25 hrs	173 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE RG_DW-02-20_WP_Q2-2021_NP	E108	08-Jun-2021	----	----	----		15-Jun-2021	0.25 hrs	162 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE RG_DW-02-20_WP_Q2-2021_NP	E162	08-Jun-2021	----	----	----		14-Jun-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE RG_DW-02-20_WP_Q2-2021_NP	E160-L	08-Jun-2021	----	----	----		14-Jun-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE RG_DW-02-20_WP_Q2-2021_NP	E121	08-Jun-2021	----	----	----		10-Jun-2021	3 days	2 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
HDPE total (nitric acid) RG_DW-02-20_WP_Q2-2021_NP	E420.Cr-L	08-Jun-2021	----	----	----		11-Jun-2021	180 days	3 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
HDPE total (nitric acid) RG_DW-02-20_WP_Q2-2021_NP	E420	08-Jun-2021	----	----	----		11-Jun-2021	180 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	221066	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	221036	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	221169	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	217126	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	217127	1	20	5.0	5.0	✓
Conductivity in Water	E100	221034	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218299	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	218298	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	221223	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	217079	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	217124	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	217128	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	217129	1	20	5.0	5.0	✓
ORP by Electrode	E125	220502	1	20	5.0	5.0	✓
pH by Meter	E108	221035	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	217125	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	220389	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	218419	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	220044	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	218418	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	221227	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	221093	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	217859	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	221066	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	221036	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	221169	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	217126	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	217127	1	20	5.0	5.0	✓
Conductivity in Water	E100	221034	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218299	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	218298	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	221223	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	217079	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	217124	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	217128	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	217129	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	220502	1	20	5.0	5.0	✓
pH by Meter	E108	221035	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	217125	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	220389	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	218419	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	220044	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	218418	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	221227	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	221093	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	220379	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	217859	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	221066	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	221036	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	221169	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	217126	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	217127	1	20	5.0	5.0	✓
Conductivity in Water	E100	221034	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218299	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	218298	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	221223	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	217079	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	217124	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	217128	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	217129	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	217125	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	220389	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	218419	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	220044	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	218418	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	221227	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	221093	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	220379	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	217859	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	221169	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	217126	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	217127	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218299	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	218298	1	19	5.2	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	221223	1	16	6.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	217079	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	217124	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	217128	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	217129	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	217125	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	218419	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	220044	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	218418	2	20	10.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	221227	1	18	5.5	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	221093	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2101893**

Page : 1 of 17

**Amendment** : **1**

Client : Teck Coal Limited  
 Contact : Cam Jaeger  
 Address : 421 Pine Avenue  
           Sparwood BC Canada V0B 2G0  
 Telephone : ----  
 Project : Regional Effects Program  
 PO : VPO00762695  
 C-O-C number : COC\_02-20\_Q2-2021  
 Sampler : mb  
 Site : ----  
 Quote number : Teck Coal Master Quote  
 No. of samples received : 1  
 No. of samples analysed : 1

Laboratory : Calgary - Environmental  
 Account Manager : Lyudmyla Shvets  
 Address : 2559 29th Street NE  
           Calgary, Alberta Canada T1Y 7B5  
 Telephone : +1 403 407 1800  
 Date Samples Received : 09-Jun-2021 08:45  
 Date Analysis Commenced : 09-Jun-2021  
 Issue Date : 07-Dec-2021 18:28

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 217859)</b>											
CG2101881-013	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 220389)</b>											
CG2101881-011	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1560	1660	5.77%	20%	----
<b>Physical Tests (QC Lot: 220502)</b>											
CG2101881-011	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	449	445	0.783%	15%	----
<b>Physical Tests (QC Lot: 221034)</b>											
CG2101873-002	Anonymous	conductivity	----	E100	2.0	µS/cm	645	644	0.155%	10%	----
<b>Physical Tests (QC Lot: 221035)</b>											
CG2101873-002	Anonymous	pH	----	E108	0.10	pH units	8.30	8.33	0.361%	4%	----
<b>Physical Tests (QC Lot: 221036)</b>											
CG2101873-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	176	180	2.47%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	1.8	<1.0	0.8	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	178	166	6.62%	20%	----
<b>Physical Tests (QC Lot: 221066)</b>											
CG2101873-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 217079)</b>											
CG2101883-009	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0012	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 217124)</b>											
CG2101893-001	RG_DW-02-20_WP_Q2-20 21_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.143	0.145	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 217125)</b>											
CG2101893-001	RG_DW-02-20_WP_Q2-20 21_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	105	105	0.00156%	20%	----
<b>Anions and Nutrients (QC Lot: 217126)</b>											
CG2101893-001	RG_DW-02-20_WP_Q2-20 21_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 217127)</b>											
CG2101893-001	RG_DW-02-20_WP_Q2-20 21_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.74	3.73	0.159%	20%	----
<b>Anions and Nutrients (QC Lot: 217128)</b>											
CG2101893-001	RG_DW-02-20_WP_Q2-20 21_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	4.55	4.55	0.0550%	20%	----
<b>Anions and Nutrients (QC Lot: 217129)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 217129) - continued</b>											
CG2101893-001	RG_DW-02-20_WP_Q2-20 21_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 220044)</b>											
CG2101879-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.453	0.486	0.032	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 221093)</b>											
CG2101887-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 221169)</b>											
CG2101888-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 221223)</b>											
CG2101887-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.22	1.32	0.09	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 221227)</b>											
CG2101887-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.35	1.34	0.01	Diff <2x LOR	----
<b>Total Metals (QC Lot: 218418)</b>											
CG2101875-003	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	0.000036	0.000038	0.000002	Diff <2x LOR	----
CG2101875-003	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0185	0.0159	0.0026	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00038	0.00038	0.000003	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00018	0.00020	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0257	0.0251	2.22%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.050	0.050	0.0001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.449 µg/L	0.000432	3.88%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	159	157	1.33%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	7.73 µg/L	0.00768	0.618%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.038	0.031	0.006	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0308	0.0297	3.57%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	79.9	78.6	1.71%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0415	0.0414	0.433%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00142	0.00143	0.474%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0538	0.0530	1.36%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.86	2.85	0.0974%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	20.9 µg/L	0.0203	2.88%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.89	1.84	2.56%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 218418) - continued</b>											
CG2101875-003	Anonymous	sodium, total	17341-25-2	E420	0.050	mg/L	18.7	18.2	2.45%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.502	0.505	0.511%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	189	184	2.84%	20%	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00459	0.00451	1.78%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0348	0.0342	1.80%	20%	----
<b>Total Metals (QC Lot: 218419)</b>											
CG2101875-003	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00014	0.00003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 218298)</b>											
CG2101875-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0028	0.0027	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00039	0.00041	0.00002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00017	0.00020	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0244	0.0252	3.01%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.045	0.044	0.0008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.426 µg/L	0.000460	7.67%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	156	153	1.58%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	6.97 µg/L	0.00717	2.82%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00027	0.00030	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0283	0.0275	2.79%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	77.6	77.8	0.245%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0368	0.0378	2.85%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00139	0.00142	2.74%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0504	0.0522	3.36%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.79	2.85	2.07%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	21.9 µg/L	0.0237	7.97%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.75	1.79	2.33%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	17.4	17.5	0.794%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.516	0.547	5.75%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 218298) - continued</b>											
CG2101875-003	Anonymous	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	156	164	4.94%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000035	0.000036	0.0000003	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00451	0.00464	2.82%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0326	0.0328	0.464%	20%	----
<b>Dissolved Metals (QC Lot: 218299)</b>											
CG2101875-003	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00011	0.00011	0.000002	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 217859)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 220379)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 220389)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 221034)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 221036)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 221066)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 217079)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 217124)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 217125)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 217126)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 217127)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 217128)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 217129)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 220044)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 221093)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 221169)</b>						





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 221169) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 221223)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 221227)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 218418)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	MBRR
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	MBRR
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	MBRR
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 218418) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 218419)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	MBRR
<b>Dissolved Metals (QCLot: 218298)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	---
<b>Dissolved Metals (QCLot: 218299)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 218299) - continued</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----

**Qualifiers**

Qualifier	Description
MBRR	<i>Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (&gt;5x initial MB level) and non-detect results were reported and are defensible</i>



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 217859)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 220379)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	86.2	85.0	115	---
<b>Physical Tests (QCLot: 220389)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.2	85.0	115	---
<b>Physical Tests (QCLot: 220502)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.3	95.4	104	---
<b>Physical Tests (QCLot: 221034)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 221035)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 221036)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 221066)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Anions and Nutrients (QCLot: 217079)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 217124)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 217125)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 217126)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 217127)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 217128)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 217129)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 220044)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	75.1	75.0	125	---
<b>Anions and Nutrients (QCLot: 221093)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 221093) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	95.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 221169)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	110	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 221223)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 221227)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Total Metals (QCLot: 218418)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	98.4	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.6	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 218418) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	102	80.0	120	----
<b>Total Metals (QCLot: 218419)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 218298)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.5	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.7	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	105	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	110	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	119	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	107	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 218298) - continued</b>									
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.3	80.0	120	----
<b>Dissolved Metals (QCLot: 218299)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.3	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 217079)</b>										
CG2101883-010	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0511 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 217124)</b>										
CG2101899-018	Anonymous	fluoride	16984-48-8	E235.F	0.967 mg/L	1 mg/L	96.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 217125)</b>										
CG2101899-018	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 217126)</b>										
CG2101899-018	Anonymous	bromide	24959-67-9	E235.Br-L	0.510 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 217127)</b>										
CG2101899-018	Anonymous	chloride	16887-00-6	E235.Cl-L	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 217128)</b>										
CG2101899-018	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.62 mg/L	2.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 217129)</b>										
CG2101899-018	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.522 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 220044)</b>										
CG2101879-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.86 mg/L	2.5 mg/L	74.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 221093)</b>										
CG2101888-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0577 mg/L	0.0676 mg/L	85.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 221169)</b>										
CG2101921-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 221223)</b>										
CG2101887-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.1 mg/L	23.9 mg/L	105	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 221227)</b>										
CG2101887-001	Anonymous	carbon, total organic [TOC]	----	E355-L	27.0 mg/L	23.9 mg/L	113	70.0	130	----
<b>Total Metals (QCLot: 218418)</b>										
CG2101875-003	Anonymous	thallium, total	7440-28-0	E420	0.00373 mg/L	0.004 mg/L	93.2	70.0	130	----
CG2101875-003	Anonymous	aluminum, total	7429-90-5	E420	0.178 mg/L	0.2 mg/L	88.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 218418) - continued</b>										
CG2101875-003	Anonymous	barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0356 mg/L	0.04 mg/L	88.9	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00830 mg/L	0.01 mg/L	83.0	70.0	130	----
		boron, total	7440-42-8	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00358 mg/L	0.004 mg/L	89.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0172 mg/L	0.02 mg/L	86.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0172 mg/L	0.02 mg/L	86.0	70.0	130	----
		iron, total	7439-89-6	E420	1.77 mg/L	2 mg/L	88.3	70.0	130	----
		lead, total	7439-92-1	E420	0.0168 mg/L	0.02 mg/L	84.2	70.0	130	----
		lithium, total	7439-93-2	E420	0.0870 mg/L	0.1 mg/L	87.0	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	3.54 mg/L	4 mg/L	88.6	70.0	130	----
		selenium, total	7782-49-2	E420	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		silicon, total	7440-21-3	E420	9.24 mg/L	10 mg/L	92.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00350 mg/L	0.004 mg/L	87.6	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		tin, total	7440-31-5	E420	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		titanium, total	7440-32-6	E420	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0942 mg/L	0.1 mg/L	94.2	70.0	130	----
		zinc, total	7440-66-6	E420	0.337 mg/L	0.4 mg/L	84.2	70.0	130	----
<b>Total Metals (QCLot: 218419)</b>										
CG2101875-003	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
<b>Dissolved Metals (QCLot: 218298)</b>										
CG2101875-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.189 mg/L	0.2 mg/L	94.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0230 mg/L	0.02 mg/L	115	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0361 mg/L	0.04 mg/L	90.3	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00881 mg/L	0.01 mg/L	88.1	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 218298) - continued</b>										
CG2101875-003	Anonymous	boron, dissolved	7440-42-8	E421	0.097 mg/L	0.1 mg/L	97.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00387 mg/L	0.004 mg/L	96.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0177 mg/L	0.02 mg/L	88.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0910 mg/L	0.1 mg/L	91.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0230 mg/L	0.02 mg/L	115	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.65 mg/L	4 mg/L	91.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.92 mg/L	10 mg/L	99.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0410 mg/L	0.04 mg/L	103	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0952 mg/L	0.1 mg/L	95.2	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.364 mg/L	0.4 mg/L	91.1	70.0	130	----
<b>Dissolved Metals (QCLot: 218299)</b>										
CG2101875-003	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----

COC ID: COC\_02-20\_Q2-2021


TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Drinking Water Sample Analysis - 2021 Q2			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	monica.bartha@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teck.lab.results@sharepoint.te	X	X	
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	VPO00762695			

SAMPLE DETAILS								ANALYSIS REQUESTED							Filtered: F: Field L: Lab N: None							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	F	N	F	N	F	N	N	
RG_DW-02-20_WP_Q2-2021_NP	RG_DW-02-20	WP	N	8-Jun-21	12:00	G	5	1	1			1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME

SERVICE REQUEST (rush - subject to availability) Regular (default) <input checked="" type="checkbox"/> X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS		Sampler's Name <b>Monica Bartha</b>	Mobile # <b>250-425-4784</b>
		Sampler's Signature 	Date/Time <b>June 8, 2021</b>

Environmental Division  
Calgary  
Work Order Reference  
**CG2101893**



Telephone : +1 403 407 1800



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101889**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : QAQC\_COC\_RG\_DW\_Q2-2021\_1  
**Sampler** : MB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Jun-2021 08:45  
**Date Analysis Commenced** : 09-Jun-2021  
**Issue Date** : 04-Feb-2022 12:17

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
James Diacon	Laboratory Analyst	Metals, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Baxter		Metals, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-T_WP_ Q2-2021_1	RG_DW-F_WP_ Q2-2021_1	RG_DW-02-40_ WP_Q2-2021_1	----	----
(Matrix: Water)					Client sampling date / time	08-Jun-2021	08-Jun-2021	08-Jun-2021 11:06	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2101889-001	CG2101889-002	CG2101889-003	-----	-----	
					Result	Result	Result	----	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	2.1	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	171	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	<1.0	<1.0	208	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	171	----	----	
conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	522	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	<0.50	<0.50	288	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	455	456	510	----	----	
pH	----	E108	0.10	pH units	5.40	5.06	8.19	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	301	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
turbidity	----	E121	0.10	NTU	<0.10	<0.10	0.64	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0.0075	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	3.74	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0.144	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0.075	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	4.55	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	105	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	----	<0.50	<0.50	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	<0.50	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-T_WP_ Q2-2021_1	RG_DW-F_WP_ Q2-2021_1	RG_DW-02-40_ WP_Q2-2021_1	----	----
Client sampling date / time					08-Jun-2021	08-Jun-2021	08-Jun-2021 11:06	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101889-001	CG2101889-002	CG2101889-003	-----	-----	
					Result	Result	Result	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	<0.10	6.04	----	----	
cation sum	----	EC101	0.10	meq/L	<0.10	<0.10	5.90	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	100	97.7	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	<0.010	1.17	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	0.106	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	<0.010	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	<0.0050	0.0083	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	73.3	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00017	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	<0.10	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0.00272	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0.070	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0.000083	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0.0079	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	23.3	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0.00195	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0.00102	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	<0.050	0.642	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	<0.050	18.4	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	2.32	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, total	7440-23-5	E420	0.050	mg/L	<0.050	<0.050	2.95	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	0.262	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	37.9	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-T_WP_ Q2-2021_1	RG_DW-F_WP_ Q2-2021_1	RG_DW-02-40_ WP_Q2-2021_1	----	----
Client sampling date / time					08-Jun-2021	08-Jun-2021	08-Jun-2021 11:06	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101889-001	CG2101889-002	CG2101889-003	-----	-----	
					Result	Result	Result	---	---	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0.00110	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0.0062	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	----	<0.0010	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	----	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	----	<0.00010	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	----	<0.00010	0.106	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	----	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	----	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	----	<0.010	<0.010	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	----	<0.0050	0.0071	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	76.1	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	----	<0.00010	0.00015	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	----	<0.10	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	----	<0.00020	0.00242	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	----	<0.010	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	----	<0.000050	0.000058	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	----	<0.0010	0.0078	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	23.9	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	----	<0.00010	0.00120	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	----	<0.000050	0.00104	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	----	<0.00050	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0.651	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	----	<0.050	19.4	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	----	<0.050	2.30	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	----	<0.000010	<0.000010	----	----	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	<0.050	<0.050	2.76	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-T_WP_ Q2-2021_1	RG_DW-F_WP_ Q2-2021_1	RG_DW-02-40_ WP_Q2-2021_1	----	----
Client sampling date / time					08-Jun-2021	08-Jun-2021	08-Jun-2021 11:06	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101889-001	CG2101889-002	CG2101889-003	-----	-----	
					Result	Result	Result	---	---	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	----	<0.00020	0.289	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	----	<0.50	33.9	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	----	<0.000010	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	----	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	----	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	----	<0.000010	0.00115	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	----	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	----	<0.0010	0.0058	----	----	
dissolved metals filtration location	----	EP421	-	-	Laboratory	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101889</b>	Page	: 1 of 16
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Spanwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 09-Jun-2021 08:45
PO	: VPO00762695	Issue Date	: 04-Feb-2022 12:17
C-O-C number	: QAQC_COC_RG_DW_Q2-2021_1		
Sampler	: MB		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-40_WP_Q2-2021_1	E298	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-F_WP_Q2-2021_1	E298	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-T_WP_Q2-2021_1	E298	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-02-40_WP_Q2-2021_1	E235.Br-L	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-F_WP_Q2-2021_1	E235.Br-L	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-T_WP_Q2-2021_1	E235.Br-L	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-02-40_WP_Q2-2021_1	E235.Cl-L	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE RG_DW-F_WP_Q2-2021_1	E235.Cl-L	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE RG_DW-T_WP_Q2-2021_1	E235.Cl-L	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE RG_DW-02-40_WP_Q2-2021_1	E378-U	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE RG_DW-F_WP_Q2-2021_1	E378-U	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE RG_DW-T_WP_Q2-2021_1	E378-U	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE RG_DW-02-40_WP_Q2-2021_1	E235.F	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE RG_DW-F_WP_Q2-2021_1	E235.F	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE RG_DW-T_WP_Q2-2021_1	E235.F	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE RG_DW-02-40_WP_Q2-2021_1	E235.NO3-L	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE RG_DW-F_WP_Q2-2021_1	E235.NO3-L	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE RG_DW-T_WP_Q2-2021_1	E235.NO3-L	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE RG_DW-02-40_WP_Q2-2021_1	E235.NO2-L	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE RG_DW-F_WP_Q2-2021_1	E235.NO2-L	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE RG_DW-T_WP_Q2-2021_1	E235.NO2-L	08-Jun-2021	----	----	----		09-Jun-2021	3 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE RG_DW-02-40_WP_Q2-2021_1	E235.SO4	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE RG_DW-F_WP_Q2-2021_1	E235.SO4	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE RG_DW-T_WP_Q2-2021_1	E235.SO4	08-Jun-2021	----	----	----		09-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-40_WP_Q2-2021_1	E318	08-Jun-2021	14-Jun-2021	----	----		14-Jun-2021	28 days	6 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-F_WP_Q2-2021_1	E318	08-Jun-2021	14-Jun-2021	----	----		14-Jun-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-T_WP_Q2-2021_1	E318	08-Jun-2021	14-Jun-2021	----	----		14-Jun-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-40_WP_Q2-2021_1	E372-U	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-F_WP_Q2-2021_1	E372-U	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-T_WP_Q2-2021_1	E372-U	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-02-40_WP_Q2-2021_1	E421.Cr-L	08-Jun-2021	10-Jun-2021	----	----		11-Jun-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-F_WP_Q2-2021_1	E421.Cr-L	08-Jun-2021	10-Jun-2021	----	----		11-Jun-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-02-40_WP_Q2-2021_1	E421	08-Jun-2021	10-Jun-2021	----	----		11-Jun-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-F_WP_Q2-2021_1	E421	08-Jun-2021	10-Jun-2021	----	----		11-Jun-2021	180 days	3 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-T_WP_Q2-2021_1	E421	08-Jun-2021	12-Jun-2021	----	----		12-Jun-2021	180 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-02-40_WP_Q2-2021_1	E358-L	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-F_WP_Q2-2021_1	E358-L	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-40_WP_Q2-2021_1	E355-L	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-F_WP_Q2-2021_1	E355-L	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-T_WP_Q2-2021_1	E355-L	08-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	28 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-02-40_WP_Q2-2021_1	E283	08-Jun-2021	----	----	----		15-Jun-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-F_WP_Q2-2021_1	E283	08-Jun-2021	----	----	----		15-Jun-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-T_WP_Q2-2021_1	E283	08-Jun-2021	----	----	----		15-Jun-2021	14 days	7 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE RG_DW-02-40_WP_Q2-2021_1	E290	08-Jun-2021	----	----	----		15-Jun-2021	14 days	7 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE RG_DW-F_WP_Q2-2021_1	E290	08-Jun-2021	----	----	----		15-Jun-2021	14 days	7 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE RG_DW-T_WP_Q2-2021_1	E290	08-Jun-2021	----	----	----		15-Jun-2021	14 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_DW-02-40_WP_Q2-2021_1	E100	08-Jun-2021	----	----	----		15-Jun-2021	28 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_DW-F_WP_Q2-2021_1	E100	08-Jun-2021	----	----	----		15-Jun-2021	28 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_DW-T_WP_Q2-2021_1	E100	08-Jun-2021	----	----	----		15-Jun-2021	28 days	7 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_DW-F_WP_Q2-2021_1	E125	08-Jun-2021	----	----	----		15-Jun-2021	0.25 hrs	172 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_DW-T_WP_Q2-2021_1	E125	08-Jun-2021	----	----	----		15-Jun-2021	0.25 hrs	172 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_DW-02-40_WP_Q2-2021_1	E125	08-Jun-2021	----	----	----		15-Jun-2021	0.25 hrs	173 hrs	* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-02-40_WP_Q2-2021_1	E108	08-Jun-2021	----	----	----		15-Jun-2021	0.25 hrs	162 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-F_WP_Q2-2021_1	E108	08-Jun-2021	----	----	----		15-Jun-2021	0.25 hrs	162 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-T_WP_Q2-2021_1	E108	08-Jun-2021	----	----	----		15-Jun-2021	0.25 hrs	162 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-02-40_WP_Q2-2021_1	E162	08-Jun-2021	----	----	----		14-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-F_WP_Q2-2021_1	E162	08-Jun-2021	----	----	----		14-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-T_WP_Q2-2021_1	E162	08-Jun-2021	----	----	----		14-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE RG_DW-02-40_WP_Q2-2021_1	E160-L	08-Jun-2021	----	----	----		14-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE RG_DW-F_WP_Q2-2021_1	E160-L	08-Jun-2021	----	----	----		14-Jun-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE RG_DW-T_WP_Q2-2021_1	E160-L	08-Jun-2021	----	----	----		14-Jun-2021	7 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE RG_DW-02-40_WP_Q2-2021_1	E121	08-Jun-2021	----	----	----		10-Jun-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE RG_DW-F_WP_Q2-2021_1	E121	08-Jun-2021	----	----	----		10-Jun-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE RG_DW-T_WP_Q2-2021_1	E121	08-Jun-2021	----	----	----		10-Jun-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) RG_DW-02-40_WP_Q2-2021_1	E420.Cr-L	08-Jun-2021	----	----	----		11-Jun-2021	180 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) RG_DW-F_WP_Q2-2021_1	E420.Cr-L	08-Jun-2021	----	----	----		11-Jun-2021	180 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) RG_DW-T_WP_Q2-2021_1	E420.Cr-L	08-Jun-2021	----	----	----		11-Jun-2021	180 days	3 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
HDPE total (nitric acid) RG_DW-02-40_WP_Q2-2021_1	E420	08-Jun-2021	----	----	----		11-Jun-2021	180 days	3 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
HDPE total (nitric acid) RG_DW-F_WP_Q2-2021_1	E420	08-Jun-2021	----	----	----		11-Jun-2021	180 days	3 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
HDPE total (nitric acid) RG_DW-T_WP_Q2-2021_1	E420	08-Jun-2021	----	----	----		11-Jun-2021	180 days	3 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 10 of 16  
Work Order : CG2101889 Amendment 1  
Client : Teck Coal Limited  
Project : REGIONAL EFFECTS PROGRAM

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	221066	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	221036	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	221169	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	217069	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	217070	1	18	5.5	5.0	✓
Conductivity in Water	E100	221034	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218299	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	218298	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	221223	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	217079	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	217067	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	217071	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	217072	1	18	5.5	5.0	✓
ORP by Electrode	E125	220502	1	20	5.0	5.0	✓
pH by Meter	E108	221035	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	217068	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	220389	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	218419	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	220044	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	218418	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	221227	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	221093	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	217859	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	221066	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	221036	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	221169	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	217069	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	217070	1	18	5.5	5.0	✓
Conductivity in Water	E100	221034	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218299	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	218298	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	221223	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	217079	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	217067	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	217071	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	217072	1	18	5.5	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	220502	1	20	5.0	5.0	✓
pH by Meter	E108	221035	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	217068	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	220389	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	218419	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	220044	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	218418	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	221227	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	221093	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	220379	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	217859	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	221066	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	221036	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	221169	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	217069	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	217070	1	18	5.5	5.0	✓
Conductivity in Water	E100	221034	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218299	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	218298	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	221223	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	217079	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	217067	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	217071	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	217072	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	217068	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	220389	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	218419	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	220044	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	218418	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	221227	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	221093	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	220379	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	217859	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	221169	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	217069	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	217070	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218299	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	218298	1	19	5.2	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	221223	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	217079	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	217067	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	217071	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	217072	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	217068	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	218419	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	220044	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	218418	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	221227	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	221093	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Calgary - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2101889**

**Page** : 1 of 21

**Amendment** : **1**

**Client** : Teck Coal Limited  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : QAQC\_COC\_RG\_DW\_Q2-2021\_1  
**Sampler** : MB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Jun-2021 08:45  
**Date Analysis Commenced** : 09-Jun-2021  
**Issue Date** : 04-Feb-2022 12:17

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
James Diacon	Laboratory Analyst	Metals, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Baxter		Metals, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 217859)</b>											
CG2101881-013	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 220389)</b>											
CG2101881-011	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1560	1660	5.77%	20%	----
<b>Physical Tests (QC Lot: 220502)</b>											
CG2101881-011	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	449	445	0.783%	15%	----
<b>Physical Tests (QC Lot: 221034)</b>											
CG2101873-002	Anonymous	conductivity	----	E100	2.0	µS/cm	645	644	0.155%	10%	----
<b>Physical Tests (QC Lot: 221035)</b>											
CG2101873-002	Anonymous	pH	----	E108	0.10	pH units	8.30	8.33	0.361%	4%	----
<b>Physical Tests (QC Lot: 221036)</b>											
CG2101873-002	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	176	180	2.47%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	1.8	<1.0	0.8	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	178	166	6.62%	20%	----
<b>Physical Tests (QC Lot: 221066)</b>											
CG2101873-002	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 217067)</b>											
CG2101881-012	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.146	0.146	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 217068)</b>											
CG2101881-012	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	1010	1010	0.433%	20%	----
<b>Anions and Nutrients (QC Lot: 217069)</b>											
CG2101881-012	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	2.70	2.70	0.0111%	20%	----
<b>Anions and Nutrients (QC Lot: 217070)</b>											
CG2101881-012	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	13.8	13.8	0.573%	20%	----
<b>Anions and Nutrients (QC Lot: 217071)</b>											
CG2101881-012	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.0891	0.107	0.0178	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 217072)</b>											
CG2101881-012	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0093	0.0088	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 217079)</b>											
CG2101883-009	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0012	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 220044)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 220044) - continued</b>											
CG2101879-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.453	0.486	0.032	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 221093)</b>											
CG2101887-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 221169)</b>											
CG2101888-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 221223)</b>											
CG2101887-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.22	1.32	0.09	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 221227)</b>											
CG2101887-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.35	1.34	0.01	Diff <2x LOR	----
<b>Total Metals (QC Lot: 218418)</b>											
CG2101875-003	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	0.000036	0.000038	0.000002	Diff <2x LOR	----
CG2101875-003	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0185	0.0159	0.0026	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00038	0.00038	0.000003	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00018	0.00020	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0257	0.0251	2.22%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.050	0.050	0.0001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.449 µg/L	0.000432	3.88%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	159	157	1.33%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	7.73 µg/L	0.00768	0.618%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.038	0.031	0.006	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0308	0.0297	3.57%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	79.9	78.6	1.71%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0415	0.0414	0.433%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00142	0.00143	0.474%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0538	0.0530	1.36%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.86	2.85	0.0974%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	20.9 µg/L	0.0203	2.88%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.89	1.84	2.56%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	18.7	18.2	2.45%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.502	0.505	0.511%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 218418) - continued</b>											
CG2101875-003	Anonymous	sulfur, total	7704-34-9	E420	0.50	mg/L	189	184	2.84%	20%	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00459	0.00451	1.78%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0348	0.0342	1.80%	20%	----
<b>Total Metals (QC Lot: 218419)</b>											
CG2101875-003	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00014	0.00003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 218298)</b>											
CG2101875-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0028	0.0027	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00039	0.00041	0.00002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00017	0.00020	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0244	0.0252	3.01%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.045	0.044	0.0008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.426 µg/L	0.000460	7.67%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	156	153	1.58%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	6.97 µg/L	0.00717	2.82%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00027	0.00030	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0283	0.0275	2.79%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	77.6	77.8	0.245%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0368	0.0378	2.85%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00139	0.00142	2.74%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0504	0.0522	3.36%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.79	2.85	2.07%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	21.9 µg/L	0.0237	7.97%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.75	1.79	2.33%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	17.4	17.5	0.794%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.516	0.547	5.75%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	156	164	4.94%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000035	0.000036	0.0000003	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 218298) - continued</b>											
CG2101875-003	Anonymous	tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00451	0.00464	2.82%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0326	0.0328	0.464%	20%	----
<b>Dissolved Metals (QC Lot: 218299)</b>											
CG2101875-003	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00011	0.00011	0.000002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 218806)</b>											
CG2101864-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00050	mg/L	0.00075	0.00077	0.00002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00050	mg/L	0.0205	0.0214	4.12%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0250	mg/L	0.493 µg/L	0.000490	0.549%	20%	----
		calcium, dissolved	7440-70-2	E421	0.250	mg/L	256	270	5.31%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.50	mg/L	<0.50 µg/L	<0.00050	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0050	mg/L	0.302	0.326	7.56%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0250	mg/L	128	137	6.99%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00050	mg/L	0.00090	0.00066	0.00024	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000250	mg/L	0.00331	0.00354	6.71%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00250	mg/L	0.0462	0.0494	6.78%	20%	----
		potassium, dissolved	7440-09-7	E421	0.250	mg/L	5.40	5.66	4.68%	20%	----
		selenium, dissolved	7782-49-2	E421	0.250	mg/L	155 µg/L	0.158	2.22%	20%	----
		silicon, dissolved	7440-21-3	E421	0.250	mg/L	1.53	1.56	0.036	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.250	mg/L	7.83	8.08	3.11%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00100	mg/L	0.355	0.376	5.66%	20%	----
		sulfur, dissolved	7704-34-9	E421	2.50	mg/L	219	225	2.91%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----





Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 218806) - continued</b>											
CG2101864-001	Anonymous	titanium, dissolved	7440-32-6	E421	0.00150	mg/L	<0.00150	<0.00150	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000050	mg/L	0.0123	0.0128	3.71%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0050	mg/L	0.0243	0.0233	0.0010	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 217859)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 220379)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 220389)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 221034)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 221036)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 221066)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 217067)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 217068)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 217069)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 217070)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 217071)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 217072)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 217079)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 220044)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 221093)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 221169)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 221169) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 221223)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 221227)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 218418)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	MBRR
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	MBRR
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	MBRR
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 218418) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 218419)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	MBRR
<b>Dissolved Metals (QCLot: 218298)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 218299)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 218299) - continued</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 218806)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Qualifiers

Qualifier	Description
MBRR	<i>Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (&gt;5x initial MB level) and non-detect results were reported and are defensible</i>



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 217859)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 220379)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	86.2	85.0	115	---
<b>Physical Tests (QCLot: 220389)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.2	85.0	115	---
<b>Physical Tests (QCLot: 220502)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.3	95.4	104	---
<b>Physical Tests (QCLot: 221034)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 221035)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 221036)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 221066)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Anions and Nutrients (QCLot: 217067)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.7	90.0	110	---
<b>Anions and Nutrients (QCLot: 217068)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 217069)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	101	85.0	115	---
<b>Anions and Nutrients (QCLot: 217070)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 217071)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 217072)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 217079)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 220044)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	75.1	75.0	125	---
<b>Anions and Nutrients (QCLot: 221093)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 221093) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	95.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 221169)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	110	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 221223)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 221227)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Total Metals (QCLot: 218418)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	98.4	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.6	80.0	120	----





Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 218418) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	102	80.0	120	----
<b>Total Metals (QCLot: 218419)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 218298)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.5	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.7	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	105	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	110	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	119	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	107	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 218298) - continued</b>									
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.3	80.0	120	----
<b>Dissolved Metals (QCLot: 218299)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.3	80.0	120	----
<b>Dissolved Metals (QCLot: 218806)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.6	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.1	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	93.8	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	96.3	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	92.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.2	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	92.0	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	94.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	91.6	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.4	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.3	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.1	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	93.6	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	94.5	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.4	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	86.8	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	94.7	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	94.7	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	111	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.2	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	92.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	91.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	92.6	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	95.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	94.5	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 217067)</b>										
CG2101881-013	Anonymous	fluoride	16984-48-8	E235.F	0.994 mg/L	1 mg/L	99.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 217068)</b>										
CG2101881-013	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 217069)</b>										
CG2101881-013	Anonymous	bromide	24959-67-9	E235.Br-L	0.519 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 217070)</b>										
CG2101881-013	Anonymous	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 217071)</b>										
CG2101881-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.66 mg/L	2.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 217072)</b>										
CG2101881-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.528 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 217079)</b>										
CG2101883-010	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0511 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 220044)</b>										
CG2101879-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.86 mg/L	2.5 mg/L	74.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 221093)</b>										
CG2101888-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0577 mg/L	0.0676 mg/L	85.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 221169)</b>										
CG2101921-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 221223)</b>										
CG2101887-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.1 mg/L	23.9 mg/L	105	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 221227)</b>										
CG2101887-001	Anonymous	carbon, total organic [TOC]	----	E355-L	27.0 mg/L	23.9 mg/L	113	70.0	130	----
<b>Total Metals (QCLot: 218418)</b>										
CG2101875-003	Anonymous	thallium, total	7440-28-0	E420	0.00373 mg/L	0.004 mg/L	93.2	70.0	130	----
CG2101875-003	Anonymous	aluminum, total	7429-90-5	E420	0.178 mg/L	0.2 mg/L	88.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----



Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Total Metals (QCLot: 218418) - continued</b>										
CG2101875-003	Anonymous	barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0356 mg/L	0.04 mg/L	88.9	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00830 mg/L	0.01 mg/L	83.0	70.0	130	----
		boron, total	7440-42-8	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00358 mg/L	0.004 mg/L	89.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0172 mg/L	0.02 mg/L	86.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0172 mg/L	0.02 mg/L	86.0	70.0	130	----
		iron, total	7439-89-6	E420	1.77 mg/L	2 mg/L	88.3	70.0	130	----
		lead, total	7439-92-1	E420	0.0168 mg/L	0.02 mg/L	84.2	70.0	130	----
		lithium, total	7439-93-2	E420	0.0870 mg/L	0.1 mg/L	87.0	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	3.54 mg/L	4 mg/L	88.6	70.0	130	----
		selenium, total	7782-49-2	E420	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		silicon, total	7440-21-3	E420	9.24 mg/L	10 mg/L	92.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00350 mg/L	0.004 mg/L	87.6	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		tin, total	7440-31-5	E420	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		titanium, total	7440-32-6	E420	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0942 mg/L	0.1 mg/L	94.2	70.0	130	----
		zinc, total	7440-66-6	E420	0.337 mg/L	0.4 mg/L	84.2	70.0	130	----
<b>Total Metals (QCLot: 218419)</b>										
CG2101875-003	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
<b>Dissolved Metals (QCLot: 218298)</b>										
CG2101875-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.189 mg/L	0.2 mg/L	94.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0230 mg/L	0.02 mg/L	115	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0361 mg/L	0.04 mg/L	90.3	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00881 mg/L	0.01 mg/L	88.1	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 218298) - continued</b>										
CG2101875-003	Anonymous	boron, dissolved	7440-42-8	E421	0.097 mg/L	0.1 mg/L	97.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00387 mg/L	0.004 mg/L	96.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0177 mg/L	0.02 mg/L	88.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0910 mg/L	0.1 mg/L	91.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0230 mg/L	0.02 mg/L	115	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.65 mg/L	4 mg/L	91.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.92 mg/L	10 mg/L	99.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0410 mg/L	0.04 mg/L	103	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0952 mg/L	0.1 mg/L	95.2	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.364 mg/L	0.4 mg/L	91.1	70.0	130	----
<b>Dissolved Metals (QCLot: 218299)</b>										
CG2101875-003	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
<b>Dissolved Metals (QCLot: 218806)</b>										
CG2101864-002	Anonymous	aluminum, dissolved	7429-90-5	E421	1.94 mg/L	2 mg/L	97.1	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.185 mg/L	0.2 mg/L	92.4	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.187 mg/L	0.2 mg/L	93.5	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.193 mg/L	0.2 mg/L	96.6	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.386 mg/L	0.4 mg/L	96.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0920 mg/L	0.1 mg/L	92.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	1.11 mg/L	1 mg/L	111	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 218806) - continued</b>										
CG2101864-002	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.190 mg/L	0.2 mg/L	94.9	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.190 mg/L	0.2 mg/L	95.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	19.1 mg/L	20 mg/L	95.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.185 mg/L	0.2 mg/L	92.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.912 mg/L	1 mg/L	91.2	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.193 mg/L	0.2 mg/L	96.6	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.188 mg/L	0.2 mg/L	94.3	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.383 mg/L	0.4 mg/L	95.9	70.0	130	----
		potassium, dissolved	7440-09-7	E421	33.9 mg/L	40 mg/L	84.8	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.385 mg/L	0.4 mg/L	96.3	70.0	130	----
		silicon, dissolved	7440-21-3	E421	93.0 mg/L	100 mg/L	93.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0362 mg/L	0.04 mg/L	90.4	70.0	130	----
		sodium, dissolved	7440-23-5	E421	18.8 mg/L	20 mg/L	93.9	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	187 mg/L	200 mg/L	93.7	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.179 mg/L	0.2 mg/L	89.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.328 mg/L	0.4 mg/L	82.0	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.944 mg/L	1 mg/L	94.4	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.85 mg/L	4 mg/L	96.3	70.0	130	----

COC ID: QAQC_COC_RG_DW_Q2-2021_1		TURNAROUND TIME:			RUSH:						
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO				
Facility Name / Job# Drinking Water Sample Analysis - 2021 Q2				Lab Name ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager Cam Jaeger				Lab Contact Lyudmyla Shvets			Email 1: cam.jaeger@teck.com		X	X	X
Email cam.jaeger@teck.com				Email lyudmyla.shvets@alsglobal.com			Email 2: monica.bartha@teck.com		X	X	X
Address 421 Pine Ave				Address 2559 29 st NE			Email 3: teckcoal@equisonline.com		X	X	X
City Sparwood Province BC				City Calgary Province AB			Email 4: teck.lab.results@sharepoint		X	X	
Postal Code V0B 2G0 Country Canada				Postal Code T1Y 7B5 Country Canada			Email 5:				
				Phone Number 403-407-1800			PO number		VPO00762695		

Environmental Division Calgary							ANALYSIS REQUESTED													
Work Order Reference CG2101889							Filter: Field, Lab, Client, Sign													
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CYAF-VA	HG-T-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA						
RG_DW-T_WP_Q2-2021_1	RG_Trip	WP	N	8 Jun-21		G	3		1				1	1						
RG_DW-F_WP_Q2-2021_1	RG_DW-F	WP	N	8 Jun-21		G	5	1	1			1	1	1						
RG_DW-02-40_WP_Q2-2021_1	RG_DW-02-40	WP	N	8 Jun-21	11:00	G	5	1	1			1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			GT	8:45 June 9

SERVICE REQUEST (rush - subject to availability)		Regular (default) X	
Priority (2-3 business days) - 50% surcharge	Sampler's Name	Monica Bartha	Mobile # 250-425-4784
Emergency (1 Business Day) - 100% surcharge	Sampler's Signature		Date/Time June 7, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

80C





CERTIFICATE OF ANALYSIS

Work Order : CG2101369
Amendment : 2
Client : Teck Coal Limited
Contact : Cam Jaeger
Address : 421 Pine Avenue
Sparwood BC Canada V0B 2G0
Telephone : ---
Project : REGIONAL EFFECTS PROGRAM
PO : VPO00762695
C-O-C number : COC\_03-04\_Q2-2021
Sampler : Monica Bartha
Site : ---
Quote number : Teck Coal Master Quote
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 6
Laboratory : Calgary - Environmental
Account Manager : Lyudmyla Shvets
Address : 2559 29th Street NE
Calgary AB Canada T1Y 7B5
Telephone : +1 403 407 1800
Date Samples Received : 12-May-2021 09:00
Date Analysis Commenced : 12-May-2021
Issue Date : 07-Dec-2021 18:34

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Rows include Hannah Phung (Lab Assistant, Inorganics, Calgary, Alberta), Harpreet Chawla (Team Leader - Inorganics, Inorganics, Calgary, Alberta), Jordan Fanson (Analyst, Inorganics, Calgary, Alberta), Kim Jensen (Department Manager - Metals, Metals, Burnaby, British Columbia), Naeun Kim (Analyst, Inorganics, Calgary, Alberta), Ruifang Zheng (Analyst, Inorganics, Calgary, Alberta), Sara Niroomand (Analyst, Inorganics, Calgary, Alberta), and Saron Kim (Analyst, Metals, Burnaby, British Columbia).



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-03-04_	----	----	----	----
(Matrix: Water)						WP_Q2-2021_N				
					Client sampling date / time	11-May-2021	---	---	---	---
						13:07				
Analyte	CAS Number	Method	LOR	Unit	CG2101369-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	197	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	197	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	554	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	271	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	447	---	---	---	---	---
pH	---	E108	0.10	pH units	8.24	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	361	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	---	---	---	---	---
turbidity	---	E121	0.10	NTU	<0.10	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	240	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0315	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	17.9	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.114	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.233	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.00	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	98.3	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	<0.50	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	<0.50	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-03-04_ WP_Q2-2021_N P	----	----	----	----
Client sampling date / time					11-May-2021 13:07	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101369-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.56	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	5.82	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	88.7	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.98	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00010	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00011	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.157	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0166	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	68.9	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00013	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0090	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	24.3	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00105	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	0.951	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	8.45	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.52	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	8.92	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.170	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-03-04_ WP_Q2-2021_N P	----	----	----	----
Client sampling date / time					11-May-2021 13:07	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101369-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	36.2	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00119	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.164	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0136	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	70.2	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00011	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00036	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0089	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	23.2	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00105	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.969	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	8.79	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.49	----	----	----	----	



**Analytical Results**

Sub-Matrix: <b>Water</b> (Matrix: <b>Water</b> )					Client sample ID	RG_DW-03-04_ WP_Q2-2021_N P	----	----	----	----
					Client sampling date / time	11-May-2021 13:07	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2101369-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	8.82	----	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.175	----	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	33.4	----	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00108	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b>	: <b>CG2101369</b>	<b>Page</b>	: 1 of 10
<b>Amendment</b>	: 2		
<b>Client</b>	: <b>Teck Coal Limited</b>	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Cam Jaeger	<b>Account Manager</b>	: Lyudmyla Shvets
<b>Address</b>	: 421 Pine Avenue Spanwood BC Canada V0B 2G0	<b>Address</b>	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
<b>Telephone</b>	: ----	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: REGIONAL EFFECTS PROGRAM	<b>Date Samples Received</b>	: 12-May-2021 09:00
<b>PO</b>	: VPO00762695	<b>Issue Date</b>	: 07-Dec-2021 18:34
<b>C-O-C number</b>	: COC_03-04_Q2-2021		
<b>Sampler</b>	: Monica Bartha		
<b>Site</b>	: ----		
<b>Quote number</b>	: Teck Coal Master Quote		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_Q2-2021_NP	E298	11-May-2021	24-May-2021	----	----		24-May-2021	28 days	13 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-04_WP_Q2-2021_NP	E235.Br-L	11-May-2021	----	----	----		12-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-04_WP_Q2-2021_NP	E235.Cl-L	11-May-2021	----	----	----		12-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> RG_DW-03-04_WP_Q2-2021_NP	E378-U	11-May-2021	----	----	----		13-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> RG_DW-03-04_WP_Q2-2021_NP	E235.F	11-May-2021	----	----	----		12-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-04_WP_Q2-2021_NP	E235.NO3-L	11-May-2021	----	----	----		12-May-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-04_WP_Q2-2021_NP	E235.NO2-L	11-May-2021	----	----	----		12-May-2021	3 days	1 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> RG_DW-03-04_WP_Q2-2021_NP	E235.SO4	11-May-2021	----	----	----		12-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_Q2-2021_NP	E318	11-May-2021	18-May-2021	----	----		18-May-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_Q2-2021_NP	E372-U	11-May-2021	19-May-2021	----	----		19-May-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-04_WP_Q2-2021_NP	E421.Cr-L	11-May-2021	13-May-2021	----	----		13-May-2021	180 days	2 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-04_WP_Q2-2021_NP	E421	11-May-2021	13-May-2021	----	----		13-May-2021	180 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-03-04_WP_Q2-2021_NP	E358-L	11-May-2021	22-May-2021	----	----		22-May-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_Q2-2021_NP	E355-L	11-May-2021	22-May-2021	----	----		22-May-2021	28 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-03-04_WP_Q2-2021_NP	E283	11-May-2021	----	----	----		20-May-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> RG_DW-03-04_WP_Q2-2021_NP	E290	11-May-2021	----	----	----		21-May-2021	14 days	10 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_DW-03-04_WP_Q2-2021_NP	E100	11-May-2021	----	----	----		21-May-2021	28 days	10 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-03-04_WP_Q2-2021_NP	E125	11-May-2021	----	----	----		18-May-2021	0.25 hrs	174 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-03-04_WP_Q2-2021_NP	E108	11-May-2021	----	----	----		21-May-2021	0.25 hrs	244 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-03-04_WP_Q2-2021_NP	E162	11-May-2021	----	----	----		16-May-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] RG_DW-03-04_WP_Q2-2021_NP	E160-L	11-May-2021	----	----	----		17-May-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE RG_DW-03-04_WP_Q2-2021_NP	E121	11-May-2021	----	----	----		14-May-2021	3 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) RG_DW-03-04_WP_Q2-2021_NP	E420.Cr-L	11-May-2021	----	----	----		13-May-2021	180 days	2 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
HDPE total (nitric acid) RG_DW-03-04_WP_Q2-2021_NP	E420	11-May-2021	----	----	----		13-May-2021	180 days	2 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	201918	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	203242	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	203859	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	196379	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	196380	1	20	5.0	5.0	✓
Conductivity in Water	E100	203240	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	197139	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	197140	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	203815	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	196733	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	196383	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	196381	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	196382	1	20	5.0	5.0	✓
ORP by Electrode	E125	199935	1	20	5.0	5.0	✓
pH by Meter	E108	203241	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	196378	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	198862	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	197062	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	199399	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	197063	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	203818	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199926	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	197729	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	201918	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	203242	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	203859	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	196379	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	196380	1	20	5.0	5.0	✓
Conductivity in Water	E100	203240	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	197139	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	197140	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	203815	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	196733	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	196383	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	196381	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	196382	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	199935	1	20	5.0	5.0	✓
pH by Meter	E108	203241	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	196378	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	198862	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	197062	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	199399	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	197063	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	203818	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199926	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	199209	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	197729	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	201918	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	203242	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	203859	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	196379	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	196380	1	20	5.0	5.0	✓
Conductivity in Water	E100	203240	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	197139	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	197140	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	203815	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	196733	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	196383	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	196381	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	196382	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	196378	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	198862	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	197062	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	199399	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	197063	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	203818	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199926	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	199209	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	197729	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	203859	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	196379	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	196380	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	197139	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	197140	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	203815	1	16	6.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	196733	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	196383	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	196381	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	196382	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	196378	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	197062	1	16	6.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	199399	1	14	7.1	5.0	✔
Total Metals in Water by CRC ICPMS	E420	197063	1	16	6.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	203818	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199926	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



## QUALITY CONTROL REPORT

**Work Order** : **CG2101369**

**Page** : 1 of 17

**Amendment** : **2**

**Client** : Teck Coal Limited  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
           Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_03-04\_Q2-2021  
**Sampler** : Monica Bartha  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
           Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 12-May-2021 09:00  
**Date Analysis Commenced** : 12-May-2021  
**Issue Date** : 07-Dec-2021 18:34

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 197729)</b>											
CG2101362-010	Anonymous	turbidity	----	E121	0.10	NTU	0.13	0.12	0.006	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 198862)</b>											
CG2101362-010	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	493	505	2.30%	20%	----
<b>Physical Tests (QC Lot: 199935)</b>											
CG2101369-001	RG_DW-03-04_WP_Q2-20 21_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	447	454	1.69%	15%	----
<b>Physical Tests (QC Lot: 201918)</b>											
CG2101362-008	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 203240)</b>											
CG2101361-008	Anonymous	conductivity	----	E100	2.0	µS/cm	2010	2010	0.00%	10%	----
<b>Physical Tests (QC Lot: 203241)</b>											
CG2101361-008	Anonymous	pH	----	E108	0.10	pH units	8.16	8.16	0.00%	4%	----
<b>Physical Tests (QC Lot: 203242)</b>											
CG2101361-008	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	265	266	0.262%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	265	266	0.264%	20%	----
<b>Anions and Nutrients (QC Lot: 196378)</b>											
CG2101368-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	22.2	22.4	0.558%	20%	----
<b>Anions and Nutrients (QC Lot: 196379)</b>											
CG2101368-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 196380)</b>											
CG2101368-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	10.2	10.2	0.000805%	20%	----
<b>Anions and Nutrients (QC Lot: 196381)</b>											
CG2101368-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.479	0.478	0.355%	20%	----
<b>Anions and Nutrients (QC Lot: 196382)</b>											
CG2101368-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 196383)</b>											
CG2101368-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.164	0.171	0.007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 196733)</b>											
CG2101366-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 199399)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 199399) - continued</b>											
CG2101362-009	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.248	0.181	0.067	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 199926)</b>											
CG2101362-007	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0027	0.0030	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 203859)</b>											
CG2101362-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0152	0.0155	0.0003	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 203815)</b>											
CG2101362-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.82	0.71	0.10	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 203818)</b>											
CG2101362-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.75	0.80	0.06	Diff <2x LOR	----
<b>Total Metals (QC Lot: 197062)</b>											
CG2101347-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 197063)</b>											
CG2101347-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 197063) - continued</b>											
CG2101347-001	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 197139)</b>											
CG2101347-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 197140)</b>											
CG2101347-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 197140) - continued</b>											
CG2101347-001	Anonymous	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 197729)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 198862)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 199209)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 201918)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 203240)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 203242)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 196378)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 196379)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 196380)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 196381)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 196382)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 196383)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 196733)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 199399)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 199926)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 203859)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 203859) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 203815)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 203818)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 197062)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 197063)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 197063) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 197139)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 197140)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----

Page : 10 of 17  
Work Order : CG2101369 Amendment 2  
Client : Teck Coal Limited  
Project : REGIONAL EFFECTS PROGRAM



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 197140) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 197729)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	---
<b>Physical Tests (QCLot: 198862)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 199209)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.4	85.0	115	---
<b>Physical Tests (QCLot: 199935)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	104	95.4	104	---
<b>Physical Tests (QCLot: 201918)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 203240)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.2	90.0	110	---
<b>Physical Tests (QCLot: 203241)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 203242)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 196378)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	108	90.0	110	---
<b>Anions and Nutrients (QCLot: 196379)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 196380)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 196381)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 196382)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 196383)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 196733)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 199399)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	90.7	75.0	125	---
<b>Anions and Nutrients (QCLot: 199926)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 199926) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 203859)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	110	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 203815)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	100	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 203818)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	98.0	80.0	120	----
<b>Total Metals (QCLot: 197062)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 197063)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	109	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.4	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.8	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.6	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	97.7	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	104	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 197063) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	107	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.3	80.0	120	----
<b>Dissolved Metals (QCLot: 197139)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
<b>Dissolved Metals (QCLot: 197140)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	94.3	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.4	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.7	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 197140) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.1	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.4	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 196378)</b>										
CG2101372-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	95.3 mg/L	100 mg/L	95.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 196379)</b>										
CG2101372-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.502 mg/L	0.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 196380)</b>										
CG2101372-003	Anonymous	chloride	16887-00-6	E235.Cl-L	95.5 mg/L	100 mg/L	95.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 196381)</b>										
CG2101372-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.40 mg/L	2.5 mg/L	95.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 196382)</b>										
CG2101372-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.487 mg/L	0.5 mg/L	97.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 196383)</b>										
CG2101372-003	Anonymous	fluoride	16984-48-8	E235.F	0.898 mg/L	1 mg/L	89.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 196733)</b>										
CG2101367-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0537 mg/L	0.05 mg/L	107	70.0	130	----
<b>Anions and Nutrients (QCLot: 199399)</b>										
CG2101362-010	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	3.26 mg/L	2.5 mg/L	130	70.0	130	----
<b>Anions and Nutrients (QCLot: 199926)</b>										
CG2101362-008	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0518 mg/L	0.0676 mg/L	76.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 203859)</b>										
CG2101362-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0895 mg/L	0.1 mg/L	89.5	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 203815)</b>										
CG2101362-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.3 mg/L	23.9 mg/L	93.2	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 203818)</b>										
CG2101362-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.3 mg/L	23.9 mg/L	93.4	70.0	130	----
<b>Total Metals (QCLot: 197062)</b>										
CG2101347-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
<b>Total Metals (QCLot: 197063)</b>										
CG2101347-001	Anonymous	aluminum, total	7429-90-5	E420	0.200 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, total	7440-36-0	E420	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 197063) - continued</b>										
CG2101347-001	Anonymous	arsenic, total	7440-38-2	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		barium, total	7440-39-3	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00972 mg/L	0.01 mg/L	97.2	70.0	130	----
		boron, total	7440-42-8	E420	0.098 mg/L	0.1 mg/L	98.6	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		calcium, total	7440-70-2	E420	3.73 mg/L	4 mg/L	93.3	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		copper, total	7440-50-8	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		iron, total	7439-89-6	E420	1.94 mg/L	2 mg/L	97.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0966 mg/L	0.1 mg/L	96.6	70.0	130	----
		magnesium, total	7439-95-4	E420	0.946 mg/L	1 mg/L	94.6	70.0	130	----
		manganese, total	7439-96-5	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		nickel, total	7440-02-0	E420	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		potassium, total	7440-09-7	E420	3.93 mg/L	4 mg/L	98.4	70.0	130	----
		selenium, total	7782-49-2	E420	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		silicon, total	7440-21-3	E420	9.14 mg/L	10 mg/L	91.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00374 mg/L	0.004 mg/L	93.5	70.0	130	----
		sodium, total	17341-25-2	E420	1.95 mg/L	2 mg/L	97.6	70.0	130	----
		strontium, total	7440-24-6	E420	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		sulfur, total	7704-34-9	E420	20.3 mg/L	20 mg/L	101	70.0	130	----
		thallium, total	7440-28-0	E420	0.00374 mg/L	0.004 mg/L	93.5	70.0	130	----
		tin, total	7440-31-5	E420	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
		uranium, total	7440-61-1	E420	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0997 mg/L	0.1 mg/L	99.7	70.0	130	----
		zinc, total	7440-66-6	E420	0.388 mg/L	0.4 mg/L	96.9	70.0	130	----
<b>Dissolved Metals (QCLot: 197139)</b>										
CG2101347-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
<b>Dissolved Metals (QCLot: 197140)</b>										
CG2101347-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.197 mg/L	0.2 mg/L	98.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 197140) - continued</b>										
CG2101347-001	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00918 mg/L	0.01 mg/L	91.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	3.96 mg/L	4 mg/L	99.1	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	97.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	0.987 mg/L	1 mg/L	98.7	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.01 mg/L	4 mg/L	100	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0397 mg/L	0.04 mg/L	99.4	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.33 mg/L	10 mg/L	93.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00398 mg/L	0.004 mg/L	99.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.99 mg/L	2 mg/L	99.6	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.8 mg/L	20 mg/L	99.2	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00389 mg/L	0.004 mg/L	97.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00390 mg/L	0.004 mg/L	97.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0995 mg/L	0.1 mg/L	99.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.406 mg/L	0.4 mg/L	102	70.0	130	----

COC ID: COC\_03-04\_Q2-2021

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY			OTHER INFO				
Facility Name / Job#	Drinking Water Sample Analysis - 2021 Q2			Lab Name	ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets		Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com		Email 2:	monica.bartha@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE		Email 3:	teckcoal@equisonline.com	X	X	X
							Email 4:	tecklab.results@sharepoint.teck.com	X	X	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:			
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada				
Phone Number	250-425-8449			Phone Number	403-407-1800		PO number	VPO00762695			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA						
RG_DW-03-04_WP_Q2-2021_NP	RG_DW-03-04	WP	N	11-May-21	13:07	G	5	1	1			1	1	1						

Environmental Division  
Calgary  
Work Order Reference  
**CG2101369**



Telephone : +1 403 407 1800

INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	12/19/20

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Sampler's Signature	Mobile #	Date/Time
Regular (default)	X	Monica Bartha	<i>[Signature]</i>	250-425-4784	May 11, 2021
Priority (2-3 business days) - 50% surcharge					
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					



CERTIFICATE OF ANALYSIS

Work Order : CG2101368
Amendment : 2
Client : Teck Coal Limited
Contact : Cam Jaeger
Address : 421 Pine Avenue
Sparwood BC Canada V0B 2G0
Telephone : ---
Project : REGIONAL EFFECTS PROGRAM
PO : VPO00762695
C-O-C number : COC\_03-10\_Q2-2021
Sampler : Monica Bartha
Site : ---
Quote number : Teck Coal Master Quote
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 6
Laboratory : Calgary - Environmental
Account Manager : Lyudmyla Shvets
Address : 2559 29th Street NE
Calgary AB Canada T1Y 7B5
Telephone : +1 403 407 1800
Date Samples Received : 12-May-2021 09:00
Date Analysis Commenced : 12-May-2021
Issue Date : 07-Dec-2021 18:39

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Lists names like Hannah Phung, Harpreet Chawla, Jordan Fanson, Kim Jensen, Naeun Kim, Ruifang Zheng, Sara Niroomand, Saron Kim and their respective roles and departments.



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-03-10_	----	----	----	----
(Matrix: Water)					WP_Q2-2021_N					
					P					
					Client sampling date / time	11-May-2021	---	---	---	---
					13:46					
Analyte	CAS Number	Method	LOR	Unit	CG2101368-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	228	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	228	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	448	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	242	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	285	---	---	---	---	---
pH	---	E108	0.10	pH units	8.20	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	283	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	---	---	---	---	---
turbidity	---	E121	0.10	NTU	<0.10	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	278	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0102	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	10.2	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.164	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.190	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.479	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	22.2	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	<0.50	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	<0.50	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-03-10_ WP_Q2-2021_N P	----	----	----	----
Client sampling date / time					11-May-2021 13:46	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101368-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.35	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	5.08	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	95.0	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.59	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.140	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.010	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	64.7	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00063	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00348	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000081	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0072	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	20.0	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00148	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	0.808	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	1.04	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	3.66	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	5.28	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.190	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-03-10_ WP_Q2-2021_N P	----	----	----	----
Client sampling date / time					11-May-2021 13:46	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101368-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	8.30	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00152	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0151	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.145	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	65.6	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00056	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00324	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000079	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0074	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	19.0	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00151	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.820	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	1.17	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.64	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-03-10_	----	----	----	----
					WP_Q2-2021_N					
					P					
					Client sampling date / time	11-May-2021	----	----	----	----
					13:46					
Analyte	CAS Number	Method	LOR	Unit	CG2101368-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.15	----	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.200	----	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	7.78	----	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00141	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0148	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101368</b>	Page	: 1 of 10
Amendment	: <b>2</b>		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Spanwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 12-May-2021 09:00
PO	: VPO00762695	Issue Date	: 07-Dec-2021 18:40
C-O-C number	: COC_03-10_Q2-2021		
Sampler	: Monica Bartha		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_Q2-2021_NP	E298	11-May-2021	24-May-2021	----	----		24-May-2021	28 days	13 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-10_WP_Q2-2021_NP	E235.Br-L	11-May-2021	----	----	----		12-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-10_WP_Q2-2021_NP	E235.Cl-L	11-May-2021	----	----	----		12-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> RG_DW-03-10_WP_Q2-2021_NP	E378-U	11-May-2021	----	----	----		13-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> RG_DW-03-10_WP_Q2-2021_NP	E235.F	11-May-2021	----	----	----		12-May-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-10_WP_Q2-2021_NP	E235.NO3-L	11-May-2021	----	----	----		12-May-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-10_WP_Q2-2021_NP	E235.NO2-L	11-May-2021	----	----	----		12-May-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> RG_DW-03-10_WP_Q2-2021_NP	E235.SO4	11-May-2021	----	----	----		12-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_Q2-2021_NP	E318	11-May-2021	18-May-2021	----	----		18-May-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_Q2-2021_NP	E372-U	11-May-2021	19-May-2021	----	----		19-May-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-10_WP_Q2-2021_NP	E421.Cr-L	11-May-2021	13-May-2021	----	----		13-May-2021	180 days	2 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-10_WP_Q2-2021_NP	E421	11-May-2021	13-May-2021	----	----		13-May-2021	180 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-03-10_WP_Q2-2021_NP	E358-L	11-May-2021	22-May-2021	----	----		22-May-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_Q2-2021_NP	E355-L	11-May-2021	22-May-2021	----	----		22-May-2021	28 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-03-10_WP_Q2-2021_NP	E283	11-May-2021	----	----	----		20-May-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> RG_DW-03-10_WP_Q2-2021_NP	E290	11-May-2021	----	----	----		21-May-2021	14 days	10 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_DW-03-10_WP_Q2-2021_NP	E100	11-May-2021	----	----	----		21-May-2021	28 days	10 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-03-10_WP_Q2-2021_NP	E125	11-May-2021	----	----	----		18-May-2021	0.25 hrs	173 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-03-10_WP_Q2-2021_NP	E108	11-May-2021	----	----	----		21-May-2021	0.25 hrs	243 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-03-10_WP_Q2-2021_NP	E162	11-May-2021	----	----	----		16-May-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] RG_DW-03-10_WP_Q2-2021_NP	E160-L	11-May-2021	----	----	----		17-May-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE RG_DW-03-10_WP_Q2-2021_NP	E121	11-May-2021	----	----	----		14-May-2021	3 days	3 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) RG_DW-03-10_WP_Q2-2021_NP	E420.Cr-L	11-May-2021	----	----	----		13-May-2021	180 days	2 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
HDPE total (nitric acid) RG_DW-03-10_WP_Q2-2021_NP	E420	11-May-2021	----	----	----		13-May-2021	180 days	2 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	201918	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	203242	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	203859	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	196379	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	196380	1	20	5.0	5.0	✓
Conductivity in Water	E100	203240	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	197139	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	197140	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	203815	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	196733	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	196383	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	196381	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	196382	1	20	5.0	5.0	✓
ORP by Electrode	E125	199934	1	20	5.0	5.0	✓
pH by Meter	E108	203241	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	196378	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	198862	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	197062	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	199399	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	197063	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	203818	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199926	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	197729	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	201918	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	203242	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	203859	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	196379	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	196380	1	20	5.0	5.0	✓
Conductivity in Water	E100	203240	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	197139	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	197140	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	203815	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	196733	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	196383	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	196381	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	196382	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	199934	1	20	5.0	5.0	✓
pH by Meter	E108	203241	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	196378	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	198862	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	197062	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	199399	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	197063	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	203818	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199926	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	199209	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	197729	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	201918	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	203242	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	203859	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	196379	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	196380	1	20	5.0	5.0	✓
Conductivity in Water	E100	203240	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	197139	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	197140	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	203815	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	196733	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	196383	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	196381	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	196382	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	196378	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	198862	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	197062	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	199399	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	197063	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	203818	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199926	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	199209	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	197729	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	203859	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	196379	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	196380	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	197139	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	197140	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	203815	1	16	6.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	196733	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	196383	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	196381	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	196382	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	196378	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	197062	1	16	6.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	199399	1	14	7.1	5.0	✔
Total Metals in Water by CRC ICPMS	E420	197063	1	16	6.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	203818	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199926	1	20	5.0	5.0	✔





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2101368**  
**Amendment** : **2**

Page : 1 of 17

Client : Teck Coal Limited  
 Contact : Cam Jaeger  
 Address : 421 Pine Avenue  
           Sparwood BC Canada V0B 2G0  
 Telephone : ----  
 Project : REGIONAL EFFECTS PROGRAM  
 PO : VPO00762695  
 C-O-C number : COC\_03-10\_Q2-2021  
 Sampler : Monica Bartha  
 Site : ----  
 Quote number : Teck Coal Master Quote  
 No. of samples received : 1  
 No. of samples analysed : 1

Laboratory : Calgary - Environmental  
 Account Manager : Lyudmyla Shvets  
 Address : 2559 29th Street NE  
           Calgary, Alberta Canada T1Y 7B5  
 Telephone : +1 403 407 1800  
 Date Samples Received : 12-May-2021 09:00  
 Date Analysis Commenced : 12-May-2021  
 Issue Date : 07-Dec-2021 18:40

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 197729)</b>											
CG2101362-010	Anonymous	turbidity	----	E121	0.10	NTU	0.13	0.12	0.006	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 198862)</b>											
CG2101362-010	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	493	505	2.30%	20%	----
<b>Physical Tests (QC Lot: 199934)</b>											
CG2101361-006	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	241	244	1.12%	15%	----
<b>Physical Tests (QC Lot: 201918)</b>											
CG2101362-008	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 203240)</b>											
CG2101361-008	Anonymous	conductivity	----	E100	2.0	µS/cm	2010	2010	0.00%	10%	----
<b>Physical Tests (QC Lot: 203241)</b>											
CG2101361-008	Anonymous	pH	----	E108	0.10	pH units	8.16	8.16	0.00%	4%	----
<b>Physical Tests (QC Lot: 203242)</b>											
CG2101361-008	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	265	266	0.262%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	265	266	0.264%	20%	----
<b>Anions and Nutrients (QC Lot: 196378)</b>											
CG2101368-001	RG_DW-03-10_WP_Q2-20 21_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	22.2	22.4	0.558%	20%	----
<b>Anions and Nutrients (QC Lot: 196379)</b>											
CG2101368-001	RG_DW-03-10_WP_Q2-20 21_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 196380)</b>											
CG2101368-001	RG_DW-03-10_WP_Q2-20 21_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	10.2	10.2	0.000805%	20%	----
<b>Anions and Nutrients (QC Lot: 196381)</b>											
CG2101368-001	RG_DW-03-10_WP_Q2-20 21_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.479	0.478	0.355%	20%	----
<b>Anions and Nutrients (QC Lot: 196382)</b>											
CG2101368-001	RG_DW-03-10_WP_Q2-20 21_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 196383)</b>											
CG2101368-001	RG_DW-03-10_WP_Q2-20 21_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.164	0.171	0.007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 196733)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 196733) - continued</b>											
CG2101366-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 199399)</b>											
CG2101362-009	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.248	0.181	0.067	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 199926)</b>											
CG2101362-007	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0027	0.0030	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 203859)</b>											
CG2101362-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0152	0.0155	0.0003	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 203815)</b>											
CG2101362-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.82	0.71	0.10	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 203818)</b>											
CG2101362-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.75	0.80	0.06	Diff <2x LOR	----
<b>Total Metals (QC Lot: 197062)</b>											
CG2101347-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 197063)</b>											
CG2101347-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	<0.0050 µg/L	<0.000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 197063) - continued</b>											
CG2101347-001	Anonymous	silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 197139)</b>											
CG2101347-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 197140)</b>											
CG2101347-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 197140) - continued</b>											
CG2101347-001	Anonymous	sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 197729)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 198862)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 199209)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 201918)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 203240)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 203242)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 196378)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 196379)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 196380)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 196381)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 196382)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 196383)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 196733)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 199399)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 199926)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 203859)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 203859) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 203815)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 203818)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 197062)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 197063)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 197063) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 197139)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 197140)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 197140) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 197729)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	---
<b>Physical Tests (QCLot: 198862)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 199209)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.4	85.0	115	---
<b>Physical Tests (QCLot: 199934)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Physical Tests (QCLot: 201918)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 203240)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.2	90.0	110	---
<b>Physical Tests (QCLot: 203241)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 203242)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 196378)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	108	90.0	110	---
<b>Anions and Nutrients (QCLot: 196379)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 196380)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 196381)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 196382)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 196383)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 196733)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 199399)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	90.7	75.0	125	---
<b>Anions and Nutrients (QCLot: 199926)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 199926) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 203859)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	110	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 203815)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	100	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 203818)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	98.0	80.0	120	----
<b>Total Metals (QCLot: 197062)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 197063)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	109	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.4	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.8	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.6	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	97.7	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	104	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 197063) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	107	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.3	80.0	120	----
<b>Dissolved Metals (QCLot: 197139)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
<b>Dissolved Metals (QCLot: 197140)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	94.3	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.4	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.7	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----



Sub-Matrix: **Water**

					<i>Laboratory Control Sample (LCS) Report</i>				
					<i>Spike</i>	<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Concentration</i>	<i>LCS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 197140) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.1	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.4	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 196378)</b>										
CG2101372-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	95.3 mg/L	100 mg/L	95.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 196379)</b>										
CG2101372-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.502 mg/L	0.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 196380)</b>										
CG2101372-003	Anonymous	chloride	16887-00-6	E235.Cl-L	95.5 mg/L	100 mg/L	95.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 196381)</b>										
CG2101372-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.40 mg/L	2.5 mg/L	95.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 196382)</b>										
CG2101372-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.487 mg/L	0.5 mg/L	97.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 196383)</b>										
CG2101372-003	Anonymous	fluoride	16984-48-8	E235.F	0.898 mg/L	1 mg/L	89.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 196733)</b>										
CG2101367-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0537 mg/L	0.05 mg/L	107	70.0	130	----
<b>Anions and Nutrients (QCLot: 199399)</b>										
CG2101362-010	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	3.26 mg/L	2.5 mg/L	130	70.0	130	----
<b>Anions and Nutrients (QCLot: 199926)</b>										
CG2101362-008	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0518 mg/L	0.0676 mg/L	76.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 203859)</b>										
CG2101362-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0895 mg/L	0.1 mg/L	89.5	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 203815)</b>										
CG2101362-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.3 mg/L	23.9 mg/L	93.2	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 203818)</b>										
CG2101362-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.3 mg/L	23.9 mg/L	93.4	70.0	130	----
<b>Total Metals (QCLot: 197062)</b>										
CG2101347-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
<b>Total Metals (QCLot: 197063)</b>										
CG2101347-001	Anonymous	aluminum, total	7429-90-5	E420	0.200 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, total	7440-36-0	E420	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 197063) - continued</b>										
CG2101347-001	Anonymous	arsenic, total	7440-38-2	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		barium, total	7440-39-3	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00972 mg/L	0.01 mg/L	97.2	70.0	130	----
		boron, total	7440-42-8	E420	0.098 mg/L	0.1 mg/L	98.6	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		calcium, total	7440-70-2	E420	3.73 mg/L	4 mg/L	93.3	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		copper, total	7440-50-8	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		iron, total	7439-89-6	E420	1.94 mg/L	2 mg/L	97.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0966 mg/L	0.1 mg/L	96.6	70.0	130	----
		magnesium, total	7439-95-4	E420	0.946 mg/L	1 mg/L	94.6	70.0	130	----
		manganese, total	7439-96-5	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		nickel, total	7440-02-0	E420	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		potassium, total	7440-09-7	E420	3.93 mg/L	4 mg/L	98.4	70.0	130	----
		selenium, total	7782-49-2	E420	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		silicon, total	7440-21-3	E420	9.14 mg/L	10 mg/L	91.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00374 mg/L	0.004 mg/L	93.5	70.0	130	----
		sodium, total	17341-25-2	E420	1.95 mg/L	2 mg/L	97.6	70.0	130	----
		strontium, total	7440-24-6	E420	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		sulfur, total	7704-34-9	E420	20.3 mg/L	20 mg/L	101	70.0	130	----
		thallium, total	7440-28-0	E420	0.00374 mg/L	0.004 mg/L	93.5	70.0	130	----
		tin, total	7440-31-5	E420	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
		uranium, total	7440-61-1	E420	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0997 mg/L	0.1 mg/L	99.7	70.0	130	----
		zinc, total	7440-66-6	E420	0.388 mg/L	0.4 mg/L	96.9	70.0	130	----
<b>Dissolved Metals (QCLot: 197139)</b>										
CG2101347-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
<b>Dissolved Metals (QCLot: 197140)</b>										
CG2101347-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.197 mg/L	0.2 mg/L	98.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 197140) - continued</b>										
CG2101347-001	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00918 mg/L	0.01 mg/L	91.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	3.96 mg/L	4 mg/L	99.1	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	97.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	0.987 mg/L	1 mg/L	98.7	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.01 mg/L	4 mg/L	100	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0397 mg/L	0.04 mg/L	99.4	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.33 mg/L	10 mg/L	93.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00398 mg/L	0.004 mg/L	99.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.99 mg/L	2 mg/L	99.6	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.8 mg/L	20 mg/L	99.2	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00389 mg/L	0.004 mg/L	97.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00390 mg/L	0.004 mg/L	97.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0995 mg/L	0.1 mg/L	99.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.406 mg/L	0.4 mg/L	102	70.0	130	----

COC ID: **COC\_03-10\_Q2-2021**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Drinking Water Sample Analysis - 2021 Q2			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	monica.bartha@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teck.lab.results@sharepoint.te	X	X	
Postal Code	VOB 2G0		Country	Canada	Postal Code	T1Y 7B5		Country	Canada			
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	VPO00762695			

SAMPLE DETAILS								ANALYSIS REQUESTED							Filter: F: Field L: Lab FL: Field @ Lab N: None											
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	F	N	F	N	F	N	N					
RG_DW-03-10_WP-Q2-2021_NP	RG_DW-03-10	WP	N	11-May-21	13:46	G	5	1	1			1	1	1												

Environmental Division  
Calgary  
Work Order Reference  
**CG2101368**



Telephone: +1 403 407 1800

INSTRUCTIONS:	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	12/05 9:00

SERVICE REQUEST (rush subject to availability):			
Regular (default)	X	Sampler's Name	Monica Bartha
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>
Emergency (1 Business Day) - 100% surcharge		Mobile #	250-425-4784
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Date/Time	May 11, 2021

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100933**  
**Client** : **Teck Coal Limited**  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210419Q2GW  
**Sampler** : N. Wicharuk  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Apr-2021 08:25  
**Date Analysis Commenced** : 20-Apr-2021  
**Issue Date** : 28-Apr-2021 15:02

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID		EV_MW_MC3_	EV_MW_BC1B_	EV_MW_BC1A_	----	----
(Matrix: Water)					WG_2021_Q2_	WG_2021_Q2_	WG_2021_Q2_				
					NP	NP	NP				
Client sampling date / time					19-Apr-2021 11:10	19-Apr-2021 13:35	19-Apr-2021 14:50			----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100933-001	CG2100933-002	CG2100933-003			-----	-----
					Result	Result	Result			---	---
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	3.7	<2.0	2.5			----	----
conductivity	----	E100	2.0	µS/cm	893	2420	2170			----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	412	1460	1320			----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	373	457	374			----	----
pH	----	E108	0.10	pH units	8.05	7.97	8.04			----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	564	1730	1730			----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.4	1.5	3.9			----	----
turbidity	----	E121	0.10	NTU	0.88	0.24	2.19			----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	279	261	268			----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0			----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0			----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	279	261	268			----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	341	318	327			----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0			----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0			----	----
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	<0.0050			----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.135	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>			----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	30.0	39.3	34.4			----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.180	0.120	<0.100 <sup>DLHC</sup>			----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.312 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>			----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	4.17	34.7	32.5			----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0131	0.0055	0.0057			----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0268	0.0210			----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0245	0.0239			----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	0.0235	0.0187			----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	159	1110	940			----	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	4.50	34.7	32.5			----	----
<b>Organic / Inorganic Carbon</b>											





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC3_WG_2021_Q2_NP	EV_MW_BC1B_WG_2021_Q2_NP	EV_MW_BC1A_WG_2021_Q2_NP	----	----
Client sampling date / time					19-Apr-2021 11:10	19-Apr-2021 13:35	19-Apr-2021 14:50	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100933-001	CG2100933-002	CG2100933-003	-----	-----	
					Result	Result	Result	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.64	2.46 <sup>DTC</sup>	0.98	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.95	1.27 <sup>DTC</sup>	0.88	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	10.0	31.9	28.2	----	----	
cation sum	----	EC101	0.10	meq/L	9.28	29.8	26.9	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.8	93.4	95.4	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.73	3.40	2.36	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0027	0.0015	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00011	0.00119	0.00069	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00017	0.00022	0.00025	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.142	0.0295	0.0591	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.040 <sup>DLA</sup>	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.018	0.041	0.042	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0798	0.267	0.200	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	107	264	256	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	0.00023	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.20 <sup>DLA</sup>	0.24	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00032	<0.00040 <sup>DLA</sup>	0.00049	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.020 <sup>DLA</sup>	0.031	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0279	0.150	0.153	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	35.2	194	165	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0279	0.00032	0.00415	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00356	0.00803	0.00539	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00067	0.00436	0.00259	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.38	6.56	5.88	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	23.2	286	283	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC3_ WG_2021_Q2_ NP	EV_MW_BC1B_ WG_2021_Q2_ NP	EV_MW_BC1A_ WG_2021_Q2_ NP	----	----
Client sampling date / time					19-Apr-2021 11:10	19-Apr-2021 13:35	19-Apr-2021 14:50	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100933-001 Result	CG2100933-002 Result	CG2100933-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.74	2.53	3.27	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	23.3	10.9	9.93	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.267	1.29	1.19	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	50.2	369	315	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000021	0.000018	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00123	0.0114	0.00906	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0015	0.0066	0.0056	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2100933</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : <b>Kennedy Allen</b> <b>Address</b> : <b>RR#1 HIGHWAY #3</b> <b>Sparwood BC Canada V0B 2G1</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>ELKVIEW OPERATIONS</b> <b>PO</b> : <b>VPO00741597</b> <b>C-O-C number</b> : <b>20210419Q2GW</b> <b>Sampler</b> : <b>N. Wicharuk</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>Teck Coal Master Quote</b> <b>No. of samples received</b> : <b>3</b> <b>No. of samples analysed</b> : <b>3</b>	<b>Page</b> : <b>1 of 16</b>  <b>Laboratory</b> : <b>Calgary - Environmental</b> <b>Account Manager</b> : <b>Lyudmyla Shvets</b> <b>Address</b> : <b>2559 29th Street NE</b> <b>Calgary, Alberta Canada T1Y 7B5</b>  <b>Telephone</b> : <b>+1 403 407 1800</b> <b>Date Samples Received</b> : <b>20-Apr-2021 08:25</b> <b>Issue Date</b> : <b>28-Apr-2021 15:02</b>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### ***Outliers: Reference Material (RM) Samples***

- No Reference Material (RM) Sample outliers occur.

#### ***Outliers : Analysis Holding Time Compliance (Breaches)***

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q2_NP	E298	19-Apr-2021	23-Apr-2021	----	4 days	✓	23-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q2_NP	E298	19-Apr-2021	23-Apr-2021	----	4 days	✓	23-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q2_NP	E298	19-Apr-2021	23-Apr-2021	----	4 days	✓	23-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q2_NP	E235.Br-L	19-Apr-2021	----	----	----		21-Apr-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q2_NP	E235.Br-L	19-Apr-2021	----	----	----		21-Apr-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC3_WG_2021_Q2_NP	E235.Br-L	19-Apr-2021	----	----	----		21-Apr-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q2_NP	E235.Cl-L	19-Apr-2021	----	----	----		21-Apr-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_BC1B_WG_2021_Q2_NP	E235.Cl-L	19-Apr-2021	----	----	----		21-Apr-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_MC3_WG_2021_Q2_NP	E235.Cl-L	19-Apr-2021	----	----	----		21-Apr-2021	28 days	3 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_BC1A_WG_2021_Q2_NP	E378-U	19-Apr-2021	----	----	----		21-Apr-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_BC1B_WG_2021_Q2_NP	E378-U	19-Apr-2021	----	----	----		21-Apr-2021	3 days	3 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_MC3_WG_2021_Q2_NP	E378-U	19-Apr-2021	----	----	----		21-Apr-2021	3 days	3 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_BC1A_WG_2021_Q2_NP	E235.F	19-Apr-2021	----	----	----		21-Apr-2021	28 days	3 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_BC1B_WG_2021_Q2_NP	E235.F	19-Apr-2021	----	----	----		21-Apr-2021	28 days	3 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_MC3_WG_2021_Q2_NP	E235.F	19-Apr-2021	----	----	----		21-Apr-2021	28 days	3 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_BC1A_WG_2021_Q2_NP	E235.NO3-L	19-Apr-2021	----	----	----		21-Apr-2021	3 days	3 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q2_NP	E235.NO3-L	19-Apr-2021	----	----	----		21-Apr-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC3_WG_2021_Q2_NP	E235.NO3-L	19-Apr-2021	----	----	----		21-Apr-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q2_NP	E235.NO2-L	19-Apr-2021	----	----	----		21-Apr-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q2_NP	E235.NO2-L	19-Apr-2021	----	----	----		21-Apr-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC3_WG_2021_Q2_NP	E235.NO2-L	19-Apr-2021	----	----	----		21-Apr-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q2_NP	E235.SO4	19-Apr-2021	----	----	----		21-Apr-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q2_NP	E235.SO4	19-Apr-2021	----	----	----		21-Apr-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC3_WG_2021_Q2_NP	E235.SO4	19-Apr-2021	----	----	----		21-Apr-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q2_NP	E375-T	19-Apr-2021	22-Apr-2021	----	3 days	✓	22-Apr-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q2_NP	E375-T	19-Apr-2021	22-Apr-2021	----	3 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q2_NP	E375-T	19-Apr-2021	22-Apr-2021	----	3 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q2_NP	E318	19-Apr-2021	22-Apr-2021	----	3 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q2_NP	E318	19-Apr-2021	22-Apr-2021	----	3 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q2_NP	E318	19-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q2_NP	E372-U	19-Apr-2021	22-Apr-2021	----	3 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q2_NP	E372-U	19-Apr-2021	22-Apr-2021	----	3 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q2_NP	E372-U	19-Apr-2021	22-Apr-2021	----	3 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC1A_WG_2021_Q2_NP	E421.Cr-L	19-Apr-2021	22-Apr-2021	----	3 days	✓	22-Apr-2021	180 days	1 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC1B_WG_2021_Q2_NP	E421.Cr-L	19-Apr-2021	22-Apr-2021	----	3 days	✓	22-Apr-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC3_WG_2021_Q2_NP	E421.Cr-L	19-Apr-2021	22-Apr-2021	----	3 days	✓	22-Apr-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_BC1A_WG_2021_Q2_NP	E509	19-Apr-2021	24-Apr-2021	----	5 days	✓	24-Apr-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_BC1B_WG_2021_Q2_NP	E509	19-Apr-2021	24-Apr-2021	----	5 days	✓	24-Apr-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC3_WG_2021_Q2_NP	E509	19-Apr-2021	24-Apr-2021	----	5 days	✓	24-Apr-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC1A_WG_2021_Q2_NP	E421	19-Apr-2021	22-Apr-2021	----	3 days	✓	22-Apr-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC1B_WG_2021_Q2_NP	E421	19-Apr-2021	22-Apr-2021	----	3 days	✓	22-Apr-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC3_WG_2021_Q2_NP	E421	19-Apr-2021	22-Apr-2021	----	3 days	✓	22-Apr-2021	180 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q2_NP	E358-L	19-Apr-2021	26-Apr-2021	----	8 days	✓	26-Apr-2021	28 days	1 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q2_NP	E358-L	19-Apr-2021	26-Apr-2021	----	8 days	✓	26-Apr-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q2_NP	E358-L	19-Apr-2021	26-Apr-2021	----	8 days	✓	26-Apr-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q2_NP	E355-L	19-Apr-2021	26-Apr-2021	----	8 days	✓	26-Apr-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q2_NP	E355-L	19-Apr-2021	26-Apr-2021	----	8 days	✓	26-Apr-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q2_NP	E355-L	19-Apr-2021	26-Apr-2021	----	8 days	✓	26-Apr-2021	28 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q2_NP	E283	19-Apr-2021	----	----	----		23-Apr-2021	14 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q2_NP	E283	19-Apr-2021	----	----	----		23-Apr-2021	14 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC3_WG_2021_Q2_NP	E283	19-Apr-2021	----	----	----		23-Apr-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q2_NP	E290	19-Apr-2021	----	----	----		23-Apr-2021	14 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_BC1B_WG_2021_Q2_NP	E290	19-Apr-2021	----	----	----		23-Apr-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_MC3_WG_2021_Q2_NP	E290	19-Apr-2021	----	----	----		23-Apr-2021	14 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_BC1A_WG_2021_Q2_NP	E100	19-Apr-2021	----	----	----		23-Apr-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_BC1B_WG_2021_Q2_NP	E100	19-Apr-2021	----	----	----		23-Apr-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MC3_WG_2021_Q2_NP	E100	19-Apr-2021	----	----	----		23-Apr-2021	28 days	5 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_BC1A_WG_2021_Q2_NP	E125	19-Apr-2021	----	----	----		26-Apr-2021	0.34 hrs	171 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_BC1B_WG_2021_Q2_NP	E125	19-Apr-2021	----	----	----		26-Apr-2021	0.34 hrs	172 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MC3_WG_2021_Q2_NP	E125	19-Apr-2021	----	----	----		26-Apr-2021	0.34 hrs	175 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MC3_WG_2021_Q2_NP	E108	19-Apr-2021	----	----	----		23-Apr-2021	0.25 hrs	102 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_BC1A_WG_2021_Q2_NP	E108	19-Apr-2021	----	----	----		23-Apr-2021	0.25 hrs	98 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_BC1B_WG_2021_Q2_NP	E108	19-Apr-2021	----	----	----		23-Apr-2021	0.25 hrs	99 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_BC1A_WG_2021_Q2_NP	E162	19-Apr-2021	----	----	----		26-Apr-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_BC1B_WG_2021_Q2_NP	E162	19-Apr-2021	----	----	----		26-Apr-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC3_WG_2021_Q2_NP	E162	19-Apr-2021	----	----	----		26-Apr-2021	7 days	8 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] EV_MW_BC1A_WG_2021_Q2_NP	E160-L	19-Apr-2021	----	----	----		26-Apr-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] EV_MW_BC1B_WG_2021_Q2_NP	E160-L	19-Apr-2021	----	----	----		26-Apr-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] EV_MW_MC3_WG_2021_Q2_NP	E160-L	19-Apr-2021	----	----	----		26-Apr-2021	7 days	8 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MW_BC1A_WG_2021_Q2_NP	E121	19-Apr-2021	----	----	----		20-Apr-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q2_NP	E121	19-Apr-2021	----	----	----		20-Apr-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_MC3_WG_2021_Q2_NP	E121	19-Apr-2021	----	----	----		20-Apr-2021	3 days	2 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	184498	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	184507	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	184105	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	182842	2	29	6.9	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	182843	2	29	6.9	5.0	✓
Conductivity in Water	E100	184505	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	183062	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	184806	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	183063	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	185506	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	182524	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	182840	2	29	6.9	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	182844	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	182845	1	20	5.0	5.0	✓
ORP by Electrode	E125	185613	1	20	5.0	5.0	✓
pH by Meter	E108	184506	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	182841	2	29	6.9	5.0	✓
TDS by Gravimetry	E162	185144	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	182534	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	182804	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	185510	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	182536	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	181880	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	184498	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	184507	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	184105	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	182842	2	29	6.9	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	182843	2	29	6.9	5.0	✓
Conductivity in Water	E100	184505	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	183062	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	184806	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	183063	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	185506	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	182524	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	182840	2	29	6.9	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	182844	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	182845	1	20	5.0	5.0	✓
ORP by Electrode	E125	185613	1	20	5.0	5.0	✓
pH by Meter	E108	184506	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	182841	2	29	6.9	5.0	✓
TDS by Gravimetry	E162	185144	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	182534	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	182804	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	185510	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	182536	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	185138	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	181880	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	184498	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	184507	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	184105	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	182842	2	29	6.9	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	182843	2	29	6.9	5.0	✓
Conductivity in Water	E100	184505	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	183062	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	184806	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	183063	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	185506	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	182524	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	182840	2	29	6.9	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	182844	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	182845	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	182841	2	29	6.9	5.0	✓
TDS by Gravimetry	E162	185144	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	182534	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	182804	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	185510	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	182536	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	185138	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	181880	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	184105	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	182842	2	29	6.9	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	182843	2	29	6.9	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	183062	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	184806	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	183063	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	185506	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	182524	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	182840	2	29	6.9	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	182844	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	182845	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	182841	2	29	6.9	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	182534	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	182804	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	185510	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	182536	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2100933**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210419Q2GW  
**Sampler** : N. Wicharuk  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Apr-2021 08:25  
**Date Analysis Commenced** : 20-Apr-2021  
**Issue Date** : 28-Apr-2021 15:02

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
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Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2100933  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 181880)</b>											
CG2100921-009	Anonymous	turbidity	----	E121	0.10	NTU	4.69	4.65	0.856%	15%	----
<b>Physical Tests (QC Lot: 184498)</b>											
CG2100921-009	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 184505)</b>											
CG2100921-009	Anonymous	conductivity	----	E100	2.0	µS/cm	2090	2080	0.480%	10%	----
<b>Physical Tests (QC Lot: 184506)</b>											
CG2100921-009	Anonymous	pH	----	E108	0.10	pH units	8.21	8.23	0.243%	4%	----
<b>Physical Tests (QC Lot: 184507)</b>											
CG2100921-009	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	516	518	0.522%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	516	518	0.522%	20%	----
<b>Physical Tests (QC Lot: 185144)</b>											
CG2100921-009	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1810	1900	5.02%	20%	----
<b>Physical Tests (QC Lot: 185613)</b>											
CG2100921-009	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	271	279	2.98%	15%	----
<b>Anions and Nutrients (QC Lot: 182524)</b>											
CG2100921-009	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182534)</b>											
CG2100933-001	EV_MW_MC3_WG_2021_Q2_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182536)</b>											
CG2100921-009	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182804)</b>											
CG2100920-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.510	0.462	0.048	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182840)</b>											
CG2100920-009	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182841)</b>											
CG2100920-009	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182842)</b>											
CG2100920-009	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182843)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 182843) - continued</b>											
CG2100920-009	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182844)</b>											
CG2100920-009	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182845)</b>											
CG2100920-009	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182846)</b>											
CG2100937-008	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182847)</b>											
CG2100937-008	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182848)</b>											
CG2100937-008	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182849)</b>											
CG2100937-008	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 184105)</b>											
CG2100933-003	EV_MW_BC1A_WG_2021_Q2_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 185506)</b>											
CG2100932-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.16	1.23	0.07	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 185510)</b>											
CG2100932-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.07	1.12	0.04	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 183062)</b>											
CG2100921-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 183063)</b>											
CG2100921-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0057	0.0041	0.0016	Diff <2x LOR	----
CG2100921-008	Anonymous	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00026	0.00026	0.000003	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00112	0.00109	2.49%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0129	0.0140	8.29%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.030	0.031	0.0007	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0373 µg/L	0.0000379	0.0000006	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	242	252	3.76%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	9.58 µg/L	0.00965	0.740%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.660	0.664	0.686%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 183063) - continued</b>											
CG2100921-008	Anonymous	lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0764	0.0759	0.712%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	160	160	0.0530%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.299	0.302	1.15%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00516	0.00528	2.24%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0447	0.0448	0.125%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.59	5.65	1.06%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	7.57 µg/L	0.00774	2.23%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.79	2.82	0.765%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	14.3	14.2	0.770%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.502	0.503	0.177%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	296	292	1.27%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000044	0.000045	0.000009	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0141	0.0145	2.87%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0046	0.0047	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 184806)</b>											
CG2100933-001	EV_MW_MC3_WG_2021_Q2_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 181880)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 184498)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 184505)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 184507)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 185138)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 185144)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 182524)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 182534)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 182536)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 182804)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 182840)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 182841)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 182842)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 182843)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 182844)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 182845)</b>						





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 182845) - continued</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 182846)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 182847)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 182848)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 182849)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 184105)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 185506)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 185510)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 183062)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 183063)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 183063) - continued</b>						
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 184806)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 181880)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100.0	85.0	115	---
<b>Physical Tests (QCLot: 184498)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	110	85.0	115	---
<b>Physical Tests (QCLot: 184505)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	---
<b>Physical Tests (QCLot: 184506)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 184507)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 185138)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	85.6	85.0	115	---
<b>Physical Tests (QCLot: 185144)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	93.3	85.0	115	---
<b>Physical Tests (QCLot: 185613)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Anions and Nutrients (QCLot: 182524)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	99.7	80.0	120	---
<b>Anions and Nutrients (QCLot: 182534)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	99.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 182536)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.7	80.0	120	---
<b>Anions and Nutrients (QCLot: 182804)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	103	75.0	125	---
<b>Anions and Nutrients (QCLot: 182840)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 182841)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	96.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 182842)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	107	85.0	115	---
<b>Anions and Nutrients (QCLot: 182843)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	96.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 182844)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 182844) - continued</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	97.0	90.0	110	----
<b>Anions and Nutrients (QCLot: 182845)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 182846)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	93.7	90.0	110	----
<b>Anions and Nutrients (QCLot: 182847)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.1	90.0	110	----
<b>Anions and Nutrients (QCLot: 182848)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 182849)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 184105)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	104	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 185506)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	85.5	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 185510)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	90.2	80.0	120	----
<b>Dissolved Metals (QCLot: 183062)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
<b>Dissolved Metals (QCLot: 183063)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.1	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.1	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.1	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 183063) - continued</b>									
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.2	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.3	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.8	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.5	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.2	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.9	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 182524)</b>										
CG2100921-010	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0504 mg/L	0.05 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 182534)</b>										
CG2100933-002	EV_MW_BC1B_WG_2021_Q2_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0667 mg/L	0.0676 mg/L	98.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 182536)</b>										
CG2100921-010	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0544 mg/L	0.0676 mg/L	80.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 182804)</b>										
CG2100920-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.88 mg/L	2.5 mg/L	115	70.0	130	----
<b>Anions and Nutrients (QCLot: 182840)</b>										
CG2100920-009	Anonymous	fluoride	16984-48-8	E235.F	0.966 mg/L	1 mg/L	96.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 182841)</b>										
CG2100920-009	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 182842)</b>										
CG2100920-009	Anonymous	bromide	24959-67-9	E235.Br-L	0.459 mg/L	0.5 mg/L	91.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 182843)</b>										
CG2100920-009	Anonymous	chloride	16887-00-6	E235.Cl-L	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 182844)</b>										
CG2100920-009	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.52 mg/L	2.5 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 182845)</b>										
CG2100920-009	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.515 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 182846)</b>										
CG2100937-008	Anonymous	fluoride	16984-48-8	E235.F	0.963 mg/L	1 mg/L	96.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 182847)</b>										
CG2100937-008	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 182848)</b>										
CG2100937-008	Anonymous	bromide	24959-67-9	E235.Br-L	0.421 mg/L	0.5 mg/L	84.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 182849)</b>										
CG2100937-008	Anonymous	chloride	16887-00-6	E235.Cl-L	101 mg/L	100 mg/L	101	75.0	125	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 184105)</b>										
CG2100933-003	EV_MW_BC1A_WG_2021_Q2_NP	ammonia, total (as N)	7664-41-7	E298	0.108 mg/L	0.1 mg/L	108	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 185506)</b>										
CG2100932-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	17.9 mg/L	23.9 mg/L	75.0	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 185510)</b>										
CG2100932-001	Anonymous	carbon, total organic [TOC]	----	E355-L	19.5 mg/L	23.9 mg/L	81.8	70.0	130	----
<b>Dissolved Metals (QCLot: 183062)</b>										
CG2100921-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
<b>Dissolved Metals (QCLot: 183063)</b>										
CG2100921-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.192 mg/L	0.2 mg/L	96.1	70.0	130	----
CG2100921-008	Anonymous	antimony, dissolved	7440-36-0	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0368 mg/L	0.04 mg/L	92.1	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00813 mg/L	0.01 mg/L	81.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	87.9	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00379 mg/L	0.004 mg/L	94.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0180 mg/L	0.02 mg/L	89.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.86 mg/L	2 mg/L	93.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0183 mg/L	0.02 mg/L	91.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0887 mg/L	0.1 mg/L	88.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.92 mg/L	10 mg/L	89.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00309 mg/L	0.004 mg/L	77.2	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00370 mg/L	0.004 mg/L	92.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----



Page : 14 of 14  
 Work Order : CG2100933  
 Client : Teck Coal Limited  
 Project : ELKVIEW OPERATIONS



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 183063) - continued</b>										
CG2100921-008	Anonymous	titanium, dissolved	7440-32-6	E421	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.369 mg/L	0.4 mg/L	92.2	70.0	130	----
<b>Dissolved Metals (QCLot: 184806)</b>										
CG2100933-002	EV_MW_BC1B_WG_2021_Q2_NP	mercury, dissolved	7439-97-6	E509	0.0000888 mg/L	0.0001 mg/L	88.8	70.0	130	----



Teck

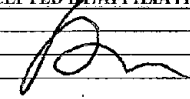
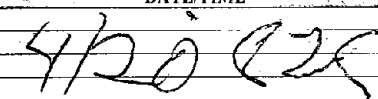
COC ID: <b>20210419Q2GW</b>		TURNAROUND TIME:		RUSH:						
PROJECT/CLIENT INFO			LABORATORY			OTHER INFO				
Facility Name / Job#	Elkview Operations		Lab Name	ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Job Description	Q2 Ground Water Sampling		Lab Contact	Lyudmyla Shveits		Email 1:	chris.emsle@teck.com	X	X	X
Project Manager	Kennedy Allen		Email	lyudmyla.shveits@alsglobal.com		Email 2:	colby.bracken@teck.com	X	X	X
Email	kennedy.allan@teck.com		Address	2559 29 Street NE		Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3					Email 4:	Teck Lab Results@sharepoint.teck.ca	X	X	X
						Email 5:	teckcoal@eguisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB			
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada			
Phone Number	1-250-865-5289		Phone Number	403-407-1800		PO number	VPO00741597			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED											
								TECKCOAL-ROUTINE-VA (E305 I)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI
EV_MW_MC3_WG_2021_Q2_NP	EV_MW_MC3	WG	N	04/19/21	11:10	G	5	1	1	1	1						1		
EV_MW_BC1B_WG_2021_Q2_NP	EV_MW_BC1B	WG	N	04/19/21	13:35	G	5	1	1	1	1						1		
EV_MW_BC1A_WG_2021_Q2_NP	EV_MW_BC1A	WG	N	04/19/21	14:50	G	5	1	1	1	1						1		
Total							15												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
		N. Wicharuk		April 19, 2021					
SERVICE REQUEST (rush - subject to availability)		Sampler's Name		Mobile #		Date/Time			
Regular (default) X		N. Wicharuk				April 19, 2021			
Priority (2-3 business days) - 50% surcharge		Sampler's Signature							
Emergency (1 Business Day) - 100% surcharge									
For Emergencies									

Environmental Division  
Calgary  
Work Order Reference  
**CG2100933**



6



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100934**  
**Client** : **Teck Coal Limited**  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210418Q2GW  
**Sampler** : C. Bracken/N. Wicharuk  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Apr-2021 08:25  
**Date Analysis Commenced** : 20-Apr-2021  
**Issue Date** : 30-Apr-2021 19:17

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					EV_MW_MC4_WG_2021_Q2_NP	EV_MW_MC1A_WG_2021_Q2_NP	EV_MW_MC1B_WG_2021_Q2_NP	EV_MW_MC2A_WG_2021_Q2_NP	EV_MW_MC2B_WG_2021_Q2_NP
Client sampling date / time					18-Apr-2021 14:20	18-Apr-2021 09:40	18-Apr-2021 10:35	18-Apr-2021 12:30	18-Apr-2021 11:55
Analyte	CAS Number	Method	LOR	Unit	CG2100934-001	CG2100934-002	CG2100934-003	CG2100934-004	CG2100934-005
					Result	Result	Result	Result	Result
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	4.2	2.7	14.3
conductivity	----	E100	2.0	µS/cm	872	846	1380	926	1090
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	448	372	645	390	577
oxidation-reduction potential [ORP]	----	E125	0.10	mV	437	337	359	335	387
pH	----	E108	0.10	pH units	8.00	8.07	7.73	8.05	7.97
solids, total dissolved [TDS]	----	E162	10	mg/L	520	426	860	463	773
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.4	2.5	29.1	2.1	<1.0
turbidity	----	E121	0.10	NTU	4.33	13.5	127	17.5	<0.10
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	340	348	389	391	247
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	340	348	389	391	247
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	415	424	475	477	301
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0070	1.56	0.267	0.889 <sup>RRV</sup>	<0.0050
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.137	0.503	1.08	0.068	<0.250 <sup>DLHC</sup>
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	30.8	76.9	150	85.6	32.7
fluoride	16984-48-8	E235.F	0.020	mg/L	0.099	0.174	0.105	0.221	0.104
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	1.37	0.257	0.717	<0.050
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	<0.0250 <sup>DLHC</sup>	<0.0050	6.00
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0068	0.0021	<0.0050 <sup>DLHC</sup>	0.0013	0.0087
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0071	0.0072	0.0049	<0.0020
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	0.0032	<0.0020	<0.0020	<0.0020
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	107	6.15	158	8.28	301
nitrogen, total	7727-37-9	EC368	0.050	mg/L	<0.050	1.37	0.257	0.718	6.01
<b>Organic / Inorganic Carbon</b>									



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC4_ WG_2021_Q2_ NP	EV_MW_MC1A_ WG_2021_Q2_ NP	EV_MW_MC1B_ WG_2021_Q2_ NP	EV_MW_MC2A_ WG_2021_Q2_ NP	EV_MW_MC2B_ WG_2021_Q2_ NP
Client sampling date / time					18-Apr-2021 14:20	18-Apr-2021 09:40	18-Apr-2021 10:35	18-Apr-2021 12:30	18-Apr-2021 11:55	
Analyte	CAS Number	Method	LOR	Unit	CG2100934-001	CG2100934-002	CG2100934-003	CG2100934-004	CG2100934-005	
					Result	Result	Result	Result	Result	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.86	1.79	2.19	0.91 <sup>DTC</sup>	0.85	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.24	1.38	2.02	<0.50 <sup>DTC</sup>	0.58	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.90	9.26	15.3	10.4	12.6	
cation sum	----	EC101	0.10	meq/L	9.37	8.51	14.9	9.63	12.0	
ion balance (cations/anions ratio)	----	EC101	0.010	%	94.6	91.9	97.4	92.6	95.2	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.75	4.22	1.32	3.84	2.44	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0024	0.0021	<0.0010	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00055	0.00056	0.00488	0.00078	0.00011	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.130	9.64	0.698	5.72	0.0495	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.040 <sup>DLA</sup>	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.036	0.061	0.033	0.057	0.022	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0100 <sup>DLA</sup>	<0.0050	<0.0050	0.0875	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	120	97.2	166	101	136	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	0.00015	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.50	<0.20 <sup>DLA</sup>	0.72	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00132	<0.00040 <sup>DLA</sup>	<0.00020	<0.00020	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.408	1.10	14.1	1.34	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0199	0.113	0.0875	0.211	0.0510	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	36.1	31.5	56.0	33.4	57.7	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0701	0.104	1.19	0.0530	<0.00010	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00361	0.000161	0.00147	0.000123	0.000598	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00280	<0.00100 <sup>DLA</sup>	0.00124	<0.00050	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.44	4.31	2.93	3.73	2.06	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.100 <sup>DLA</sup>	0.324	<0.050	47.1	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC4_ WG_2021_Q2_ NP	EV_MW_MC1A _WG_2021_Q2_ _NP	EV_MW_MC1B _WG_2021_Q2_ _NP	EV_MW_MC2A _WG_2021_Q2_ _NP	EV_MW_MC2B _WG_2021_Q2_ _NP
Client sampling date / time					18-Apr-2021 14:20	18-Apr-2021 09:40	18-Apr-2021 10:35	18-Apr-2021 12:30	18-Apr-2021 11:55	
Analyte	CAS Number	Method	LOR	Unit	CG2100934-001	CG2100934-002	CG2100934-003	CG2100934-004	CG2100934-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.00	3.46	5.54	4.37	3.24	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.63	18.4	31.6	37.6	10.8	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.588	1.75	0.769	1.54	0.314	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	36.8	<1.00 <sup>DLA</sup>	55.2	<0.50	100	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000021	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00114	0.000159	0.000640	0.000011	0.00149	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0048	0.0046	0.0039	0.0033	0.0012	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100934</b>	Page	: 1 of 21
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Kennedy Allen	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 20-Apr-2021 08:25
PO	: VPO00741597	Issue Date	: 30-Apr-2021 19:18
C-O-C number	: 20210418Q2GW		
Sampler	: C. Bracken/N. Wicharuk		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q2_NP	E298	18-Apr-2021	23-Apr-2021	----	5 days	✓	23-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q2_NP	E298	18-Apr-2021	23-Apr-2021	----	5 days	✓	23-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q2_NP	E298	18-Apr-2021	23-Apr-2021	----	6 days	✓	23-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q2_NP	E298	18-Apr-2021	23-Apr-2021	----	6 days	✓	23-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q2_NP	E298	18-Apr-2021	23-Apr-2021	----	6 days	✓	23-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q2_NP	E235.Br-L	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q2_NP	E235.Br-L	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2A_WG_2021_Q2_NP	E235.Br-L	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2B_WG_2021_Q2_NP	E235.Br-L	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE EV_MW_MC4_WG_2021_Q2_NP	E235.Br-L	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_MC1A_WG_2021_Q2_NP	E235.Cl-L	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_MC1B_WG_2021_Q2_NP	E235.Cl-L	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2A_WG_2021_Q2_NP	E235.Cl-L	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2B_WG_2021_Q2_NP	E235.Cl-L	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_MC4_WG_2021_Q2_NP	E235.Cl-L	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC4_WG_2021_Q2_NP	E378-U	18-Apr-2021	----	----	----		21-Apr-2021	3 days	3 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC1A_WG_2021_Q2_NP	E378-U	18-Apr-2021	----	----	----		21-Apr-2021	3 days	4 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC1B_WG_2021_Q2_NP	E378-U	18-Apr-2021	----	----	----		21-Apr-2021	3 days	4 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC2A_WG_2021_Q2_NP	E378-U	18-Apr-2021	----	----	----		21-Apr-2021	3 days	4 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC2B_WG_2021_Q2_NP	E378-U	18-Apr-2021	----	----	----		21-Apr-2021	3 days	4 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC1A_WG_2021_Q2_NP	E235.F	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC1B_WG_2021_Q2_NP	E235.F	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC2A_WG_2021_Q2_NP	E235.F	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC2B_WG_2021_Q2_NP	E235.F	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC4_WG_2021_Q2_NP	E235.F	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✔	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q2_NP	E235.NO3-L	18-Apr-2021	----	----	----		21-Apr-2021	3 days	4 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q2_NP	E235.NO3-L	18-Apr-2021	----	----	----		21-Apr-2021	3 days	4 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC2A_WG_2021_Q2_NP	E235.NO3-L	18-Apr-2021	----	----	----		21-Apr-2021	3 days	4 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC2B_WG_2021_Q2_NP	E235.NO3-L	18-Apr-2021	----	----	----		21-Apr-2021	3 days	4 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC4_WG_2021_Q2_NP	E235.NO3-L	18-Apr-2021	----	----	----		21-Apr-2021	3 days	4 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q2_NP	E235.NO2-L	18-Apr-2021	----	----	----		21-Apr-2021	3 days	4 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q2_NP	E235.NO2-L	18-Apr-2021	----	----	----		21-Apr-2021	3 days	4 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC2A_WG_2021_Q2_NP	E235.NO2-L	18-Apr-2021	----	----	----		21-Apr-2021	3 days	4 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC2B_WG_2021_Q2_NP	E235.NO2-L	18-Apr-2021	----	----	----		21-Apr-2021	3 days	4 days	✓	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC4_WG_2021_Q2_NP	E235.NO2-L	18-Apr-2021	----	----	----		21-Apr-2021	3 days	4 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q2_NP	E235.SO4	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q2_NP	E235.SO4	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC2A_WG_2021_Q2_NP	E235.SO4	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC2B_WG_2021_Q2_NP	E235.SO4	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC4_WG_2021_Q2_NP	E235.SO4	18-Apr-2021	----	----	----		21-Apr-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q2_NP	E375-T	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q2_NP	E375-T	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q2_NP	E375-T	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	28 days	1 days	✓	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q2_NP	E375-T	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q2_NP	E375-T	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q2_NP	E318	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q2_NP	E318	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q2_NP	E318	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q2_NP	E318	18-Apr-2021	22-Apr-2021	----	5 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q2_NP	E318	18-Apr-2021	22-Apr-2021	----	5 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q2_NP	E372-U	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q2_NP	E372-U	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	28 days	1 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q2_NP	E372-U	18-Apr-2021	22-Apr-2021	----	4 days	✔	22-Apr-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q2_NP	E372-U	18-Apr-2021	22-Apr-2021	----	4 days	✔	22-Apr-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q2_NP	E372-U	18-Apr-2021	22-Apr-2021	----	4 days	✔	22-Apr-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC1A_WG_2021_Q2_NP	E421.Cr-L	18-Apr-2021	22-Apr-2021	----	4 days	✔	22-Apr-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC1B_WG_2021_Q2_NP	E421.Cr-L	18-Apr-2021	22-Apr-2021	----	4 days	✔	22-Apr-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC2A_WG_2021_Q2_NP	E421.Cr-L	18-Apr-2021	22-Apr-2021	----	4 days	✔	22-Apr-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC2B_WG_2021_Q2_NP	E421.Cr-L	18-Apr-2021	22-Apr-2021	----	4 days	✔	22-Apr-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC4_WG_2021_Q2_NP	E421.Cr-L	18-Apr-2021	22-Apr-2021	----	4 days	✔	22-Apr-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC1B_WG_2021_Q2_NP	E509	18-Apr-2021	24-Apr-2021	----	6 days	✔	24-Apr-2021	28 days	1 days	✔	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC2A_WG_2021_Q2_NP	E509	18-Apr-2021	24-Apr-2021	----	6 days	✓	24-Apr-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC2B_WG_2021_Q2_NP	E509	18-Apr-2021	24-Apr-2021	----	6 days	✓	24-Apr-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC4_WG_2021_Q2_NP	E509	18-Apr-2021	24-Apr-2021	----	6 days	✓	24-Apr-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC1A_WG_2021_Q2_NP	E509	18-Apr-2021	24-Apr-2021	----	7 days	✓	24-Apr-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC1A_WG_2021_Q2_NP	E421	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC1B_WG_2021_Q2_NP	E421	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC2A_WG_2021_Q2_NP	E421	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC2B_WG_2021_Q2_NP	E421	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC4_WG_2021_Q2_NP	E421	18-Apr-2021	22-Apr-2021	----	4 days	✓	22-Apr-2021	180 days	1 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q2_NP	E358-L	18-Apr-2021	26-Apr-2021	----	9 days	✔	26-Apr-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q2_NP	E358-L	18-Apr-2021	26-Apr-2021	----	9 days	✔	26-Apr-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q2_NP	E358-L	18-Apr-2021	26-Apr-2021	----	9 days	✔	26-Apr-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q2_NP	E358-L	18-Apr-2021	26-Apr-2021	----	9 days	✔	26-Apr-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q2_NP	E358-L	18-Apr-2021	26-Apr-2021	----	9 days	✔	26-Apr-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q2_NP	E355-L	18-Apr-2021	26-Apr-2021	----	9 days	✔	26-Apr-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q2_NP	E355-L	18-Apr-2021	26-Apr-2021	----	9 days	✔	26-Apr-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q2_NP	E355-L	18-Apr-2021	26-Apr-2021	----	9 days	✔	26-Apr-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q2_NP	E355-L	18-Apr-2021	26-Apr-2021	----	9 days	✔	26-Apr-2021	28 days	1 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q2_NP	E355-L	18-Apr-2021	26-Apr-2021	----	9 days	✔	26-Apr-2021	28 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q2_NP	E283	18-Apr-2021	----	----	----		23-Apr-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q2_NP	E283	18-Apr-2021	----	----	----		23-Apr-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC2A_WG_2021_Q2_NP	E283	18-Apr-2021	----	----	----		23-Apr-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC2B_WG_2021_Q2_NP	E283	18-Apr-2021	----	----	----		23-Apr-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC4_WG_2021_Q2_NP	E283	18-Apr-2021	----	----	----		23-Apr-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q2_NP	E290	18-Apr-2021	----	----	----		23-Apr-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q2_NP	E290	18-Apr-2021	----	----	----		23-Apr-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_MC2A_WG_2021_Q2_NP	E290	18-Apr-2021	----	----	----		23-Apr-2021	14 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_MC2B_WG_2021_Q2_NP	E290	18-Apr-2021	----	----	----		23-Apr-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_MC4_WG_2021_Q2_NP	E290	18-Apr-2021	----	----	----		23-Apr-2021	14 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MC1A_WG_2021_Q2_NP	E100	18-Apr-2021	----	----	----		23-Apr-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MC1B_WG_2021_Q2_NP	E100	18-Apr-2021	----	----	----		23-Apr-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MC2A_WG_2021_Q2_NP	E100	18-Apr-2021	----	----	----		23-Apr-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MC2B_WG_2021_Q2_NP	E100	18-Apr-2021	----	----	----		23-Apr-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MC4_WG_2021_Q2_NP	E100	18-Apr-2021	----	----	----		23-Apr-2021	28 days	6 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MC4_WG_2021_Q2_NP	E125	18-Apr-2021	----	----	----		26-Apr-2021	0.34 hrs	196 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MC2A_WG_2021_Q2_NP	E125	18-Apr-2021	----	----	----		26-Apr-2021	0.34 hrs	197 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_MC2B_WG_2021_Q2_NP	E125	18-Apr-2021	----	----	----		26-Apr-2021	0.34 hrs	198 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_MC1B_WG_2021_Q2_NP	E125	18-Apr-2021	----	----	----		26-Apr-2021	0.34 hrs	199 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_MC1A_WG_2021_Q2_NP	E125	18-Apr-2021	----	----	----		26-Apr-2021	0.34 hrs	200 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_MC4_WG_2021_Q2_NP	E108	18-Apr-2021	----	----	----		23-Apr-2021	0.25 hrs	123 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_MC2A_WG_2021_Q2_NP	E108	18-Apr-2021	----	----	----		23-Apr-2021	0.25 hrs	124 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_MC2B_WG_2021_Q2_NP	E108	18-Apr-2021	----	----	----		23-Apr-2021	0.25 hrs	125 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_MC1B_WG_2021_Q2_NP	E108	18-Apr-2021	----	----	----		23-Apr-2021	0.25 hrs	126 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_MC1A_WG_2021_Q2_NP	E108	18-Apr-2021	----	----	----		23-Apr-2021	0.25 hrs	127 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_MC4_WG_2021_Q2_NP	E162	18-Apr-2021	----	----	----		25-Apr-2021	7 days	7 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q2_NP	E162	18-Apr-2021	----	----	----		25-Apr-2021	7 days	8 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q2_NP	E162	18-Apr-2021	----	----	----		25-Apr-2021	7 days	8 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_MW_MC2A_WG_2021_Q2_NP	E162	18-Apr-2021	----	----	----		25-Apr-2021	7 days	8 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_MW_MC2B_WG_2021_Q2_NP	E162	18-Apr-2021	----	----	----		25-Apr-2021	7 days	8 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_MC4_WG_2021_Q2_NP	E160-L	18-Apr-2021	----	----	----		25-Apr-2021	7 days	7 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_MC1A_WG_2021_Q2_NP	E160-L	18-Apr-2021	----	----	----		25-Apr-2021	7 days	8 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_MC1B_WG_2021_Q2_NP	E160-L	18-Apr-2021	----	----	----		25-Apr-2021	7 days	8 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_MC2A_WG_2021_Q2_NP	E160-L	18-Apr-2021	----	----	----		25-Apr-2021	7 days	8 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_MC2B_WG_2021_Q2_NP	E160-L	18-Apr-2021	----	----	----		25-Apr-2021	7 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_MC4_WG_2021_Q2_NP	E121	18-Apr-2021	----	----	----		20-Apr-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q2_NP	E121	18-Apr-2021	----	----	----		20-Apr-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q2_NP	E121	18-Apr-2021	----	----	----		20-Apr-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_MC2A_WG_2021_Q2_NP	E121	18-Apr-2021	----	----	----		20-Apr-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_MC2B_WG_2021_Q2_NP	E121	18-Apr-2021	----	----	----		20-Apr-2021	3 days	3 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	184498	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	184507	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	184210	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	182891	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	182892	1	17	5.8	5.0	✓
Conductivity in Water	E100	184505	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	183062	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	184806	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	183063	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	185506	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	182524	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	182889	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	182893	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	182894	1	17	5.8	5.0	✓
ORP by Electrode	E125	185613	1	20	5.0	5.0	✓
pH by Meter	E108	184506	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	182890	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	185144	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	182534	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	182804	2	40	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	185510	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	182536	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	181880	2	21	9.5	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	184498	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	184507	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	184210	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	182891	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	182892	1	17	5.8	5.0	✓
Conductivity in Water	E100	184505	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	183062	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	184806	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	183063	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	185506	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	182524	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	182889	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	182893	1	17	5.8	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	182894	1	17	5.8	5.0	✓
ORP by Electrode	E125	185613	1	20	5.0	5.0	✓
pH by Meter	E108	184506	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	182890	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	185144	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	182534	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	182804	2	40	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	185510	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	182536	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	185138	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	181880	2	21	9.5	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	184498	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	184507	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	184210	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	182891	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	182892	1	17	5.8	5.0	✓
Conductivity in Water	E100	184505	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	183062	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	184806	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	183063	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	185506	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	182524	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	182889	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	182893	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	182894	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	182890	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	185144	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	182534	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	182804	2	40	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	185510	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	182536	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	185138	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	181880	2	21	9.5	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	184210	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	182891	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	182892	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	183062	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	184806	1	20	5.0	5.0	✓





Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	183063	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	185506	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	182524	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	182889	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	182893	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	182894	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	182890	1	17	5.8	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	182534	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	182804	2	40	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	185510	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	182536	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2100934**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210418Q2GW  
**Sampler** : C. Bracken/N. Wicharuk  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Apr-2021 08:25  
**Date Analysis Commenced** : 20-Apr-2021  
**Issue Date** : 30-Apr-2021 19:18

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2100934  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 181880)</b>											
CG2100921-009	Anonymous	turbidity	----	E121	0.10	NTU	4.69	4.65	0.856%	15%	----
<b>Physical Tests (QC Lot: 181881)</b>											
CG2100934-005	EV_MW_MC2B_WG_2021_Q2_NP	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 184498)</b>											
CG2100921-009	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 184505)</b>											
CG2100921-009	Anonymous	conductivity	----	E100	2.0	µS/cm	2090	2080	0.480%	10%	----
<b>Physical Tests (QC Lot: 184506)</b>											
CG2100921-009	Anonymous	pH	----	E108	0.10	pH units	8.21	8.23	0.243%	4%	----
<b>Physical Tests (QC Lot: 184507)</b>											
CG2100921-009	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	516	518	0.522%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	516	518	0.522%	20%	----
<b>Physical Tests (QC Lot: 184508)</b>											
CG2100934-005	EV_MW_MC2B_WG_2021_Q2_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	247	249	0.766%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	247	249	0.766%	20%	----
<b>Physical Tests (QC Lot: 185144)</b>											
CG2100921-009	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1810	1900	5.02%	20%	----
<b>Physical Tests (QC Lot: 185613)</b>											
CG2100921-009	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	271	279	2.98%	15%	----
<b>Anions and Nutrients (QC Lot: 182524)</b>											
CG2100921-009	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182534)</b>											
CG2100933-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182536)</b>											
CG2100921-009	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182804)</b>											





Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 182804) - continued</b>											
CG2100920-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.510	0.462	0.048	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182805)</b>											
CG2100934-003	EV_MW_MC1B_WG_2021_Q2_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.257	0.352	0.095	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182889)</b>											
CG2100940-006	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182890)</b>											
CG2100940-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182891)</b>											
CG2100940-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182892)</b>											
CG2100940-006	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182893)</b>											
CG2100940-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 182894)</b>											
CG2100940-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0021	0.0011	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 184210)</b>											
CG2100921-009	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.199	0.206	3.26%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 185506)</b>											
CG2100932-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.16	1.23	0.07	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 185510)</b>											
CG2100932-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.07	1.12	0.04	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 183062)</b>											
CG2100921-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 183063)</b>											
CG2100921-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0057	0.0041	0.0016	Diff <2x LOR	----
CG2100921-008	Anonymous	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00026	0.00026	0.000003	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00112	0.00109	2.49%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0129	0.0140	8.29%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.030	0.031	0.0007	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0373 µg/L	0.0000379	0.0000006	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	242	252	3.76%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	9.58 µg/L	0.00965	0.740%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 183063) - continued</b>											
CG2100921-008	Anonymous	iron, dissolved	7439-89-6	E421	0.010	mg/L	0.660	0.664	0.686%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0764	0.0759	0.712%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	160	160	0.0530%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.299	0.302	1.15%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00516	0.00528	2.24%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0447	0.0448	0.125%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.59	5.65	1.06%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	7.57 µg/L	0.00774	2.23%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.79	2.82	0.765%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	14.3	14.2	0.770%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.502	0.503	0.177%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	296	292	1.27%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000044	0.000045	0.000009	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0141	0.0145	2.87%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0046	0.0047	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 184806)</b>											
CG2100933-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 181880)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 181881)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 184498)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 184505)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 184507)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 184508)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 185138)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 185144)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 182524)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 182534)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 182536)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 182804)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 182805)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 182889)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 182890)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 182891)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 182892)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 182893)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 182894)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 184210)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 185506)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 185510)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 183062)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 183063)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 183063) - continued</b>						
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 184806)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 181880)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100.0	85.0	115	---
<b>Physical Tests (QCLot: 181881)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100.0	85.0	115	---
<b>Physical Tests (QCLot: 184498)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	110	85.0	115	---
<b>Physical Tests (QCLot: 184505)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	---
<b>Physical Tests (QCLot: 184506)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 184507)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 184508)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 185138)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	85.6	85.0	115	---
<b>Physical Tests (QCLot: 185144)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	93.3	85.0	115	---
<b>Physical Tests (QCLot: 185613)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Anions and Nutrients (QCLot: 182524)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	99.7	80.0	120	---
<b>Anions and Nutrients (QCLot: 182534)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	99.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 182536)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.7	80.0	120	---
<b>Anions and Nutrients (QCLot: 182804)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	103	75.0	125	---
<b>Anions and Nutrients (QCLot: 182805)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	101	75.0	125	---
<b>Anions and Nutrients (QCLot: 182889)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 182890)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 182890) - continued</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.7	90.0	110	----
<b>Anions and Nutrients (QCLot: 182891)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 182892)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 182893)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.5	90.0	110	----
<b>Anions and Nutrients (QCLot: 182894)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.5	90.0	110	----
<b>Anions and Nutrients (QCLot: 184210)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	99.9	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 185506)</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	10 mg/L	85.5	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 185510)</b>									
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	10 mg/L	90.2	80.0	120	----
<b>Dissolved Metals (QCLot: 183062)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
<b>Dissolved Metals (QCLot: 183063)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.1	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.1	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.1	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 183063) - continued</b>									
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.2	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.3	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.8	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.5	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.2	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.9	80.0	120	----





## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 182524)</b>										
CG2100921-010	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0504 mg/L	0.05 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 182534)</b>										
CG2100933-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0667 mg/L	0.0676 mg/L	98.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 182536)</b>										
CG2100921-010	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0544 mg/L	0.0676 mg/L	80.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 182804)</b>										
CG2100920-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.88 mg/L	2.5 mg/L	115	70.0	130	----
<b>Anions and Nutrients (QCLot: 182805)</b>										
CG2100934-004	EV_MW_MC2A_WG_2021_Q2_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.99 mg/L	2.5 mg/L	120	70.0	130	----
<b>Anions and Nutrients (QCLot: 182889)</b>										
CG2100940-006	Anonymous	fluoride	16984-48-8	E235.F	0.765 mg/L	1 mg/L	76.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 182890)</b>										
CG2100940-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 182891)</b>										
CG2100940-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.534 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 182892)</b>										
CG2100940-006	Anonymous	chloride	16887-00-6	E235.Cl-L	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 182893)</b>										
CG2100940-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.50 mg/L	2.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 182894)</b>										
CG2100940-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.477 mg/L	0.5 mg/L	95.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 184210)</b>										
CG2100921-010	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 185506)</b>										
CG2100932-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	17.9 mg/L	23.9 mg/L	75.0	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 185510)</b>										
CG2100932-001	Anonymous	carbon, total organic [TOC]	----	E355-L	19.5 mg/L	23.9 mg/L	81.8	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 183062)</b>										
CG2100921-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
<b>Dissolved Metals (QCLot: 183063)</b>										
CG2100921-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.192 mg/L	0.2 mg/L	96.1	70.0	130	----
CG2100921-008	Anonymous	antimony, dissolved	7440-36-0	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0368 mg/L	0.04 mg/L	92.1	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00813 mg/L	0.01 mg/L	81.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	87.9	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00379 mg/L	0.004 mg/L	94.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0180 mg/L	0.02 mg/L	89.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.86 mg/L	2 mg/L	93.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0183 mg/L	0.02 mg/L	91.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0887 mg/L	0.1 mg/L	88.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.92 mg/L	10 mg/L	89.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00309 mg/L	0.004 mg/L	77.2	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00370 mg/L	0.004 mg/L	92.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.369 mg/L	0.4 mg/L	92.2	70.0	130	----
<b>Dissolved Metals (QCLot: 184806)</b>										
CG2100933-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000888 mg/L	0.0001 mg/L	88.8	70.0	130	----



COC ID: 20210418Q2GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emsile@teck.com	X	X	X	
Project Manager	Kennedy Allen			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X	
Email	kennedy.allan@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X	
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X	
								Email 5:	teckcoal@equisonline.com			X	
Province	BC			City	Calgary			Province	AB				
Country	Canada			Postal Code	T1Y 7B5			Country	Canada				
Phone Number	403-5289			Phone Number	403-407-1800			PO number	VPO00741597				

Environmental Division  
Calgary  
Work Order Reference  
**CG2100934**



Telephone: +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MW_MC4_WG_2021_Q2_NP	EV_MW_MC4	WG	N	04/18/21	14:20	G	5	1	1	1	1	1	1					1		
EV_MW_MC1A_WG_2021_Q2_NP	EV_MW_MC1A	WG	N	04/18/21	9:40	G	5	1	1	1	1	1	1					1		
EV_MW_MC1B_WG_2021_Q2_NP	EV_MW_MC1B	WG	N	04/18/21	10:35	G	5	1	1	1	1	1	1					1		
EV_MW_MC2A_WG_2021_Q2_NP	EV_MW_MC2A	WG	N	04/18/21	12:30	G	5	1	1	1	1	1	1					1		
EV_MW_MC2B_WG_2021_Q2_NP	EV_MW_MC2B	WG	N	04/18/21	11:55	G	5	1	1	1	1	1	1					1		
							<b>Total</b>	<b>25</b>												

734

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Bracken/N. Wicharuk	April 18, 2021		
			<i>CB</i>	4/20/21

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/> X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	C. Bracken/N. Wicharuk	
	Sampler's Signature <i>CB</i>	Date/Time: April 18, 2021



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101138**  
**Client** : **Teck Coal Limited**  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210429Q2GW  
**Sampler** : C. Emslie/S. Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 30-Apr-2021 09:35  
**Date Analysis Commenced** : 30-Apr-2021  
**Issue Date** : 07-May-2021 18:24

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID		EV_MW_GT1A_	EV_MW_GT1B_	EV_BCGW_WG	----	----
(Matrix: Water)					WG_2021_Q2_	WG_2021_Q2_	_2021_Q2_				
					NP	NP	NP				
Client sampling date / time					29-Apr-2021 14:01	29-Apr-2021 12:53	29-Apr-2021 16:27				
Analyte	CAS Number	Method	LOR	Unit	CG2101138-001	CG2101138-002	CG2101138-003	-----	-----		
					Result	Result	Result	---	---		
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
conductivity	----	E100	2.0	µS/cm	493	1730	567	----	----		
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	277	1080	302	----	----		
oxidation-reduction potential [ORP]	----	E125	0.10	mV	489	504	472	----	----		
pH	----	E108	0.10	pH units	8.21	8.29	8.24	----	----		
solids, total dissolved [TDS]	----	E162	10	mg/L	300	1420	336	----	----		
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.5	<1.0	----	----		
turbidity	----	E121	0.10	NTU	0.84	0.27	<0.10	----	----		
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	180	225	176	----	----		
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	5.0	<2.0	----	----		
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	180	220	176	----	----		
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	220	268	214	----	----		
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	3.0	<2.0	----	----		
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0979	0.0116	0.0091	----	----		
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.250 <sup>DLHC</sup>	<0.050	----	----		
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.79	9.07	2.76	----	----		
fluoride	16984-48-8	E235.F	0.020	mg/L	0.113	0.144	0.136	----	----		
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	0.204	----	----		
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	16.0	1.47	----	----		
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0014	<0.0050 <sup>DLHC</sup>	<0.0010	----	----		
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0067	0.0014	----	----		
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0047	0.0071	0.0038	----	----		
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0052	0.0060	<0.0020	----	----		
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	97.3	747	125	----	----		
nitrogen, total	7727-37-9	EC368	0.050	mg/L	<0.050	16.0	1.67	----	----		
<b>Organic / Inorganic Carbon</b>											



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_GT1A_WG_2021_Q2_NP	EV_MW_GT1B_WG_2021_Q2_NP	EV_BCGW_WG_2021_Q2_NP	----	----
Client sampling date / time					29-Apr-2021 14:01	29-Apr-2021 12:53	29-Apr-2021 16:27	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101138-001	CG2101138-002	CG2101138-003	-----	-----	
					Result	Result	Result	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	1.09	<0.50	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	1.17	<0.50	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.68	21.4	6.31	----	----	
cation sum	----	EC101	0.10	meq/L	5.68	21.9	6.24	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	102	98.9	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	1.15	0.558	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0014	0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00079	0.00012	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00023	0.00027	0.00014	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0642	0.0578	0.0345	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.013	0.030	0.013	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.118	0.0261	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	75.5	199	73.9	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00013	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00039	0.00101	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.112	<0.010	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0106	0.0912	0.0165	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	21.4	142	28.6	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0773	<0.00010	<0.00010	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00150	0.00664	0.00118	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.0138	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.771	3.98	0.958	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	207	14.3	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_GT1A_WG_2021_Q2_NP	EV_MW_GT1B_WG_2021_Q2_NP	EV_BCGW_WG_2021_Q2_NP	----	----
Client sampling date / time					29-Apr-2021 14:01	29-Apr-2021 12:53	29-Apr-2021 16:27	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101138-001	CG2101138-002	CG2101138-003	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.74	2.39	2.65	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.80	5.50	4.15	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.131	0.615	0.144	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	33.8	263	42.5	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000011	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000407	0.00735	0.00118	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0035	0.0013	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101138</b>	Page	: 1 of 16
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Kennedy Allen	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 30-Apr-2021 09:35
PO	: VPO00741597	Issue Date	: 07-May-2021 18:24
C-O-C number	: 20210429Q2GW		
Sampler	: C. Emslie/S. Hansen		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BCGW_WG_2021_Q2_NP	E298	29-Apr-2021	06-May-2021	----	7 days	✓	06-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q2_NP	E298	29-Apr-2021	06-May-2021	----	7 days	✓	06-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q2_NP	E298	29-Apr-2021	06-May-2021	----	7 days	✓	06-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_BCGW_WG_2021_Q2_NP	E235.Br-L	29-Apr-2021	----	----	----		30-Apr-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q2_NP	E235.Br-L	29-Apr-2021	----	----	----		30-Apr-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GT1B_WG_2021_Q2_NP	E235.Br-L	29-Apr-2021	----	----	----		30-Apr-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_BCGW_WG_2021_Q2_NP	E235.Cl-L	29-Apr-2021	----	----	----		30-Apr-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_GT1A_WG_2021_Q2_NP	E235.Cl-L	29-Apr-2021	----	----	----		30-Apr-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_GT1B_WG_2021_Q2_NP	E235.Cl-L	29-Apr-2021	----	----	----		30-Apr-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_BCGW_WG_2021_Q2_NP	E378-U	29-Apr-2021	----	----	----		30-Apr-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_GT1A_WG_2021_Q2_NP	E378-U	29-Apr-2021	----	----	----		30-Apr-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_GT1B_WG_2021_Q2_NP	E378-U	29-Apr-2021	----	----	----		30-Apr-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_BCGW_WG_2021_Q2_NP	E235.F	29-Apr-2021	----	----	----		30-Apr-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_GT1A_WG_2021_Q2_NP	E235.F	29-Apr-2021	----	----	----		30-Apr-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_GT1B_WG_2021_Q2_NP	E235.F	29-Apr-2021	----	----	----		30-Apr-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_BCGW_WG_2021_Q2_NP	E235.NO3-L	29-Apr-2021	----	----	----		30-Apr-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q2_NP	E235.NO3-L	29-Apr-2021	----	----	----		30-Apr-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_GT1B_WG_2021_Q2_NP	E235.NO3-L	29-Apr-2021	----	----	----		30-Apr-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_BCGW_WG_2021_Q2_NP	E235.NO2-L	29-Apr-2021	----	----	----		30-Apr-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q2_NP	E235.NO2-L	29-Apr-2021	----	----	----		30-Apr-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_GT1B_WG_2021_Q2_NP	E235.NO2-L	29-Apr-2021	----	----	----		30-Apr-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_BCGW_WG_2021_Q2_NP	E235.SO4	29-Apr-2021	----	----	----		30-Apr-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q2_NP	E235.SO4	29-Apr-2021	----	----	----		30-Apr-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_GT1B_WG_2021_Q2_NP	E235.SO4	29-Apr-2021	----	----	----		30-Apr-2021	28 days	2 days	✓
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_BCGW_WG_2021_Q2_NP	E375-T	29-Apr-2021	06-May-2021	----	7 days	✓	06-May-2021	28 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q2_NP	E375-T	29-Apr-2021	06-May-2021	----	7 days	✓	06-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q2_NP	E375-T	29-Apr-2021	06-May-2021	----	7 days	✓	06-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BCGW_WG_2021_Q2_NP	E318	29-Apr-2021	04-May-2021	----	5 days	✓	04-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q2_NP	E318	29-Apr-2021	04-May-2021	----	5 days	✓	04-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q2_NP	E318	29-Apr-2021	04-May-2021	----	5 days	✓	04-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BCGW_WG_2021_Q2_NP	E372-U	29-Apr-2021	06-May-2021	----	7 days	✓	06-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q2_NP	E372-U	29-Apr-2021	06-May-2021	----	7 days	✓	06-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q2_NP	E372-U	29-Apr-2021	06-May-2021	----	7 days	✓	06-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_BCGW_WG_2021_Q2_NP	E421.Cr-L	29-Apr-2021	02-May-2021	----	3 days	✓	03-May-2021	180 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GT1A_WG_2021_Q2_NP	E421.Cr-L	29-Apr-2021	02-May-2021	----	3 days	✓	03-May-2021	180 days	2 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GT1B_WG_2021_Q2_NP	E421.Cr-L	29-Apr-2021	02-May-2021	----	4 days	✓	03-May-2021	180 days	2 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_BCGW_WG_2021_Q2_NP	E509	29-Apr-2021	05-May-2021	----	6 days	✓	05-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GT1A_WG_2021_Q2_NP	E509	29-Apr-2021	05-May-2021	----	7 days	✓	05-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GT1B_WG_2021_Q2_NP	E509	29-Apr-2021	05-May-2021	----	7 days	✓	05-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_BCGW_WG_2021_Q2_NP	E421	29-Apr-2021	02-May-2021	----	3 days	✓	03-May-2021	180 days	2 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GT1A_WG_2021_Q2_NP	E421	29-Apr-2021	02-May-2021	----	3 days	✓	03-May-2021	180 days	2 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GT1B_WG_2021_Q2_NP	E421	29-Apr-2021	02-May-2021	----	4 days	✓	03-May-2021	180 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_BCGW_WG_2021_Q2_NP	E358-L	29-Apr-2021	06-May-2021	----	7 days	✓	06-May-2021	28 days	1 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q2_NP	E358-L	29-Apr-2021	06-May-2021	----	7 days	✓	06-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q2_NP	E358-L	29-Apr-2021	06-May-2021	----	8 days	✓	06-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BCGW_WG_2021_Q2_NP	E355-L	29-Apr-2021	06-May-2021	----	7 days	✓	06-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q2_NP	E355-L	29-Apr-2021	06-May-2021	----	7 days	✓	06-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q2_NP	E355-L	29-Apr-2021	06-May-2021	----	8 days	✓	06-May-2021	28 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_BCGW_WG_2021_Q2_NP	E283	29-Apr-2021	----	----	----		04-May-2021	14 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q2_NP	E283	29-Apr-2021	----	----	----		04-May-2021	14 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_GT1B_WG_2021_Q2_NP	E283	29-Apr-2021	----	----	----		04-May-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_BCGW_WG_2021_Q2_NP	E290	29-Apr-2021	----	----	----		04-May-2021	14 days	5 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_GT1A_WG_2021_Q2_NP	E290	29-Apr-2021	----	----	----		04-May-2021	14 days	5 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_GT1B_WG_2021_Q2_NP	E290	29-Apr-2021	----	----	----		04-May-2021	14 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_BCGW_WG_2021_Q2_NP	E100	29-Apr-2021	----	----	----		04-May-2021	28 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_GT1A_WG_2021_Q2_NP	E100	29-Apr-2021	----	----	----		04-May-2021	28 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_GT1B_WG_2021_Q2_NP	E100	29-Apr-2021	----	----	----		04-May-2021	28 days	5 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_BCGW_WG_2021_Q2_NP	E125	29-Apr-2021	----	----	----		07-May-2021	0.34 hrs	181 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_GT1A_WG_2021_Q2_NP	E125	29-Apr-2021	----	----	----		07-May-2021	0.34 hrs	184 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_GT1B_WG_2021_Q2_NP	E125	29-Apr-2021	----	----	----		07-May-2021	0.34 hrs	185 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_BCGW_WG_2021_Q2_NP	E108	29-Apr-2021	----	----	----		04-May-2021	0.25 hrs	114 hrs	* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_GT1A_WG_2021_Q2_NP	E108	29-Apr-2021	----	----	----		04-May-2021	0.25 hrs	117 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_GT1B_WG_2021_Q2_NP	E108	29-Apr-2021	----	----	----		04-May-2021	0.25 hrs	118 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_BCGW_WG_2021_Q2_NP	E162	29-Apr-2021	----	----	----		05-May-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_GT1A_WG_2021_Q2_NP	E162	29-Apr-2021	----	----	----		05-May-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_GT1B_WG_2021_Q2_NP	E162	29-Apr-2021	----	----	----		05-May-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_BCGW_WG_2021_Q2_NP	E160-L	29-Apr-2021	----	----	----		05-May-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_GT1A_WG_2021_Q2_NP	E160-L	29-Apr-2021	----	----	----		05-May-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_GT1B_WG_2021_Q2_NP	E160-L	29-Apr-2021	----	----	----		05-May-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_BCGW_WG_2021_Q2_NP	E121	29-Apr-2021	----	----	----		01-May-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q2_NP	E121	29-Apr-2021	----	----	----		01-May-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_GT1B_WG_2021_Q2_NP	E121	29-Apr-2021	----	----	----		01-May-2021	3 days	2 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	190701	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	189851	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	192160	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	188788	2	25	8.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	188789	2	25	8.0	5.0	✓
Conductivity in Water	E100	189850	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	189418	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	191556	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	189419	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	192298	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	188493	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	188787	2	25	8.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	188790	2	25	8.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	188791	2	25	8.0	5.0	✓
ORP by Electrode	E125	192847	1	20	5.0	5.0	✓
pH by Meter	E108	189849	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	188792	2	25	8.0	5.0	✓
TDS by Gravimetry	E162	191138	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	191246	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	189675	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	192300	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	191248	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	188935	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	190701	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	189851	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	192160	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	188788	2	25	8.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	188789	2	25	8.0	5.0	✓
Conductivity in Water	E100	189850	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	189418	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	191556	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	189419	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	192298	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	188493	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	188787	2	25	8.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	188790	2	25	8.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	188791	2	25	8.0	5.0	✓
ORP by Electrode	E125	192847	1	20	5.0	5.0	✓
pH by Meter	E108	189849	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	188792	2	25	8.0	5.0	✓
TDS by Gravimetry	E162	191138	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	191246	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	189675	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	192300	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	191248	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	191133	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	188935	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	190701	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	189851	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	192160	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	188788	2	25	8.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	188789	2	25	8.0	5.0	✓
Conductivity in Water	E100	189850	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	189418	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	191556	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	189419	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	192298	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	188493	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	188787	2	25	8.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	188790	2	25	8.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	188791	2	25	8.0	5.0	✓
Sulfate in Water by IC	E235.SO4	188792	2	25	8.0	5.0	✓
TDS by Gravimetry	E162	191138	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	191246	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	189675	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	192300	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	191248	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	191133	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	188935	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	192160	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	188788	2	25	8.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	188789	2	25	8.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	189418	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	191556	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	189419	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	192298	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	188493	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	188787	2	25	8.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	188790	2	25	8.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	188791	2	25	8.0	5.0	✓
Sulfate in Water by IC	E235.SO4	188792	2	25	8.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	191246	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	189675	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	192300	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	191248	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101138**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210429Q2GW  
**Sampler** : C. Emslie/S. Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 30-Apr-2021 09:35  
**Date Analysis Commenced** : 30-Apr-2021  
**Issue Date** : 07-May-2021 18:24

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2101138  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 188935)</b>											
CG2101126-021	Anonymous	turbidity	----	E121	0.10	NTU	26.3	26.0	1.15%	15%	----
<b>Physical Tests (QC Lot: 189849)</b>											
CG2101136-001	Anonymous	pH	----	E108	0.10	pH units	8.19	8.20	0.122%	4%	----
<b>Physical Tests (QC Lot: 189850)</b>											
CG2101136-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1390	1380	0.648%	10%	----
<b>Physical Tests (QC Lot: 189851)</b>											
CG2101136-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	352	425	18.8%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	352	348	0.972%	20%	----
<b>Physical Tests (QC Lot: 190701)</b>											
CG2101126-021	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	68.1	67.5	0.885%	20%	----
<b>Physical Tests (QC Lot: 191138)</b>											
CG2101126-021	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	3040	3060	0.557%	20%	----
<b>Physical Tests (QC Lot: 192847)</b>											
CG2101126-027	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	354	354	0.00%	15%	----
<b>Anions and Nutrients (QC Lot: 188493)</b>											
CG2101136-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0016	0.0015	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 188787)</b>											
CG2101124-006	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 188788)</b>											
CG2101124-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 188789)</b>											
CG2101124-006	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 188790)</b>											
CG2101124-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 188791)</b>											
CG2101124-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 188792)</b>											
CG2101124-006	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 188793)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 188793) - continued</b>											
CG2101142-002	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 188794)</b>											
CG2101142-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 188795)</b>											
CG2101142-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 188796)</b>											
CG2101142-002	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 188797)</b>											
CG2101142-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 188798)</b>											
CG2101142-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 189675)</b>											
CG2101128-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 191246)</b>											
CG2101138-001	EV_MW_GT1A_WG_2021_Q2_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0052	0.0043	0.0009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 191248)</b>											
CG2101126-021	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 192160)</b>											
CG2101126-021	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0500	mg/L	1.21	1.22	0.321%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 192298)</b>											
CG2101128-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.81	1.02	0.21	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 192300)</b>											
CG2101128-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.91	1.84	0.07	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 189418)</b>											
CG2101136-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 189419)</b>											
CG2101136-001	Anonymous	iron, dissolved	7439-89-6	E421	0.010	mg/L	0.168	0.172	1.94%	20%	----
CG2101136-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0014	0.0013	0.00004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00680	0.00678	0.219%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00046	0.00047	0.000009	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0285	0.0305	6.92%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.075	0.076	0.0010	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 189419) - continued</b>											
CG2101136-001	Anonymous	cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.460 µg/L	0.000479	3.98%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	157	166	6.05%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	31.1 µg/L	0.0329	5.63%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00337	0.00355	5.28%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000969	0.00103	6.55%	20%	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.456	0.482	5.47%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	60.4	63.1	4.23%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.163	0.172	5.69%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0242	0.0243	0.392%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.141	0.149	5.15%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	13.8	15.2	9.76%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	3.11 µg/L	0.00321	3.43%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.94	2.96	0.777%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	54.5	58.1	6.32%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.360	0.370	2.76%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	128	126	1.56%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000236	0.000253	7.05%	20%	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0162	0.0170	5.04%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0251	0.0266	5.77%	20%	----
<b>Dissolved Metals (QC Lot: 191556)</b>											
CG2101126-025	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 188935)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 189850)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 189851)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 190701)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 191133)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 191138)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 188493)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 188787)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 188788)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 188789)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 188790)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 188791)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 188792)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 188793)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 188794)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 188795)</b>						





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 188795) - continued</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 188796)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 188797)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 188798)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 189675)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 191246)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 191248)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 192160)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 192298)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 192300)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 189418)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 189419)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 189419) - continued</b>						
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	MB-LOR
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 191556)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

**Qualifiers**

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 188935)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100	85.0	115	---
<b>Physical Tests (QCLot: 189849)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 189850)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	104	90.0	110	---
<b>Physical Tests (QCLot: 189851)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 190701)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	98.2	85.0	115	---
<b>Physical Tests (QCLot: 191133)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	97.7	85.0	115	---
<b>Physical Tests (QCLot: 191138)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	98.7	85.0	115	---
<b>Physical Tests (QCLot: 192847)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 188493)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	94.0	80.0	120	---
<b>Anions and Nutrients (QCLot: 188787)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	93.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 188788)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	106	85.0	115	---
<b>Anions and Nutrients (QCLot: 188789)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	96.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 188790)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	97.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 188791)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 188792)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	96.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 188793)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	90.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 188794)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		
						Low	High		
<b>Anions and Nutrients (QCLot: 188794) - continued</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	96.0	90.0	110	----
<b>Anions and Nutrients (QCLot: 188795)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	109	85.0	115	----
<b>Anions and Nutrients (QCLot: 188796)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	96.4	90.0	110	----
<b>Anions and Nutrients (QCLot: 188797)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	97.4	90.0	110	----
<b>Anions and Nutrients (QCLot: 188798)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.7	90.0	110	----
<b>Anions and Nutrients (QCLot: 189675)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	82.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 191246)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	98.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 191248)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	97.7	80.0	120	----
<b>Anions and Nutrients (QCLot: 192160)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	108	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 192298)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	88.1	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 192300)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	95.2	80.0	120	----
<b>Dissolved Metals (QCLot: 189418)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
<b>Dissolved Metals (QCLot: 189419)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.6	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	105	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	107	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.9	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 189419) - continued</b>									
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	106	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	105	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	102	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.6	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 188493)</b>										
CG2101137-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0456 mg/L	0.05 mg/L	91.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 188787)</b>										
CG2101124-006	Anonymous	fluoride	16984-48-8	E235.F	0.912 mg/L	1 mg/L	91.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 188788)</b>										
CG2101124-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.563 mg/L	0.5 mg/L	113	75.0	125	----
<b>Anions and Nutrients (QCLot: 188789)</b>										
CG2101124-006	Anonymous	chloride	16887-00-6	E235.Cl-L	92.4 mg/L	100 mg/L	92.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 188790)</b>										
CG2101124-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.31 mg/L	2.5 mg/L	92.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 188791)</b>										
CG2101124-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.482 mg/L	0.5 mg/L	96.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 188792)</b>										
CG2101124-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	92.3 mg/L	100 mg/L	92.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 188793)</b>										
CG2101142-002	Anonymous	fluoride	16984-48-8	E235.F	0.923 mg/L	1 mg/L	92.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 188794)</b>										
CG2101142-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	92.1 mg/L	100 mg/L	92.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 188795)</b>										
CG2101142-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.494 mg/L	0.5 mg/L	98.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 188796)</b>										
CG2101142-002	Anonymous	chloride	16887-00-6	E235.Cl-L	92.4 mg/L	100 mg/L	92.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 188797)</b>										
CG2101142-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.31 mg/L	2.5 mg/L	92.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 188798)</b>										
CG2101142-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.481 mg/L	0.5 mg/L	96.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 189675)</b>										
CG2101130-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	ND mg/L	2.5 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 191246)</b>										
CG2101138-002	EV_MW_GT1B_WG_2021_Q2_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0570 mg/L	0.0676 mg/L	84.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 191248)</b>										
CG2101126-022	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0561 mg/L	0.0676 mg/L	83.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 192160)</b>										
CG2101142-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 192298)</b>										
CG2101128-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	28.1 mg/L	23.9 mg/L	117	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 192300)</b>										
CG2101128-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.7 mg/L	23.9 mg/L	94.8	70.0	130	----
<b>Dissolved Metals (QCLot: 189418)</b>										
CG2101136-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0520 mg/L	0.05 mg/L	104	70.0	130	----
<b>Dissolved Metals (QCLot: 189419)</b>										
CG2101136-001	Anonymous	iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	95.8	70.0	130	----
CG2101136-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.262 mg/L	0.25 mg/L	105	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0235 mg/L	0.025 mg/L	93.9	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0278 mg/L	0.025 mg/L	111	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.025 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0468 mg/L	0.05 mg/L	93.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00986 mg/L	0.0125 mg/L	78.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.123 mg/L	0.125 mg/L	98.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00474 mg/L	0.005 mg/L	94.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	5 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.025 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0242 mg/L	0.025 mg/L	96.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0222 mg/L	0.025 mg/L	88.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.125 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1.25 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.025 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0242 mg/L	0.025 mg/L	96.9	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.05 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	5 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0578 mg/L	0.05 mg/L	116	70.0	130	----
		silicon, dissolved	7440-21-3	E421	12.1 mg/L	12.5 mg/L	96.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00463 mg/L	0.005 mg/L	92.6	70.0	130	----



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 189419) - continued</b>										
CG2101136-001	Anonymous	sodium, dissolved	17341-25-2	E421	ND mg/L	2.5 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.025 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	25 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00435 mg/L	0.005 mg/L	87.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0242 mg/L	0.025 mg/L	96.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0538 mg/L	0.05 mg/L	108	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.005 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.137 mg/L	0.125 mg/L	110	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.524 mg/L	0.5 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 191556)</b>										
CG2101126-026	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000969 mg/L	0.0001 mg/L	96.9	70.0	130	----



COC ID: **20210429Q2GW**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO		LABORATORY			OTHER INFO				
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling	Lab Contact	Lyudmyla Shvets		Email 1:	chris.emslie@teck.com	X	X	X
Project Manager	Kennedy Allen	Email	lyudmyla.shvets@alsglobal.com		Email 2:	colby.bracken@teck.com	X	X	X
Email	kennedy.allan@teck.com	Address	2559 29 Street NE		Email 3:	kennedy.allen@teck.com	X	X	X
Address	RR#1 HWY# 3				Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
					Email 5:	teckcoal@equisonline.com			X

Environmental Division  
Calgary  
Work Order Reference  
**CG2101138**



Telephone: +1 403 407 1800

Province	BC	City	Calgary	Province	AB
Country	Canada	Postal Code	T1Y 7B5	Country	Canada
Phone Number	403-407-1800		PO number	VPO00741597	

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-V/A (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL, Hydroxide, OH-CL	TECKCOAL-MET-D-V/A (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CVI	
EV_MW_GT1A_WG_2021_Q2_NP	EV_MW_GT1A	WG	N	04/29/21	14:01	G	5	1	1	1	1	1	1	1				1		
EV_MW_GT1B_WG_2021_Q2_NP	EV_MW_GT1B	WG	N	04/29/21	12:53	G	5	1	1	1	1	1	1	1				1		
EV_BCGW_WG_2021_Q2_NP	EV_BCGW	WG	N	04/29/21	16:27	G	5	1	1	1	1	1	1	1				1		
Total							15													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Emslie/S. Hansen	April 29, 2021	<i>[Signature]</i>	4/29/21 9:35

SERVICE REQUEST (rush - subject to availability) <input checked="" type="checkbox"/> Regular (default) <input type="checkbox"/> Priority (2-3 business days) - 50% surcharge <input type="checkbox"/> Emergency (1 Business Day) - 100% surcharge <input type="checkbox"/> For Emergency <1 Day, ASAP or Weekend - Contact ALS		Sampler's Name C. Emslie/S. Hansen	Mobile #
Sampler's Signature <i>[Signature]</i>		Date/Time April 29, 2021	<i>[Signature]</i>



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2101409**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210513Q2GW  
**Sampler** : K. Allen/ C. Emslie  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 10  
**No. of samples analysed** : 10

**Page** : 1 of 8  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 14-May-2021 09:05  
**Date Analysis Commenced** : 14-May-2021  
**Issue Date** : 29-May-2021 13:28

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MCGW B_WG_2021_Q 2_NP	EV_MW_MCGW A_WG_2021_Q 2_NP	EV_MW_AQ2_ WG_2021_Q2_ NP	EV_HW1_WG_2 021_Q2_NP	EV_BRGW_WG _2021_Q2_NP
Client sampling date / time					13-May-2021 15:45	13-May-2021 15:00	13-May-2021 13:40	13-May-2021 10:10	13-May-2021 10:55	
Analyte	CAS Number	Method	LOR	Unit	CG2101409-001	CG2101409-002	CG2101409-003	CG2101409-004	CG2101409-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	2.5	3.7	<2.0	<2.0	<2.0	
conductivity	----	E100	2.0	µS/cm	703	715	1010	1020	1040	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	456	434	684	656	688	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	395	346	396	290	272	
pH	----	E108	0.10	pH units	7.50	7.53	7.37	7.58	7.49	
solids, total dissolved [TDS]	----	E162	10	mg/L	421	455	694	772	763	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.0	1.9	<1.0	1.3	
turbidity	----	E121	0.10	NTU	<0.10	0.68	5.85	0.24	0.18	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	326	345	480	250	267	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	326	345	480	250	267	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	397	421	586	305	326	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0279	0.0575	0.0185	<0.0050	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	0.169	<0.050	0.276	0.417	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	29.9	40.1	14.6	37.2	29.7	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.186	0.208	0.168	0.120	0.110	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.244	0.082	<0.050	0.147	0.161	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.82	0.918	<0.0050	5.35	1.78	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0051	<0.0010	<0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0027	<0.0010	<0.0010	0.0018	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0022	0.0021	0.0024	<0.0020	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	49.2	28.6	148	279	308	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	3.06	1.00	<0.050	5.50	1.94	
<b>Organic / Inorganic Carbon</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MCGW B_WG_2021_Q 2_NP	EV_MW_MCGW A_WG_2021_Q 2_NP	EV_MW_AQ2_ WG_2021_Q2_ NP	EV_HW1_WG_2 021_Q2_NP	EV_BRGW_WG _2021_Q2_NP
Client sampling date / time					13-May-2021 15:45	13-May-2021 15:00	13-May-2021 13:40	13-May-2021 10:10	13-May-2021 10:55	
Analyte	CAS Number	Method	LOR	Unit	CG2101409-001	CG2101409-002	CG2101409-003	CG2101409-004	CG2101409-005	
					Result	Result	Result	Result	Result	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.65	1.41	1.35	1.16	1.34	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.41	1.17	1.22	1.15	1.00	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	8.59	8.70	13.1	12.2	12.7	
cation sum	----	EC101	0.10	meq/L	9.92	9.40	14.7	13.8	14.2	
ion balance (cations/anions ratio)	----	EC101	0.010	%	115	108	112	113	112	
ion balance (cation-anion difference)	----	EC101	0.010	%	7.18	3.87	5.76	6.15	5.58	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0027	<0.0010	0.0016	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00014	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	0.00014	0.00011	0.00011	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.263	0.548	0.0200	0.0520	0.0609	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.055	0.035	0.111	0.026	0.035	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0808	0.0333	<0.0050	0.0722	0.0542	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	126	114	170	158	179	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.17	0.10	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00040	<0.00020	<0.00020	0.0226	0.00024	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.070	0.477	<0.010	0.016	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	0.000236	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0189	0.0257	0.0634	0.0651	0.0526	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	34.3	36.4	63.0	63.6	58.6	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00028	0.0329	0.0760	0.00031	0.00124	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00316	0.00317	0.000187	0.000678	0.000626	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00170	0.00175	0.00062	0.00083	0.00154	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.68	2.33	2.07	2.20	2.10	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	1.82	0.913	<0.050	42.9	12.9	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MCGW B_WG_2021_Q 2_NP	EV_MW_MCGW A_WG_2021_Q 2_NP	EV_MW_AQ2_ WG_2021_Q2_ NP	EV_HW1_WG_2 021_Q2_NP	EV_BRGW_WG _2021_Q2_NP
Client sampling date / time					13-May-2021 15:45	13-May-2021 15:00	13-May-2021 13:40	13-May-2021 10:10	13-May-2021 10:55	
Analyte	CAS Number	Method	LOR	Unit	CG2101409-001	CG2101409-002	CG2101409-003	CG2101409-004	CG2101409-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.63	5.06	6.47	3.31	3.25	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	17.2	15.0	21.6	14.0	8.48	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.342	0.447	1.22	0.340	0.348	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	16.9	11.0	54.4	101	109	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000016	0.000014	<0.000010	0.000015	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000733	0.000627	0.000118	0.00154	0.00158	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0011	0.0015	<0.0010	0.0348	0.0018	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_WH50GW_WG_2021_Q2_NP	EV_LSGW_WG_2021_Q2_NP	EV_GCGW_WG_2021_Q2_NP	EV_MW_AQ1_WG_2021_Q2_NP	EV_MW_SPR1C_WG_2021_Q2_NP
Client sampling date / time					13-May-2021 11:30	13-May-2021 10:55	13-May-2021 12:24	13-May-2021 14:03	13-May-2021 15:21	
Analyte	CAS Number	Method	LOR	Unit	CG2101409-006	CG2101409-007	CG2101409-008	CG2101409-009	CG2101409-010	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	3.2	<2.0	
conductivity	----	E100	2.0	µS/cm	376	934	395	863	743	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	224	626	247	509	435	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	223	268	223	228	219	
pH	----	E108	0.10	pH units	8.04	7.66	7.98	7.48	8.15	
solids, total dissolved [TDS]	----	E162	10	mg/L	240	530	253	547	486	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	11.3	6.1	4.9	2.7	<1.0	
turbidity	----	E121	0.10	NTU	5.70	20.6	4.66	2.13	0.11	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	147	530	162	359	220	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	147	530	162	358	220	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	179	647	197	437	268	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0158	0.152	0.0299	<0.0050	<0.0050	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	0.195	0.591	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.97	6.82	3.66	37.1	55.1	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.115	0.258	0.594	0.163	0.103	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0.278	0.094	0.112	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.458	<0.0050	<0.0050	1.07	0.741	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0030	<0.0010	<0.0010	0.0155	0.0013	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0047	0.0094	0.0036	0.0130	<0.0020	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0033	0.0073	<0.0020	0.0148 <sup>DLM</sup>	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	58.8	54.0	51.1	95.4	109	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.458	<0.050	0.278	1.16	0.853	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.98	2.33	0.94	1.24	1.47	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_WH50GW_WG_2021_Q2_NP	EV_LSGW_WG_2021_Q2_NP	EV_GCGW_WG_2021_Q2_NP	EV_MW_AQ1_WG_2021_Q2_NP	EV_MW_SPR1C_WG_2021_Q2_NP
Client sampling date / time					13-May-2021 11:30	13-May-2021 10:55	13-May-2021 12:24	13-May-2021 14:03	13-May-2021 15:21	
Analyte	CAS Number	Method	LOR	Unit	CG2101409-006	CG2101409-007	CG2101409-008	CG2101409-009	CG2101409-010	
					Result	Result	Result	Result	Result	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.96	2.08	0.64	1.19	1.37	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.26	11.9	4.44	10.3	8.28	
cation sum	----	EC101	0.10	meq/L	4.67	13.2	5.16	10.4	9.26	
ion balance (cations/anions ratio)	----	EC101	0.010	%	110	111	116	101	112	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.59	5.18	7.50	0.483	5.59	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0016	0.0021	0.0014	<0.0010	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	0.00142	0.00337	0.00012	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0792	0.225	0.0806	0.209	0.199	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.041	0.014	0.022	0.013	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0163	<0.0050	<0.0050	0.0394	0.0662	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	57.9	128	68.2	123	116	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	1.16	0.19	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00036	<0.00020	<0.00020	0.00081	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.034	1.95	0.327	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0075	0.0738	0.0080	0.0230	0.0193	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	19.4	74.3	18.7	49.1	35.2	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00278	0.976	0.0756	0.00010	<0.00010	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00105	0.00215	0.00258	0.000321	0.000569	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00374	0.00053	0.00062	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.741	4.04	0.803	1.61	1.36	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	4.68	0.067	<0.050	8.17	9.39	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.06	4.12	4.36	3.99	2.78	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_WH50GW_WG_2021_Q2_NP	EV_LSGW_WG_2021_Q2_NP	EV_GCGW_WG_2021_Q2_NP	EV_MW_AQ1_WG_2021_Q2_NP	EV_MW_SPR1C_WG_2021_Q2_NP
Client sampling date / time					13-May-2021 11:30	13-May-2021 10:55	13-May-2021 12:24	13-May-2021 14:03	13-May-2021 15:21	
Analyte	CAS Number	Method	LOR	Unit	CG2101409-006	CG2101409-007	CG2101409-008	CG2101409-009	CG2101409-010	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.80	10.1	4.11	5.26	12.4	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.127	0.524	0.282	0.361	0.251	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	19.7	19.8	18.8	30.9	36.5	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000036	0.000018	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000866	0.00207	0.00105	0.000422	0.00107	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0014	0.0014	0.0044	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL REPORT

**Work Order** : **CG2101409**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210513Q2GW  
**Sampler** : K. Allen/ C. Emslie  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 10  
**No. of samples analysed** : 10

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 14-May-2021 09:05  
**Date Analysis Commenced** : 14-May-2021  
**Issue Date** : 29-May-2021 13:28

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2101409  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 198366)</b>											
CG2101394-001	Anonymous	turbidity	----	E121	0.10	NTU	0.22	0.22	0.002	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 199756)</b>											
CG2101404-003	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	550	576	4.71%	20%	----
<b>Physical Tests (QC Lot: 202088)</b>											
CG2101404-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	263	262	0.0381%	15%	----
<b>Physical Tests (QC Lot: 203314)</b>											
CG2101404-003	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 204573)</b>											
CG2101326-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	342	343	0.174%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	342	343	0.175%	20%	----
<b>Physical Tests (QC Lot: 204574)</b>											
CG2101394-001	Anonymous	pH	----	E108	0.10	pH units	8.23	8.24	0.121%	4%	----
<b>Physical Tests (QC Lot: 204575)</b>											
CG2101394-001	Anonymous	conductivity	----	E100	2.0	µS/cm	666	666	0.00%	10%	----
<b>Physical Tests (QC Lot: 204576)</b>											
CG2101409-010	EV_MW_SPR1C_WG_2021_Q2_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	220	263	18.1%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	220	263	18.1%	20%	----
<b>Anions and Nutrients (QC Lot: 197906)</b>											
CG2101404-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 197988)</b>											
CG2101409-009	EV_MW_AQ1_WG_2021_Q2_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.163	0.161	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 197989)</b>											
CG2101409-009	EV_MW_AQ1_WG_2021_Q2_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	95.4	95.3	0.0818%	20%	----
<b>Anions and Nutrients (QC Lot: 197990)</b>											
CG2101409-009	EV_MW_AQ1_WG_2021_Q2_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.195	0.192	0.003	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 197991)</b>											
CG2101409-009	EV_MW_AQ1_WG_2021_Q2_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	37.1	37.0	0.198%	20%	----
<b>Anions and Nutrients (QC Lot: 197992)</b>											
CG2101409-009	EV_MW_AQ1_WG_2021_Q2_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.07	1.07	0.168%	20%	----
<b>Anions and Nutrients (QC Lot: 197993)</b>											
CG2101409-009	EV_MW_AQ1_WG_2021_Q2_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198040)</b>											
CG2101404-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	205	206	0.384%	20%	----
<b>Anions and Nutrients (QC Lot: 198041)</b>											
CG2101404-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198042)</b>											
CG2101404-003	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.82	0.82	0.008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198043)</b>											
CG2101404-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	13.5	13.5	0.00444%	20%	----
<b>Anions and Nutrients (QC Lot: 198044)</b>											
CG2101404-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0044	0.0032	0.0012	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198045)</b>											
CG2101404-003	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.150	0.148	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 200915)</b>											
CG2101404-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0024	0.0020	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 201180)</b>											
CG2101404-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 202001)</b>											
CG2101409-001	EV_MW_MCGWB_WG_2021_Q2_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0022	0.0024	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 204369)</b>											
CG2101409-001	EV_MW_MCGWB_WG_2021_Q2_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0060	0.0010	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 205358)</b>											
CG2101409-002	EV_MW_MCGWA_WG_2021_Q2_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0279	0.0346	0.0067	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 204286)</b>											
CG2101404-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.64	1.74	0.10	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 204288)</b>											
CG2101404-003	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.80	1.77	0.02	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 199299)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 199299) - continued</b>											
CG2101393-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0025	0.0022	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00017	0.00018	0.000008	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0444	0.0450	1.26%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0138 µg/L	0.0000140	0.0000002	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	79.7	81.3	1.92%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00022	0.00022	0.000002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0066	0.0066	0.00001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	40.7	41.1	1.000%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00081	0.00077	0.00004	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000812	0.000834	2.65%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00074	0.00078	0.00004	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.941	0.969	2.95%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	34.5 µg/L	0.0332	3.78%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.86	1.84	1.08%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.58	1.67	5.74%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.114	0.116	1.71%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	45.7	44.7	2.38%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00204	0.00208	1.73%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 199300)</b>											
CG2101393-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 199766)</b>											
CG2101407-006	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 198366)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 199750)</b>						
solids, total suspended [TSS]	---	E160-L	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 199756)</b>						
solids, total dissolved [TDS]	---	E162	10	mg/L	<10	---
<b>Physical Tests (QCLot: 203314)</b>						
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	<2.0	---
<b>Physical Tests (QCLot: 204573)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, carbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, hydroxide (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 204575)</b>						
conductivity	---	E100	1	µS/cm	<1.0	---
<b>Physical Tests (QCLot: 204576)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, carbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, hydroxide (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
<b>Anions and Nutrients (QCLot: 197906)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 197988)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 197989)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 197990)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 197991)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 197992)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 197993)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 198040)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 198041)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 198042)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 198043)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 198044)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 198045)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 200915)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 201180)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 202001)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 204369)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 205358)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 204286)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 204288)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 199299)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 199299) - continued</b>						
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 199300)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 199766)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 198366)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100.0	85.0	115	---
<b>Physical Tests (QCLot: 199750)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	89.2	85.0	115	---
<b>Physical Tests (QCLot: 199756)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	98.9	85.0	115	---
<b>Physical Tests (QCLot: 202088)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 203314)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 204573)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 204574)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 204575)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.0	90.0	110	---
<b>Physical Tests (QCLot: 204576)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	109	85.0	115	---
<b>Anions and Nutrients (QCLot: 197906)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 197988)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	92.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 197989)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 197990)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100.0	85.0	115	---
<b>Anions and Nutrients (QCLot: 197991)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 197992)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 197993)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 198040)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 198040) - continued</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 198041)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	91.0	85.0	115	----
<b>Anions and Nutrients (QCLot: 198042)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.3	90.0	110	----
<b>Anions and Nutrients (QCLot: 198043)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 198044)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	110	90.0	110	----
<b>Anions and Nutrients (QCLot: 198045)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	91.8	90.0	110	----
<b>Anions and Nutrients (QCLot: 200915)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	104	80.0	120	----
<b>Anions and Nutrients (QCLot: 201180)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 202001)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 204369)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	113	85.0	115	----
<b>Anions and Nutrients (QCLot: 205358)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	106	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 204286)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 204288)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 199299)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	116	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	111	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.1	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	108	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	110	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	111	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 199299) - continued</b>									
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	93.7	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	111	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	# 125	80.0	120	MES
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	112	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	111	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	106	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	120	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	91.8	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	114	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	110	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	111	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 199300)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----

**Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 197906)</b>										
CG2101404-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0629 mg/L	0.05 mg/L	126	70.0	130	----
<b>Anions and Nutrients (QCLot: 197988)</b>										
CG2101417-005	Anonymous	fluoride	16984-48-8	E235.F	0.965 mg/L	1 mg/L	96.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 197989)</b>										
CG2101417-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 197990)</b>										
CG2101417-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.514 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 197991)</b>										
CG2101417-005	Anonymous	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 197992)</b>										
CG2101417-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.63 mg/L	2.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 197993)</b>										
CG2101417-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.529 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 198040)</b>										
CG2101404-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 198041)</b>										
CG2101404-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.427 mg/L	0.5 mg/L	85.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 198042)</b>										
CG2101404-004	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 198043)</b>										
CG2101404-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.55 mg/L	2.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 198044)</b>										
CG2101404-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.464 mg/L	0.5 mg/L	92.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 198045)</b>										
CG2101404-004	Anonymous	fluoride	16984-48-8	E235.F	0.979 mg/L	1 mg/L	97.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 200915)</b>										
CG2101404-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0547 mg/L	0.0676 mg/L	81.0	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 201180)</b>										
CG2101404-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	3.16 mg/L	2.5 mg/L	126	70.0	130	----
<b>Anions and Nutrients (QCLot: 202001)</b>										
CG2101409-002	EV_MW_MCGWA_WG_2021_Q2_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0603 mg/L	0.0676 mg/L	89.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 205358)</b>										
CG2101409-003	EV_MW_AQ2_WG_2021_Q2_NP	ammonia, total (as N)	7664-41-7	E298	0.0887 mg/L	0.1 mg/L	88.7	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 204286)</b>										
CG2101404-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.4 mg/L	23.9 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 204288)</b>										
CG2101404-003	Anonymous	carbon, total organic [TOC]	----	E355-L	25.6 mg/L	23.9 mg/L	107	70.0	130	----
<b>Dissolved Metals (QCLot: 199299)</b>										
CG2101393-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.219 mg/L	0.2 mg/L	109	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0219 mg/L	0.02 mg/L	110	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00803 mg/L	0.01 mg/L	80.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.110 mg/L	0.1 mg/L	110	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00433 mg/L	0.004 mg/L	108	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.98 mg/L	2 mg/L	99.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.121 mg/L	0.1 mg/L	121	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.12 mg/L	4 mg/L	103	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.45 mg/L	10 mg/L	94.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	2.16 mg/L	2 mg/L	108	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----



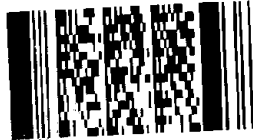
Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 199299) - continued</b>										
CG2101393-001	Anonymous	sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00372 mg/L	0.004 mg/L	93.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0216 mg/L	0.02 mg/L	108	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00380 mg/L	0.004 mg/L	95.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.411 mg/L	0.4 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 199300)</b>										
CG2101393-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 199766)</b>										
CG2101409-001	EV_MW_MCGWB_WG_202 1_Q2_NP	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----

COC ID: 20210513Q2GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emslie@teck.com	X	X	X	
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X	
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X	X	X	
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X	
								Email 5:	teckcoal@aguisonline.com			X	
Province		BC		City		Calgary		Province		AB			
Country		Canada		Postal Code		T1Y 7B5		Country		Canada			
-5289				Phone Number				403-407-1800					
								PO number				VPO00741597	

Environmental Division  
Calgary  
Work Order Reference  
**CG2101409**



Telephone : -1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MW_MCGWB_WG_2021_Q2_NP	EV_MW_MCGWB	WG	N	05/13/21	15:45	G	5	1	1	1	1	1	1	1				1		
EV_MW_MCGWA_WG_2021_Q2_NP	EV_MW_MCGWA	WG	N	05/13/21	15:00	G	5	1	1	1	1	1	1	1				1		
EV_MW_AQ2_WG_2021_Q2_NP	EV_MW_AQ2	WG	N	05/13/21	13:40	G	5	1	1	1	1	1	1	1				1		
EV_HW1_WG_2021_Q2_NP	EV_HW1	WG	N	05/13/21	10:10	G	5	1	1	1	1	1	1	1				1		
EV_BRGW_WG_2021_Q2_NP	EV_BRGW	WG	N	05/13/21	10:55	G	5	1	1	1	1	1	1	1				1		
EV_WH50GW_WG_2021_Q2_NP	EV_WH50GW	WG	N	05/13/21	11:30	G	5	1	1	1	1	1	1	1				1		
							Total	30												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	K. Allen/ C. Emslie	May 13, 2021	<i>[Signature]</i>	14/05 9:05

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	K. Allen/ C. Emslie	Mobile #		
Sampler's Signature	<i>[Signature]</i>	Date/Time	May 13, 2021	

100



COC ID: **20210513Q2GW**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job# Elkview Operations				Lab Name ALS Calgary				Report Format / Distribution				
Job Description Q2 Ground Water Sampling				Lab Contact Lyudmyla Shvets				Email 1: chris.emslie@teck.com		Excel	PDF	EDD
Project Manager Jennifer Dane				Email lyudmyla.shvets@alsglobal.com				Email 2: colby.bracken@teck.com		X	X	X
Email jennifer.dane@teck.com				Address 2559 29 Street NE				Email 3: kennedy.allen@teck.com		X	X	X
Address RR#1 HWY# 3								Email 4: Teck.Lab.Results@sharepoint.teck.com		X	X	X
								Email 5: teckcoal@equisonline.com				X
Province BC		City Calgary		Province AB								
Country Canada		Postal Code T1Y 7B5		Country Canada								
55-5289				Phone Number 403-407-1800				PO number VPO00741597				

Environmental Division  
Calgary  
Work Order Reference  
**CG2101409**



Telephone: - 1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL...	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CVI	
EV_LSGW_WG_2021_Q2_NP	EV_LSGW	WG	N	05/13/21	10:55	G	5	1	1	1	1	1	1	1				1		
EV_GCGW_WG_2021_Q2_NP	EV_GCGW	WG	N	05/13/21	12:24	G	5	1	1	1	1	1	1	1				1		
EV_MW_AQ1_WG_2021_Q2_NP	EV_MW_AQ1	WG	N	05/13/21	14:03	G	5	1	1	1	1	1	1	1				1		
EV_MW_SPR1C_WG_2021_Q2_NP	EV_MW_SPR1C	WG	N	05/13/21	15:21	G	5	1	1	1	1	1	1	1				1		
							Total	20												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	K. Allen/ C. Emslie	May 13, 2021	<i>[Signature]</i>	10/25/21

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
					K. Allen/ C. Emslie		<i>[Signature]</i>	May 13, 2021

*[Handwritten mark]*





CERTIFICATE OF ANALYSIS

Work Order : CG2101410
Client : Teck Coal Limited
Contact : Kennedy Allen
Address : RR#1 HIGHWAY #3
Sparwood BC Canada V0B 2G1
Telephone : ---
Project : ELKVIEW OPERATIONS
PO : VPO00741597
C-O-C number : 20210512Q2GW
Sampler : Kennedy Allen
Site : ---
Quote number : Teck Coal Master Quote
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 5
Laboratory : Calgary - Environmental
Account Manager : Lyudmyla Shvets
Address : 2559 29th Street NE
Calgary AB Canada T1Y 7B5
Telephone : +1 403 407 1800
Date Samples Received : 13-May-2021 09:00
Date Analysis Commenced : 12-May-2021
Issue Date : 01-Jun-2021 17:21

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Lists names like Anthony Calero, Hannah Phung, Harpreet Chawla, Jashan Kaur, Jon Fisher, Jordan Fanson, Kevin Duarte, Kim Jensen, Naeun Kim, Parker Sgarbossa, Ruifang Zheng, Sara Niroomand with their respective roles and departments.



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_BALGW_W	----	----	----	----
(Matrix: Water)						G_2021_Q2_NP				
					Client sampling date / time	12-May-2021 12:06	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2101410-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	5.3	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	714	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	358	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	335	----	----	----	----	----
pH	----	E108	0.10	pH units	8.07	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	478	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	4.4	----	----	----	----	----
turbidity	----	E121	0.10	NTU	3.76	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	321	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	321	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	392	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0571	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.80	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.171	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.378	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0157	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0079	----	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0063	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	97.9	----	----	----	----	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.394	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.98	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_BALGW_W G_2021_Q2_NP	----	----	----	----
Client sampling date / time					12-May-2021 12:06	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101410-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.16	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	8.51	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	8.77	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	103	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.50	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0235	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00018	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0342	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.180	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	92.6	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.14	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00083	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.150	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000085	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.117	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	30.8	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0292	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000228	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00067	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.83	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.054	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.61	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000019	----	----	----	----	



**Analytical Results**

Sub-Matrix: <b>Water</b>					Client sample ID	EV_BALGW_W G_2021_Q2_NP	----	----	----	----
(Matrix: <b>Water</b> )					Client sampling date / time	12-May-2021 12:06	----	----	----	----
<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	CG2101410-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	35.3	----	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	2.35	----	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	33.0	----	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00040	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000134	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0029	----	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101410</b>	Page	: 1 of 10
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Kennedy Allen	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 13-May-2021 09:00
PO	: VPO00741597	Issue Date	: 01-Jun-2021 17:21
C-O-C number	: 20210512Q2GW		
Sampler	: Kennedy Allen		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BALGW_WG_2021_Q2_NP	E298	12-May-2021	25-May-2021	----	13 days	✓	25-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_BALGW_WG_2021_Q2_NP	E235.Br-L	12-May-2021	----	----	----		14-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_BALGW_WG_2021_Q2_NP	E235.Cl-L	12-May-2021	----	----	----		14-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> EV_BALGW_WG_2021_Q2_NP	E378-U	12-May-2021	----	----	----		14-May-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_BALGW_WG_2021_Q2_NP	E235.F	12-May-2021	----	----	----		14-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_BALGW_WG_2021_Q2_NP	E235.NO3-L	12-May-2021	----	----	----		14-May-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_BALGW_WG_2021_Q2_NP	E235.NO2-L	12-May-2021	----	----	----		14-May-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_BALGW_WG_2021_Q2_NP	E235.SO4	12-May-2021	----	----	----		14-May-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_BALGW_WG_2021_Q2_NP	E375-T	12-May-2021	20-May-2021	----	8 days	✔	20-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BALGW_WG_2021_Q2_NP	E318	12-May-2021	20-May-2021	----	8 days	✔	20-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BALGW_WG_2021_Q2_NP	E372-U	12-May-2021	19-May-2021	----	7 days	✔	19-May-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_BALGW_WG_2021_Q2_NP	E421.Cr-L	12-May-2021	17-May-2021	----	6 days	✔	18-May-2021	180 days	2 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_BALGW_WG_2021_Q2_NP	E509	12-May-2021	18-May-2021	----	6 days	✔	18-May-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_BALGW_WG_2021_Q2_NP	E421	12-May-2021	17-May-2021	----	6 days	✔	18-May-2021	180 days	2 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_BALGW_WG_2021_Q2_NP	E358-L	12-May-2021	12-May-2021	----	1 days	✔	28-May-2021	28 days	16 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BALGW_WG_2021_Q2_NP	E355-L	12-May-2021	31-May-2021	----	19 days	✔	31-May-2021	28 days	1 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_BALGW_WG_2021_Q2_NP	E283	12-May-2021	----	----	----		21-May-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_BALGW_WG_2021_Q2_NP	E290	12-May-2021	----	----	----		25-May-2021	14 days	13 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_BALGW_WG_2021_Q2_NP	E100	12-May-2021	----	----	----		25-May-2021	28 days	13 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_BALGW_WG_2021_Q2_NP	E125	12-May-2021	----	----	----		19-May-2021	0.34 hrs	163 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE EV_BALGW_WG_2021_Q2_NP	E108	12-May-2021	----	----	----		25-May-2021	0.25 hrs	309 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_BALGW_WG_2021_Q2_NP	E162	12-May-2021	----	----	----		17-May-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] EV_BALGW_WG_2021_Q2_NP	E160-L	12-May-2021	----	----	----		17-May-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_BALGW_WG_2021_Q2_NP	E121	12-May-2021	----	----	----		14-May-2021	3 days	3 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	202633	1	1	100.0	5.0	✓
Alkalinity Species by Titration	E290	204553	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	204614	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	197990	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	197991	1	20	5.0	5.0	✓
Conductivity in Water	E100	204551	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	199295	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	199766	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	199296	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	207557	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	197906	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	197988	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	197992	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	197993	1	20	5.0	5.0	✓
ORP by Electrode	E125	200548	1	18	5.5	5.0	✓
pH by Meter	E108	204552	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	197989	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	199222	1	11	9.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	201392	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	200903	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	209061	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199957	1	11	9.0	5.0	✓
Turbidity by Nephelometry	E121	197942	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	202633	1	1	100.0	5.0	✓
Alkalinity Species by Titration	E290	204553	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	204614	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	197990	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	197991	1	20	5.0	5.0	✓
Conductivity in Water	E100	204551	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	199295	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	199766	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	199296	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	207557	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	197906	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	197988	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	197992	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	197993	1	20	5.0	5.0	✓
ORP by Electrode	E125	200548	1	18	5.5	5.0	✓
pH by Meter	E108	204552	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	197989	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	199222	1	11	9.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	201392	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	200903	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	209061	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199957	1	11	9.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	199214	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	197942	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	202633	1	1	100.0	5.0	✓
Alkalinity Species by Titration	E290	204553	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	204614	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	197990	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	197991	1	20	5.0	5.0	✓
Conductivity in Water	E100	204551	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	199295	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	199766	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	199296	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	207557	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	197906	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	197988	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	197992	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	197993	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	197989	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	199222	1	11	9.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	201392	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	200903	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	209061	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199957	1	11	9.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	199214	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	197942	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	204614	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	197990	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	197991	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	199295	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	199766	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	199296	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	207557	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	197906	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	197988	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	197992	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	197993	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	197989	1	20	5.0	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	201392	0	1	0.0	5.0	✖
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	200903	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	209061	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199957	1	11	9.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Waterloo - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Waterloo - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Waterloo - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Waterloo - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2101410**

**Page** : 1 of 13

**Client** : Teck Coal Limited  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210512Q2GW  
**Sampler** : Kennedy Allen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 13-May-2021 09:00  
**Date Analysis Commenced** : 12-May-2021  
**Issue Date** : 01-Jun-2021 17:21

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



Page : 2 of 13  
Work Order : CG2101410  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 197942)</b>											
CG2101393-003	Anonymous	turbidity	----	E121	0.10	NTU	1.20	1.21	0.01	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 199222)</b>											
CG2101407-005	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	190	184	6	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 200548)</b>											
CG2101399-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	406	403	0.618%	15%	----
<b>Physical Tests (QC Lot: 202633)</b>											
CG2101410-001	EV_BALGW_WG_2021_Q2_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	5.3	5.1	0.2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 204551)</b>											
CG2101393-003	Anonymous	conductivity	----	E100	2.0	µS/cm	597	586	1.86%	10%	----
<b>Physical Tests (QC Lot: 204552)</b>											
CG2101393-003	Anonymous	pH	----	E108	0.10	pH units	8.36	8.41	0.596%	4%	----
<b>Physical Tests (QC Lot: 204553)</b>											
CG2101393-003	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	184	178	2.93%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	7.0	8.4	1.4	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	191	187	2.07%	20%	----
<b>Anions and Nutrients (QC Lot: 197906)</b>											
CG2101404-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 197988)</b>											
CG2101409-009	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.163	0.161	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 197989)</b>											
CG2101409-009	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	95.4	95.3	0.0818%	20%	----
<b>Anions and Nutrients (QC Lot: 197990)</b>											
CG2101409-009	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.195	0.192	0.003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 197991)</b>											
CG2101409-009	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	37.1	37.0	0.198%	20%	----
<b>Anions and Nutrients (QC Lot: 197992)</b>											
CG2101409-009	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.07	1.07	0.168%	20%	----
<b>Anions and Nutrients (QC Lot: 197993)</b>											
CG2101409-009	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 199957)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 199957) - continued</b>											
CG2101399-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 200903)</b>											
CG2101401-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	1.88	1.65	12.8%	20%	----
<b>Anions and Nutrients (QC Lot: 201392)</b>											
CG2101410-001	EV_BALGW_WG_2021_Q 2_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0063	0.0056	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 204614)</b>											
CG2101410-001	EV_BALGW_WG_2021_Q 2_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0571	0.0536	6.32%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 207557)</b>											
CG2101394-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.75	2.74	0.01	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 209061)</b>											
CG2101398-005	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.35	1.55	0.20	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 199295)</b>											
CG2101388-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 199296)</b>											
CG2101388-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	<0.0010	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00044	0.00043	0.000010	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0189	0.0191	1.13%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	0.014	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.503 µg/L	0.000521	3.50%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	121	120	1.10%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.47 µg/L	0.00045	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00071	0.00069	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0413	0.0420	1.86%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	61.5	61.3	0.273%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00296	0.00297	0.346%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00172	0.00177	2.68%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0105	0.0104	1.57%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.48	2.46	1.10%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	147 µg/L	0.151	3.09%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 199296) - continued</b>											
CG2101388-001	Anonymous	silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.68	1.66	1.21%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.895	0.892	0.370%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0937	0.0949	1.27%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	109	108	0.772%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	0.000013	0.0000006	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00259	0.00254	1.92%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0156	0.0156	0.241%	20%	----
<b>Dissolved Metals (QC Lot: 199766)</b>											
CG2101407-006	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 197942)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 199214)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 199222)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 202633)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 204551)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 204553)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 197906)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 197988)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 197989)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 197990)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 197991)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 197992)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 197993)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 199957)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 200903)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 201392)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 201392) - continued</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 204614)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 207557)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 209061)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 199295)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 199296)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 199296) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 199766)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 197942)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.4	85.0	115	---
<b>Physical Tests (QCLot: 199214)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	88.2	85.0	115	---
<b>Physical Tests (QCLot: 199222)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 200548)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Physical Tests (QCLot: 202633)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 204551)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	---
<b>Physical Tests (QCLot: 204552)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 204553)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 197906)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 197988)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	92.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 197989)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 197990)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100.0	85.0	115	---
<b>Anions and Nutrients (QCLot: 197991)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 197992)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 197993)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 199957)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 200903)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 200903) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	82.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 201392)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 204614)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.7	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 207557)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 209061)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	98.1	80.0	120	----
<b>Dissolved Metals (QCLot: 199295)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 199296)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	88.9	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.5	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	108	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.7	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.5	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 199296) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.4	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	106	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	104	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 197906)</b>										
CG2101404-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0629 mg/L	0.05 mg/L	126	70.0	130	----
<b>Anions and Nutrients (QCLot: 197988)</b>										
CG2101417-005	Anonymous	fluoride	16984-48-8	E235.F	0.965 mg/L	1 mg/L	96.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 197989)</b>										
CG2101417-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 197990)</b>										
CG2101417-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.514 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 197991)</b>										
CG2101417-005	Anonymous	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 197992)</b>										
CG2101417-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.63 mg/L	2.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 197993)</b>										
CG2101417-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.529 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 199957)</b>										
CG2101401-001	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 200903)</b>										
CG2101401-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.79 mg/L	2.5 mg/L	71.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 204614)</b>										
RG2100145-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 207557)</b>										
CG2101398-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	10.5 mg/L	10 mg/L	105	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 209061)</b>										
CG2101398-006	Anonymous	carbon, total organic [TOC]	----	E355-L	10.2 mg/L	10 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 199295)</b>										
CG2101388-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 199296)</b>										
CG2101388-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.219 mg/L	0.2 mg/L	109	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 199296) - continued</b>										
CG2101388-001	Anonymous	arsenic, dissolved	7440-38-2	E421	0.0215 mg/L	0.02 mg/L	108	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0217 mg/L	0.02 mg/L	108	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00906 mg/L	0.01 mg/L	90.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.099 mg/L	0.1 mg/L	99.4	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00425 mg/L	0.004 mg/L	106	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	97.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0964 mg/L	0.1 mg/L	96.4	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.45 mg/L	4 mg/L	111	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.32 mg/L	10 mg/L	93.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00384 mg/L	0.004 mg/L	95.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	2.32 mg/L	2 mg/L	116	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00373 mg/L	0.004 mg/L	93.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00382 mg/L	0.004 mg/L	95.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.402 mg/L	0.4 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 199766)</b>										
CG2101409-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----

<b>COC ID:</b>	<b>20210512Q2GW</b>	<b>TURNAROUND TIME:</b>		<b>RUSH:</b>	
<b>PROJECT/CLIENT INFO</b>		<b>LABORATORY</b>		<b>OTHER INFO</b>	
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Job Description	Q2 Ground Water Sampling	Lab Contact	Lyudmyla Shvets	Email 1:	chris.emsle@teck.com X X X
Project Manager	Kennedy Allen	Email	lyudmyla.shvets@alsglobal.com	Email 2:	colby.bracken@teck.com X X X
Email	kennedy.allen@teck.com	Address	2559 29 Street NE	Email 3:	kennedy.allen@teck.com X X X
Address	RR#1 HWY# 3			Email 4:	Teck.Lab.Results@sharepoint.teck.ca X X X
				Email 5:	teckcoal@equisonline.com X
City	Sparwood	Province	BC	City	Calgary
Postal Code		Country	Canada	Postal Code	T1Y 7B5
Phone Number	1-250-865-5289	City	Calgary	Province	AB
		Country	Canada	Postal Code	T1Y 7B5
		Phone Number	403-407-1800	PO number	VPO00741597

SAMPLE DETAILS							ANALYSIS REQUESTED														
Sample ID	Sample Location (sys-loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CYVI		
EV_BALGW_WG_2021_Q2_NP	EV_BALGW	WG	N	05/12/21	12:06	G	5	1		1	1		1						1		
<b>Total</b>																					5

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
	Kennedy Allen	May 12, 2021	<i>[Signature]</i>	5/12/2021

<b>SERVICE REQUEST (rush - subject to availability)</b>	<b>Sampler's Name</b>	<b>Mobile #</b>
Regular (default) X 1 days - 50% surcharge 2 days - 100% surcharge Weekend - Contact ALS	Kennedy Allen	
	<b>Sampler's Signature</b>	<b>Date/Time</b>
		May 12, 2021

Environmental Division  
Calgary  
Work Order Reference  
**CG2101410**



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2101472**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210516Q2GW  
**Sampler** : C. Emslie/S. Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 18-May-2021 08:40  
**Date Analysis Commenced** : 18-May-2021  
**Issue Date** : 02-Jun-2021 12:25

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).





## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					EV_ECGW_WG_2021_Q2_NP	EV_MW_SP1A_WG_2021_Q2_NP	EV_MW_SP1B_WG_2021_Q2_NP	EV_MW_SP1C_WG_2021_Q2_NP	----
Client sampling date / time					16-May-2021 11:00	16-May-2021 15:41	16-May-2021 16:48	16-May-2021 17:43	----
Analyte	CAS Number	Method	LOR	Unit	CG2101472-001	CG2101472-002	CG2101472-003	CG2101472-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
conductivity	----	E100	2.0	µS/cm	402	562	459	454	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	162	300	243	234	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	242	387	255	334	----
pH	----	E108	0.10	pH units	8.21	8.09	8.17	8.14	----
solids, total dissolved [TDS]	----	E162	10	mg/L	259	314	268	276	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	26.0	3.1	1.5	2.5	----
turbidity	----	E121	0.10	NTU	40.0	5.96	0.18	0.23	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	206	291	166	179	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	206	291	166	179	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	251	355	202	218	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.133	0.608	<0.0050	0.0061	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.50	3.96	6.51	13.7	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.675	0.252	0.087	0.095	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0110	<0.0010	<0.0010	<0.0010	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0051	<0.0010	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0361	0.0053	<0.0020	0.980	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0113	0.0042	<0.0020	<0.0020	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	25.3	39.3	71.2	48.7	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0651	<0.0050	0.412	0.237	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.216	0.741	0.154	0.108	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.292	0.741	0.566	0.345	----
<b>Organic / Inorganic Carbon</b>									



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_ECGW_WG_2021_Q2_NP	EV_MW_SP1A_WG_2021_Q2_NP	EV_MW_SP1B_WG_2021_Q2_NP	EV_MW_SP1C_WG_2021_Q2_NP	----
Client sampling date / time					16-May-2021 11:00	16-May-2021 15:41	16-May-2021 16:48	16-May-2021 17:43	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101472-001	CG2101472-002	CG2101472-003	CG2101472-004	-----	
					Result	Result	Result	Result	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.88	<0.50	0.69	0.94	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.50	<0.50	0.55	0.69	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.70	6.76	5.02	5.00	----	
cation sum	----	EC101	0.10	meq/L	4.74	6.53	5.12	5.10	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	101	96.6	102	102	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.424	1.73	0.986	0.990	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0014	<0.0010	<0.0010	0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00035	<0.00010	<0.00010	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0496	0.552	0.148	0.148	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.112	0.028	<0.010	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0208	<0.0050	0.0079	0.0353	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	37.0	76.5	64.3	63.8	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00012	0.00011	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00065	<0.00020	<0.00020	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.425	<0.010	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0134	0.0927	0.0061	0.0088	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	16.8	26.4	20.1	18.1	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0856	0.0598	<0.00010	<0.00010	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0140	0.000392	0.000711	0.000841	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00214	<0.00050	<0.00050	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.05	3.30	0.669	0.835	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.071	<0.050	4.01	2.60	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_ECGW_WG_2021_Q2_NP	EV_MW_SP1A_WG_2021_Q2_NP	EV_MW_SP1B_WG_2021_Q2_NP	EV_MW_SP1C_WG_2021_Q2_NP	----
Client sampling date / time					16-May-2021 11:00	16-May-2021 15:41	16-May-2021 16:48	16-May-2021 17:43	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101472-001	CG2101472-002	CG2101472-003	CG2101472-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.82	3.04	2.30	2.60	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000050 <sup>DLM</sup>	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	33.9	9.15	5.51	9.26	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.398	0.295	0.150	0.149	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	8.51	14.0	23.8	17.0	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000043	<0.000010	<0.000010	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00158	0.000108	0.000773	0.000836	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0015	<0.0010	<0.0010	<0.0010	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101472</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 18-May-2021 08:40
PO	: VPO00741597	Issue Date	: 02-Jun-2021 12:25
C-O-C number	: 20210516Q2GW		
Sampler	: C. Emslie/S. Hansen		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ECGW_WG_2021_Q2_NP	E298	16-May-2021	27-May-2021	----	11 days	✓	27-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q2_NP	E298	16-May-2021	27-May-2021	----	11 days	✓	27-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q2_NP	E298	16-May-2021	27-May-2021	----	11 days	✓	27-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q2_NP	E298	16-May-2021	27-May-2021	----	11 days	✓	27-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1C_WG_2021_Q2_NP	E235.Br-L	16-May-2021	----	----	----		18-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_ECGW_WG_2021_Q2_NP	E235.Br-L	16-May-2021	----	----	----		18-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1A_WG_2021_Q2_NP	E235.Br-L	16-May-2021	----	----	----		18-May-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1B_WG_2021_Q2_NP	E235.Br-L	16-May-2021	----	----	----		18-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1C_WG_2021_Q2_NP	E235.Cl-L	16-May-2021	----	----	----		18-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_ECGW_WG_2021_Q2_NP	E235.Cl-L	16-May-2021	----	----	----		18-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1A_WG_2021_Q2_NP	E235.Cl-L	16-May-2021	----	----	----		18-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1B_WG_2021_Q2_NP	E235.Cl-L	16-May-2021	----	----	----		18-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_SP1A_WG_2021_Q2_NP	E378-U	16-May-2021	----	----	----		18-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_SP1B_WG_2021_Q2_NP	E378-U	16-May-2021	----	----	----		18-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_SP1C_WG_2021_Q2_NP	E378-U	16-May-2021	----	----	----		18-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_ECGW_WG_2021_Q2_NP	E378-U	16-May-2021	----	----	----		18-May-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_SP1C_WG_2021_Q2_NP	E235.F	16-May-2021	----	----	----		18-May-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_ECGW_WG_2021_Q2_NP	E235.F	16-May-2021	----	----	----		18-May-2021	28 days	3 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_SP1A_WG_2021_Q2_NP	E235.F	16-May-2021	----	----	----		18-May-2021	28 days	3 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_SP1B_WG_2021_Q2_NP	E235.F	16-May-2021	----	----	----		18-May-2021	28 days	3 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1C_WG_2021_Q2_NP	E235.NO3-L	16-May-2021	----	----	----		18-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_ECGW_WG_2021_Q2_NP	E235.NO3-L	16-May-2021	----	----	----		18-May-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1A_WG_2021_Q2_NP	E235.NO3-L	16-May-2021	----	----	----		18-May-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1B_WG_2021_Q2_NP	E235.NO3-L	16-May-2021	----	----	----		18-May-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1C_WG_2021_Q2_NP	E235.NO2-L	16-May-2021	----	----	----		18-May-2021	3 days	2 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_ECGW_WG_2021_Q2_NP	E235.NO2-L	16-May-2021	----	----	----		18-May-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1A_WG_2021_Q2_NP	E235.NO2-L	16-May-2021	----	----	----		18-May-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1B_WG_2021_Q2_NP	E235.NO2-L	16-May-2021	----	----	----		18-May-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_SP1C_WG_2021_Q2_NP	E235.SO4	16-May-2021	----	----	----		18-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_ECGW_WG_2021_Q2_NP	E235.SO4	16-May-2021	----	----	----		18-May-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_SP1A_WG_2021_Q2_NP	E235.SO4	16-May-2021	----	----	----		18-May-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_SP1B_WG_2021_Q2_NP	E235.SO4	16-May-2021	----	----	----		18-May-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
Amber glass dissolved (sulfuric acid) EV_ECGW_WG_2021_Q2_NP	E375-T	16-May-2021	24-May-2021	----	8 days	✔	24-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
Amber glass dissolved (sulfuric acid) EV_MW_SP1A_WG_2021_Q2_NP	E375-T	16-May-2021	24-May-2021	----	8 days	✔	24-May-2021	28 days	1 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q2_NP	E375-T	16-May-2021	24-May-2021	----	8 days	✔	24-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q2_NP	E375-T	16-May-2021	24-May-2021	----	8 days	✔	24-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ECGW_WG_2021_Q2_NP	E318	16-May-2021	22-May-2021	----	6 days	✔	22-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q2_NP	E318	16-May-2021	22-May-2021	----	6 days	✔	22-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q2_NP	E318	16-May-2021	22-May-2021	----	6 days	✔	22-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q2_NP	E318	16-May-2021	22-May-2021	----	6 days	✔	22-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ECGW_WG_2021_Q2_NP	E372-U	16-May-2021	25-May-2021	----	9 days	✔	25-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q2_NP	E372-U	16-May-2021	25-May-2021	----	9 days	✔	25-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q2_NP	E372-U	16-May-2021	25-May-2021	----	9 days	✔	25-May-2021	28 days	1 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q2_NP	E372-U	16-May-2021	25-May-2021	----	9 days	✓	25-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1A_WG_2021_Q2_NP	E421.Cr-L	16-May-2021	21-May-2021	----	5 days	✓	21-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1B_WG_2021_Q2_NP	E421.Cr-L	16-May-2021	21-May-2021	----	5 days	✓	21-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1C_WG_2021_Q2_NP	E421.Cr-L	16-May-2021	21-May-2021	----	5 days	✓	21-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ECGW_WG_2021_Q2_NP	E421.Cr-L	16-May-2021	21-May-2021	----	6 days	✓	21-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_ECGW_WG_2021_Q2_NP	E509	16-May-2021	21-May-2021	----	5 days	✓	21-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SP1A_WG_2021_Q2_NP	E509	16-May-2021	21-May-2021	----	5 days	✓	21-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SP1B_WG_2021_Q2_NP	E509	16-May-2021	21-May-2021	----	5 days	✓	21-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SP1C_WG_2021_Q2_NP	E509	16-May-2021	21-May-2021	----	5 days	✓	21-May-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1A_WG_2021_Q2_NP	E421	16-May-2021	21-May-2021	----	5 days	✓	21-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1B_WG_2021_Q2_NP	E421	16-May-2021	21-May-2021	----	5 days	✓	21-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1C_WG_2021_Q2_NP	E421	16-May-2021	21-May-2021	----	5 days	✓	21-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ECGW_WG_2021_Q2_NP	E421	16-May-2021	21-May-2021	----	6 days	✓	21-May-2021	180 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ECGW_WG_2021_Q2_NP	E358-L	16-May-2021	26-May-2021	----	10 days	✓	26-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q2_NP	E358-L	16-May-2021	26-May-2021	----	10 days	✓	26-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q2_NP	E358-L	16-May-2021	26-May-2021	----	10 days	✓	26-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q2_NP	E358-L	16-May-2021	26-May-2021	----	10 days	✓	26-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ECGW_WG_2021_Q2_NP	E355-L	16-May-2021	26-May-2021	----	10 days	✓	26-May-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q2_NP	E355-L	16-May-2021	26-May-2021	----	10 days	✓	26-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q2_NP	E355-L	16-May-2021	26-May-2021	----	10 days	✓	26-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q2_NP	E355-L	16-May-2021	26-May-2021	----	10 days	✓	26-May-2021	28 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_ECGW_WG_2021_Q2_NP	E283	16-May-2021	----	----	----		25-May-2021	14 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_SP1A_WG_2021_Q2_NP	E283	16-May-2021	----	----	----		25-May-2021	14 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_SP1B_WG_2021_Q2_NP	E283	16-May-2021	----	----	----		25-May-2021	14 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_SP1C_WG_2021_Q2_NP	E283	16-May-2021	----	----	----		25-May-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_SP1A_WG_2021_Q2_NP	E290	16-May-2021	----	----	----		26-May-2021	14 days	10 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_SP1B_WG_2021_Q2_NP	E290	16-May-2021	----	----	----		26-May-2021	14 days	10 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_SP1C_WG_2021_Q2_NP	E290	16-May-2021	----	----	----		26-May-2021	14 days	10 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_ECGW_WG_2021_Q2_NP	E290	16-May-2021	----	----	----		26-May-2021	14 days	11 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_SP1A_WG_2021_Q2_NP	E100	16-May-2021	----	----	----		26-May-2021	28 days	10 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_SP1B_WG_2021_Q2_NP	E100	16-May-2021	----	----	----		26-May-2021	28 days	10 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_SP1C_WG_2021_Q2_NP	E100	16-May-2021	----	----	----		26-May-2021	28 days	10 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_ECGW_WG_2021_Q2_NP	E100	16-May-2021	----	----	----		26-May-2021	28 days	11 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_SP1C_WG_2021_Q2_NP	E125	16-May-2021	----	----	----		25-May-2021	0.34 hrs	206 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_SP1B_WG_2021_Q2_NP	E125	16-May-2021	----	----	----		25-May-2021	0.34 hrs	207 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_SP1A_WG_2021_Q2_NP	E125	16-May-2021	----	----	----		25-May-2021	0.34 hrs	208 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_ECGW_WG_2021_Q2_NP	E125	16-May-2021	----	----	----		25-May-2021	0.34 hrs	213 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_SP1C_WG_2021_Q2_NP	E108	16-May-2021	----	----	----		26-May-2021	0.25 hrs	234 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_SP1B_WG_2021_Q2_NP	E108	16-May-2021	----	----	----		26-May-2021	0.25 hrs	235 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_SP1A_WG_2021_Q2_NP	E108	16-May-2021	----	----	----		26-May-2021	0.25 hrs	236 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_ECGW_WG_2021_Q2_NP	E108	16-May-2021	----	----	----		26-May-2021	0.25 hrs	240 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_SP1B_WG_2021_Q2_NP	E162	16-May-2021	----	----	----		19-May-2021	7 days	3 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_SP1C_WG_2021_Q2_NP	E162	16-May-2021	----	----	----		19-May-2021	7 days	3 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_ECGW_WG_2021_Q2_NP	E162	16-May-2021	----	----	----		19-May-2021	7 days	4 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_SP1A_WG_2021_Q2_NP	E162	16-May-2021	----	----	----		19-May-2021	7 days	4 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_SP1B_WG_2021_Q2_NP	E160-L	16-May-2021	----	----	----		19-May-2021	7 days	3 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_SP1C_WG_2021_Q2_NP	E160-L	16-May-2021	----	----	----		19-May-2021	7 days	3 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_ECGW_WG_2021_Q2_NP	E160-L	16-May-2021	----	----	----		19-May-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_SP1A_WG_2021_Q2_NP	E160-L	16-May-2021	----	----	----		19-May-2021	7 days	4 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_SP1B_WG_2021_Q2_NP	E121	16-May-2021	----	----	----		18-May-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_SP1C_WG_2021_Q2_NP	E121	16-May-2021	----	----	----		18-May-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_ECGW_WG_2021_Q2_NP	E121	16-May-2021	----	----	----		18-May-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_SP1A_WG_2021_Q2_NP	E121	16-May-2021	----	----	----		18-May-2021	3 days	3 days	✔	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	204200	2	40	5.0	5.0	✓
Alkalinity Species by Titration	E290	205568	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	206428	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	200375	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	200376	1	20	5.0	5.0	✓
Conductivity in Water	E100	205566	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	202732	2	39	5.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	202691	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	202733	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	205505	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	200273	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	200379	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	200377	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	200378	1	20	5.0	5.0	✓
ORP by Electrode	E125	204235	1	20	5.0	5.0	✓
pH by Meter	E108	205567	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	200374	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	200753	2	30	6.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	202838	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	202791	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	205506	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	202844	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	200324	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	204200	2	40	5.0	5.0	✓
Alkalinity Species by Titration	E290	205568	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	206428	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	200375	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	200376	1	20	5.0	5.0	✓
Conductivity in Water	E100	205566	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	202732	2	39	5.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	202691	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	202733	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	205505	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	200273	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	200379	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	200377	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	200378	1	20	5.0	5.0	✔
ORP by Electrode	E125	204235	1	20	5.0	5.0	✔
pH by Meter	E108	205567	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	200374	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	200753	2	30	6.6	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	202838	1	4	25.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	202791	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	205506	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	202844	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	200748	1	22	4.5	5.0	✖
Turbidity by Nephelometry	E121	200324	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	204200	2	40	5.0	5.0	✔
Alkalinity Species by Titration	E290	205568	2	40	5.0	5.0	✔
Ammonia by Fluorescence	E298	206428	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	200375	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	200376	1	20	5.0	5.0	✔
Conductivity in Water	E100	205566	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	202732	2	39	5.1	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	202691	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	202733	2	40	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	205505	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	200273	1	19	5.2	5.0	✔
Fluoride in Water by IC	E235.F	200379	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	200377	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	200378	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	200374	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	200753	2	30	6.6	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	202838	1	4	25.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	202791	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	205506	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	202844	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	200748	1	22	4.5	5.0	✖
Turbidity by Nephelometry	E121	200324	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	206428	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	200375	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	200376	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	202732	2	39	5.1	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	202691	1	20	5.0	5.0	✔



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	202733	2	40	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	205505	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	200273	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	200379	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	200377	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	200378	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	200374	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	202838	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	202791	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	205506	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	202844	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101472**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
           Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210516Q2GW  
**Sampler** : C. Emslie/S. Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
           Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 18-May-2021 08:40  
**Date Analysis Commenced** : 18-May-2021  
**Issue Date** : 02-Jun-2021 12:25

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia

Page : 2 of 18  
Work Order : CG2101472  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 200324)</b>											
CG2101471-001	Anonymous	turbidity	----	E121	0.10	NTU	27.1	27.3	0.735%	15%	----
<b>Physical Tests (QC Lot: 200753)</b>											
CG2101450-020	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1790	1880	5.34%	20%	----
<b>Physical Tests (QC Lot: 200754)</b>											
CG2101472-004	EV_MW_SP1C_WG_2021_Q2_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	276	263	4.64%	20%	----
<b>Physical Tests (QC Lot: 204200)</b>											
CG2101468-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	17.2	15.8	1.4	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 204201)</b>											
CG2101472-002	EV_MW_SP1A_WG_2021_Q2_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 204235)</b>											
CG2101462-009	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	421	412	2.16%	15%	----
<b>Physical Tests (QC Lot: 205566)</b>											
CG2101462-011	Anonymous	conductivity	----	E100	2.0	µS/cm	251	244	2.83%	10%	----
<b>Physical Tests (QC Lot: 205567)</b>											
CG2101462-011	Anonymous	pH	----	E108	0.10	pH units	8.05	8.11	0.742%	4%	----
<b>Physical Tests (QC Lot: 205568)</b>											
CG2101462-011	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	105	101	3.11%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	105	101	3.11%	20%	----
<b>Physical Tests (QC Lot: 205569)</b>											
CG2101472-002	EV_MW_SP1A_WG_2021_Q2_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	291	290	0.344%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	291	290	0.344%	20%	----
<b>Anions and Nutrients (QC Lot: 200273)</b>											
CG2101470-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 200374)</b>											
CG2101470-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	19.3	19.1	0.992%	20%	----
<b>Anions and Nutrients (QC Lot: 200375)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 200375) - continued</b>											
CG2101470-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 200376)</b>											
CG2101470-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.39	0.38	0.005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 200377)</b>											
CG2101470-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.248	0.239	3.57%	20%	----
<b>Anions and Nutrients (QC Lot: 200378)</b>											
CG2101470-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0011	<0.0010	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 200379)</b>											
CG2101470-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.106	0.108	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 202791)</b>											
CG2101472-001	EV_ECGW_WG_2021_Q2_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.216	0.226	0.010	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 202838)</b>											
CG2101472-001	EV_ECGW_WG_2021_Q2_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0113	0.0129	0.0016	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 202844)</b>											
CG2101471-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0202	0.0213	4.99%	20%	----
<b>Anions and Nutrients (QC Lot: 206428)</b>											
CG2101471-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0483	0.0525	8.33%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 205505)</b>											
CG2101466-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	20.2	24.5	19.3%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 205506)</b>											
CG2101466-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	25.4	22.0	14.1%	20%	----
<b>Dissolved Metals (QC Lot: 202691)</b>											
CG2101472-001	EV_ECGW_WG_2021_Q2_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 202732)</b>											
CG2101471-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 202733)</b>											
CG2101471-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0058	0.0065	0.0006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00022	0.00022	0.000002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00016	0.00019	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0830	0.0830	0.0995%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.040	0.040	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0310 µg/L	0.0000319	0.0000009	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 202733) - continued</b>											
CG2101471-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.050	mg/L	53.9	54.6	1.27%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.11 µg/L	0.00011	0.000007	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00161	0.00157	0.00004	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.022	0.022	0.000008	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0188	0.0188	0.0609%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	15.7	15.9	0.958%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00360	0.00357	0.747%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00110	0.00111	1.19%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00169	0.00172	0.00003	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.98	2.02	2.09%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	2.28 µg/L	0.00220	3.25%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.25	3.20	1.37%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.43	6.50	0.978%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.495	0.502	1.53%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	11.8	12.1	1.78%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000631	0.000621	1.65%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0141	0.0143	1.34%	20%	----
<b>Dissolved Metals (QC Lot: 202734)</b>											
CG2101472-001	EV_ECGW_WG_2021_Q2_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 202735)</b>											
CG2101472-001	EV_ECGW_WG_2021_Q2_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0014	0.0011	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00035	0.00034	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0496	0.0498	0.323%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.112	0.111	1.35%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0208 µg/L	0.0000186	0.0000022	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 202735) - continued</b>											
CG2101472-001	EV_ECGW_WG_2021_Q2_NP	calcium, dissolved	7440-70-2	E421	0.050	mg/L	37.0	36.3	1.78%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00065	0.00067	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0134	0.0131	2.08%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	16.8	16.8	0.161%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0856	0.0863	0.883%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0140	0.0139	0.285%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00214	0.00211	0.00002	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.05	1.06	1.20%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.071 µg/L	0.000101	0.000030	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.82	4.84	0.476%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	----	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	33.9	34.1	0.421%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.398	0.407	2.15%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	8.51	8.88	4.24%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000043	0.000042	0.000001	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00158	0.00158	0.243%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0015	0.0017	0.0002	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 200324)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 200748)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 200753)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 200754)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 204200)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 204201)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 205566)</b>						
conductivity	---	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 205568)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 205569)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 200273)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 200374)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 200375)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 200376)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 200377)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 200378)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 200379)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 202791)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 202838)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 202844)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 206428)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 205505)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 205506)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 202691)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 202732)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 202733)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 202733) - continued</b>						
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 202734)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 202735)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 202735) - continued</b>						
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 200324)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100	85.0	115	---
<b>Physical Tests (QCLot: 200748)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	85.3	85.0	115	---
<b>Physical Tests (QCLot: 200753)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	95.1	85.0	115	---
<b>Physical Tests (QCLot: 200754)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	91.7	85.0	115	---
<b>Physical Tests (QCLot: 204200)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	108	85.0	115	---
<b>Physical Tests (QCLot: 204201)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 204235)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 205566)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	---
<b>Physical Tests (QCLot: 205567)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 205568)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	99.7	85.0	115	---
<b>Physical Tests (QCLot: 205569)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	97.6	85.0	115	---
<b>Anions and Nutrients (QCLot: 200273)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	108	80.0	120	---
<b>Anions and Nutrients (QCLot: 200374)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	97.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 200375)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.0	85.0	115	---
<b>Anions and Nutrients (QCLot: 200376)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	96.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 200377)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	96.7	90.0	110	---
<b>Anions and Nutrients (QCLot: 200378)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 200378) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	96.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 200379)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	90.5	90.0	110	----
<b>Anions and Nutrients (QCLot: 202791)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 202838)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 202844)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 206428)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	94.5	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 205505)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 205506)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	106	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.9	80.0	120	----
<b>Dissolved Metals (QCLot: 202732)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
<b>Dissolved Metals (QCLot: 202733)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	94.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 202733) - continued</b>									
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.0	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	95.5	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	106	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	106	80.0	120	----
<b>Dissolved Metals (QCLot: 202734)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 202735)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.1	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.8	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	107	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.6	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	105	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	105	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 202735) - continued</b>									
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	95.6	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.9	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.1	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	102	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 200273)</b>										
CG2101470-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0502 mg/L	0.05 mg/L	100	70.0	130	----
<b>Anions and Nutrients (QCLot: 200374)</b>										
CG2101470-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	99.5 mg/L	100 mg/L	99.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 200375)</b>										
CG2101470-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.488 mg/L	0.5 mg/L	97.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 200376)</b>										
CG2101470-004	Anonymous	chloride	16887-00-6	E235.Cl-L	98.1 mg/L	100 mg/L	98.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 200377)</b>										
CG2101470-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.46 mg/L	2.5 mg/L	98.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 200378)</b>										
CG2101470-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.496 mg/L	0.5 mg/L	99.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 200379)</b>										
CG2101470-004	Anonymous	fluoride	16984-48-8	E235.F	0.889 mg/L	1 mg/L	88.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 202791)</b>										
CG2101472-002	EV_MW_SP1A_WG_2021_Q2_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.85 mg/L	2.5 mg/L	114	70.0	130	----
<b>Anions and Nutrients (QCLot: 202838)</b>										
CG2101472-002	EV_MW_SP1A_WG_2021_Q2_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0689 mg/L	0.0676 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 202844)</b>										
CG2101471-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0609 mg/L	0.0676 mg/L	90.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 206428)</b>										
CG2101471-012	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0913 mg/L	0.1 mg/L	91.3	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 205505)</b>										
CG2101466-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	29.6 mg/L	23.9 mg/L	124	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 205506)</b>										
CG2101466-001	Anonymous	carbon, total organic [TOC]	----	E355-L	ND mg/L	23.9 mg/L	ND	70.0	130	----
<b>Dissolved Metals (QCLot: 202691)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 202691) - continued</b>										
CG2101472-002	EV_MW_SP1A_WG_2021_Q2_NP	mercury, dissolved	7439-97-6	E509	0.0000995 mg/L	0.0001 mg/L	99.5	70.0	130	----
<b>Dissolved Metals (QCLot: 202732)</b>										
CG2101471-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0399 mg/L	0.04 mg/L	99.6	70.0	130	----
<b>Dissolved Metals (QCLot: 202733)</b>										
CG2101471-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0200 mg/L	0.02 mg/L	100.0	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00934 mg/L	0.01 mg/L	93.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00381 mg/L	0.004 mg/L	95.3	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.95 mg/L	2 mg/L	97.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.94 mg/L	4 mg/L	98.5	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.32 mg/L	10 mg/L	93.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00386 mg/L	0.004 mg/L	96.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.7 mg/L	20 mg/L	104	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00397 mg/L	0.004 mg/L	99.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.401 mg/L	0.4 mg/L	100	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 202734)</b>										
CG2101472-001	EV_ECGW_WG_2021_Q2_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0393 mg/L	0.04 mg/L	98.4	70.0	130	----
<b>Dissolved Metals (QCLot: 202735)</b>										
CG2101472-001	EV_ECGW_WG_2021_Q2_NP	aluminum, dissolved	7429-90-5	E421	0.197 mg/L	0.2 mg/L	98.5	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00880 mg/L	0.01 mg/L	88.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00372 mg/L	0.004 mg/L	93.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.93 mg/L	2 mg/L	96.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0386 mg/L	0.04 mg/L	96.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.94 mg/L	4 mg/L	98.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.04 mg/L	10 mg/L	90.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0199 mg/L	0.02 mg/L	99.3	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.0 mg/L	20 mg/L	99.8	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00382 mg/L	0.004 mg/L	95.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0394 mg/L	0.04 mg/L	98.5	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00393 mg/L	0.004 mg/L	98.3	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.389 mg/L	0.4 mg/L	97.2	70.0	130	----



COC ID: 20210516Q2GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO		LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary		Report Format / Distribution			Excel	PDF	EDD
Job Description	Q2 Ground Water Sampling	Lab Contact	Lyudmyla Shvets		Email 1:	chris.emslie@teck.com	X	X	X	
Project Manager	Jennifer Dane	Email	lyudmyla.shvets@alsglobal.com		Email 2:	colby.bracken@teck.com	X	X	X	
Email	jennifer.dane@teck.com	Address	2559 29 Street NE		Email 3:	kennedy.allen@teck.com	X	X	X	
Address	RR#1 HWY# 3				Email 4:	Teck.Lab.Results@sharepoint.teck.ca	X	X	X	
					Email 5:	teckcoal@equisonline.com			X	
Province	BC	City	Calgary		Province	AB				
Country	Canada	Postal Code	T1Y 7B5		Country	Canada				
Phone Number	403-407-1800	PO number	VPO00741597							

Environmental Division  
Calgary  
Work Order Reference  
**CG2101472**



Telephone : +1 403 407 1800

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED														
								TECKCOAL-ROUTINE-VA (E305-1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CYI			
EV_ECGW_WG_2021_Q2_NP	EV_ECGW	WG	N	05/16/21	11:00	G	5	1	1	1	1											
EV_MW_SPIA_WG_2021_Q2_NP	EV_MW_SPIA	WG	N	05/16/21	15:41	G	5	1	1	1	1											
EV_MW_SPIB_WG_2021_Q2_NP	EV_MW_SPIB	WG	N	05/16/21	16:48	G	5	1	1	1	1											
EV_MW_SPIC_WG_2021_Q2_NP	EV_MW_SPIC	WG	N	05/16/21	17:43	G	5	1	1	1	1											
<b>Total</b>							<b>20</b>															

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Emslie/S. Hansen	May 16, 2021	<i>[Signature]</i>	5/16/2021

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	C. Emslie/S. Hansen	
	Sampler's Signature	Date/Time
		May 16, 2021

*[Handwritten Signature]*





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101569**  
**Client** : **Teck Coal Limited**  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210520Q2GW  
**Sampler** : C. Bracken/J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-May-2021 08:40  
**Date Analysis Commenced** : 22-May-2021  
**Issue Date** : 05-Jun-2021 12:29

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Richard Chong		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_GV3GWS_	EV_MW_GV4A_	EV_MW_GV4B_	----	----
(Matrix: Water)						WG_2021_Q2_	WG_2021_Q2_	WG_2021_Q2_		
						NP	NP	NP		
Client sampling date / time					20-May-2021	20-May-2021	20-May-2021	----	----	
					13:40	16:10	17:05			
Analyte	CAS Number	Method	LOR	Unit	CG2101569-001	CG2101569-002	CG2101569-003	-----	-----	
					Result	Result	Result	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	3.2	5.0	3.6	----	----	
conductivity	----	E100	2.0	µS/cm	436	613	519	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	267	329	314	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	438	492	441	----	----	
pH	----	E108	0.10	pH units	7.93	7.91	7.97	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	307	406	343	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	9.0	27.5	----	----	
turbidity	----	E121	0.10	NTU	0.35	2.60	26.1	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	267	291	274	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	267	291	274	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	326	355	334	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0082	<0.0050	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.99	2.32	2.96	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.280	0.706	0.604	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.109	0.105	0.166	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.203	0.0624	0.189	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0019	0.0033	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0021	0.0070	0.0256	----	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	34.7	106	70.5	----	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.312	0.169	0.358	----	----	
<b>Organic / Inorganic Carbon</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_GV3GWS_ WG_2021_Q2_ NP	EV_MW_GV4A_ WG_2021_Q2_ NP	EV_MW_GV4B_ WG_2021_Q2_ NP	----	----
Client sampling date / time					20-May-2021 13:40	20-May-2021 16:10	20-May-2021 17:05	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101569-001	CG2101569-002	CG2101569-003	-----	-----	
					Result	Result	Result	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.78	4.12	1.46	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.25	3.77	1.43	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.12	8.13	7.07	----	----	
cation sum	----	EC101	0.10	meq/L	5.46	7.87	6.45	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	89.2	96.8	91.2	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.70	1.62	4.58	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0040	0.0015	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00011	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00013	0.00079	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0691	0.0531	0.0638	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.017	<0.010	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0063	<0.0050	0.0085	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	70.5	79.1	75.4	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00017	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.80	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00250	0.00098	0.00051	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.094	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000074	0.000069	0.000130	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0065	0.0108	0.0089	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	22.2	32.0	30.6	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00030	0.285	0.00056	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000930	0.00260	0.00159	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00135	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.909	1.51	1.11	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	3.22	4.28	3.76	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_GV3GWS_ WG_2021_Q2_ NP	EV_MW_GV4A_ WG_2021_Q2_ NP	EV_MW_GV4B_ WG_2021_Q2_ NP	----	----
Client sampling date / time					20-May-2021 13:40	20-May-2021 16:10	20-May-2021 17:05	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101569-001	CG2101569-002	CG2101569-003	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.30	4.82	4.49	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.26	28.4	3.25	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.189	0.332	0.271	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	11.2	34.8	21.7	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000013	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00012	0.00015	0.00013	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00128	0.00299	0.00143	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0024	<0.0010	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2101569</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : <b>Kennedy Allen</b> <b>Address</b> : <b>RR#1 HIGHWAY #3</b> <b>Sparwood BC Canada V0B 2G1</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>ELKVIEW OPERATIONS</b> <b>PO</b> : <b>VPO00741597</b> <b>C-O-C number</b> : <b>20210520Q2GW</b> <b>Sampler</b> : <b>C. Bracken/J. Batstone</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>Teck Coal Master Quote</b> <b>No. of samples received</b> : <b>3</b> <b>No. of samples analysed</b> : <b>3</b>	<b>Page</b> : <b>1 of 16</b>  <b>Laboratory</b> : <b>Calgary - Environmental</b> <b>Account Manager</b> : <b>Lyudmyla Shvets</b> <b>Address</b> : <b>2559 29th Street NE</b> <b>Calgary, Alberta Canada T1Y 7B5</b>  <b>Telephone</b> : <b>+1 403 407 1800</b> <b>Date Samples Received</b> : <b>22-May-2021 08:40</b> <b>Issue Date</b> : <b>05-Jun-2021 12:30</b>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### ***Outliers: Reference Material (RM) Samples***

- No Reference Material (RM) Sample outliers occur.

#### ***Outliers : Analysis Holding Time Compliance (Breaches)***

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q2_NP	E298	20-May-2021	03-Jun-2021	----	14 days	✓	03-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q2_NP	E298	20-May-2021	03-Jun-2021	----	14 days	✓	03-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q2_NP	E298	20-May-2021	03-Jun-2021	----	14 days	✓	03-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q2_NP	E235.Br-L	20-May-2021	----	----	----		22-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q2_NP	E235.Br-L	20-May-2021	----	----	----		22-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q2_NP	E235.Br-L	20-May-2021	----	----	----		22-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q2_NP	E235.Cl-L	20-May-2021	----	----	----		22-May-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_GV4A_WG_2021_Q2_NP	E235.Cl-L	20-May-2021	----	----	----		22-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_GV4B_WG_2021_Q2_NP	E235.Cl-L	20-May-2021	----	----	----		22-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_GV3GWS_WG_2021_Q2_NP	E378-U	20-May-2021	----	----	----		22-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_GV4A_WG_2021_Q2_NP	E378-U	20-May-2021	----	----	----		22-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_GV4B_WG_2021_Q2_NP	E378-U	20-May-2021	----	----	----		22-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_GV3GWS_WG_2021_Q2_NP	E235.F	20-May-2021	----	----	----		22-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_GV4A_WG_2021_Q2_NP	E235.F	20-May-2021	----	----	----		22-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_GV4B_WG_2021_Q2_NP	E235.F	20-May-2021	----	----	----		22-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_GV3GWS_WG_2021_Q2_NP	E235.NO3-L	20-May-2021	----	----	----		22-May-2021	3 days	2 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q2_NP	E235.NO3-L	20-May-2021	----	----	----		22-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q2_NP	E235.NO3-L	20-May-2021	----	----	----		22-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q2_NP	E235.NO2-L	20-May-2021	----	----	----		22-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q2_NP	E235.NO2-L	20-May-2021	----	----	----		22-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q2_NP	E235.NO2-L	20-May-2021	----	----	----		22-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q2_NP	E235.SO4	20-May-2021	----	----	----		22-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q2_NP	E235.SO4	20-May-2021	----	----	----		22-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q2_NP	E235.SO4	20-May-2021	----	----	----		22-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q2_NP	E375-T	20-May-2021	01-Jun-2021	----	12 days	✓	01-Jun-2021	28 days	0 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q2_NP	E375-T	20-May-2021	01-Jun-2021	----	12 days	✓	01-Jun-2021	28 days	0 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q2_NP	E375-T	20-May-2021	01-Jun-2021	----	12 days	✓	01-Jun-2021	28 days	0 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q2_NP	E318	20-May-2021	28-May-2021	----	8 days	✓	28-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q2_NP	E318	20-May-2021	28-May-2021	----	8 days	✓	28-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q2_NP	E318	20-May-2021	28-May-2021	----	8 days	✓	28-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q2_NP	E372-U	20-May-2021	31-May-2021	----	11 days	✓	31-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q2_NP	E372-U	20-May-2021	31-May-2021	----	11 days	✓	31-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q2_NP	E372-U	20-May-2021	31-May-2021	----	11 days	✓	31-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_GV3GWS_WG_2021_Q2_NP	E421.Cr-L	20-May-2021	27-May-2021	----	8 days	✓	27-May-2021	180 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV4A_WG_2021_Q2_NP	E421.Cr-L	20-May-2021	27-May-2021	----	8 days	✓	27-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV4B_WG_2021_Q2_NP	E421.Cr-L	20-May-2021	27-May-2021	----	8 days	✓	27-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_GV3GWS_WG_2021_Q2_NP	E509	20-May-2021	29-May-2021	----	9 days	✓	29-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GV4A_WG_2021_Q2_NP	E509	20-May-2021	29-May-2021	----	9 days	✓	29-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GV4B_WG_2021_Q2_NP	E509	20-May-2021	29-May-2021	----	9 days	✓	29-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_GV3GWS_WG_2021_Q2_NP	E421	20-May-2021	27-May-2021	----	8 days	✓	27-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV4A_WG_2021_Q2_NP	E421	20-May-2021	27-May-2021	----	8 days	✓	27-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV4B_WG_2021_Q2_NP	E421	20-May-2021	27-May-2021	----	8 days	✓	27-May-2021	180 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q2_NP	E358-L	20-May-2021	01-Jun-2021	----	12 days	✓	01-Jun-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q2_NP	E358-L	20-May-2021	01-Jun-2021	----	12 days	✓	01-Jun-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q2_NP	E358-L	20-May-2021	01-Jun-2021	----	12 days	✓	01-Jun-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q2_NP	E355-L	20-May-2021	01-Jun-2021	----	12 days	✓	01-Jun-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q2_NP	E355-L	20-May-2021	01-Jun-2021	----	12 days	✓	01-Jun-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q2_NP	E355-L	20-May-2021	01-Jun-2021	----	12 days	✓	01-Jun-2021	28 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q2_NP	E283	20-May-2021	----	----	----		30-May-2021	14 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q2_NP	E283	20-May-2021	----	----	----		30-May-2021	14 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q2_NP	E283	20-May-2021	----	----	----		30-May-2021	14 days	10 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q2_NP	E290	20-May-2021	----	----	----		28-May-2021	14 days	9 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_GV4A_WG_2021_Q2_NP	E290	20-May-2021	----	----	----		28-May-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_GV4B_WG_2021_Q2_NP	E290	20-May-2021	----	----	----		28-May-2021	14 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_GV3GWS_WG_2021_Q2_NP	E100	20-May-2021	----	----	----		28-May-2021	28 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_GV4A_WG_2021_Q2_NP	E100	20-May-2021	----	----	----		28-May-2021	28 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_GV4B_WG_2021_Q2_NP	E100	20-May-2021	----	----	----		28-May-2021	28 days	9 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_GV3GWS_WG_2021_Q2_NP	E125	20-May-2021	----	----	----		28-May-2021	0.34 hrs	192 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_GV4B_WG_2021_Q2_NP	E125	20-May-2021	----	----	----		01-Jun-2021	0.34 hrs	281 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_GV4A_WG_2021_Q2_NP	E125	20-May-2021	----	----	----		01-Jun-2021	0.34 hrs	282 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_GV4B_WG_2021_Q2_NP	E108	20-May-2021	----	----	----		28-May-2021	0.25 hrs	192 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_GV4A_WG_2021_Q2_NP	E108	20-May-2021	----	----	----		28-May-2021	0.25 hrs	193 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_GV3GWS_WG_2021_Q2_NP	E108	20-May-2021	----	----	----		28-May-2021	0.25 hrs	195 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_GV4A_WG_2021_Q2_NP	E162	20-May-2021	----	----	----		25-May-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_GV4B_WG_2021_Q2_NP	E162	20-May-2021	----	----	----		25-May-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_GV3GWS_WG_2021_Q2_NP	E162	20-May-2021	----	----	----		25-May-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_GV4A_WG_2021_Q2_NP	E160-L	20-May-2021	----	----	----		25-May-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_GV4B_WG_2021_Q2_NP	E160-L	20-May-2021	----	----	----		25-May-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_GV3GWS_WG_2021_Q2_NP	E160-L	20-May-2021	----	----	----		25-May-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_GV3GWS_WG_2021_Q2_NP	E121	20-May-2021	----	----	----		23-May-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q2_NP	E121	20-May-2021	----	----	----		23-May-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q2_NP	E121	20-May-2021	----	----	----		23-May-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	208609	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	207934	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	211961	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	203743	1	11	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	203744	1	11	9.0	5.0	✓
Conductivity in Water	E100	207932	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	206899	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	208190	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	206898	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	209931	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	203658	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	203741	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	203745	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	203746	1	11	9.0	5.0	✓
ORP by Electrode	E125	207296	2	24	8.3	5.0	✓
pH by Meter	E108	207933	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	203742	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	204386	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	209130	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	206406	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	209933	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	207465	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	203904	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	208609	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	207934	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	211961	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	203743	1	11	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	203744	1	11	9.0	5.0	✓
Conductivity in Water	E100	207932	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	206899	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	208190	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	206898	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	209931	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	203658	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	203741	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	203745	1	11	9.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	203746	1	11	9.0	5.0	✓
ORP by Electrode	E125	207296	2	24	8.3	5.0	✓
pH by Meter	E108	207933	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	203742	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	204386	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	209130	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	206406	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	209933	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	207465	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	204390	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	203904	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	208609	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	207934	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	211961	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	203743	1	11	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	203744	1	11	9.0	5.0	✓
Conductivity in Water	E100	207932	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	206899	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	208190	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	206898	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	209931	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	203658	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	203741	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	203745	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	203746	1	11	9.0	5.0	✓
Sulfate in Water by IC	E235.SO4	203742	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	204386	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	209130	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	206406	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	209933	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	207465	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	204390	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	203904	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	211961	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	203743	1	11	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	203744	1	11	9.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	206899	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	208190	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	206898	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	209931	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	203658	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	203741	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	203745	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	203746	1	11	9.0	5.0	✓
Sulfate in Water by IC	E235.SO4	203742	1	11	9.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	209130	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	206406	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	209933	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	207465	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101569**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210520Q2GW  
**Sampler** : C. Bracken/J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-May-2021 08:40  
**Date Analysis Commenced** : 22-May-2021  
**Issue Date** : 05-Jun-2021 12:29

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Richard Chong		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2101569  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 203904)</b>											
CG2101548-010	Anonymous	turbidity	----	E121	0.10	NTU	2.38	2.41	1.25%	15%	----
<b>Physical Tests (QC Lot: 204386)</b>											
CG2101551-002	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 207296)</b>											
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	438	450	2.75%	15%	----
<b>Physical Tests (QC Lot: 207932)</b>											
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	conductivity	----	E100	2.0	µS/cm	436	441	1.14%	10%	----
<b>Physical Tests (QC Lot: 207933)</b>											
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	pH	----	E108	0.10	pH units	7.93	7.93	0.00%	4%	----
<b>Physical Tests (QC Lot: 207934)</b>											
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	267	264	1.16%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	267	264	1.17%	20%	----
<b>Physical Tests (QC Lot: 208609)</b>											
CG2101559-005	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	23.7	23.4	1.10%	20%	----
<b>Physical Tests (QC Lot: 208844)</b>											
CG2101569-002	EV_MW_GV4A_WG_2021_Q2_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	492	484	1.68%	15%	----
<b>Anions and Nutrients (QC Lot: 203658)</b>											
CG2101565-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 203741)</b>											
CG2101570-008	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 203742)</b>											
CG2101570-008	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 203743)</b>											
CG2101570-008	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 203744)</b>											
CG2101570-008	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 203745)</b>											





Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 203745) - continued</b>											
CG2101570-008	Anonymous	nitrate (as N)	14797-55-8	E235.N03-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 203746)</b>											
CG2101570-008	Anonymous	nitrite (as N)	14797-65-0	E235.N02-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 206406)</b>											
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.109	<0.050	0.059	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 207465)</b>											
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0021	<0.0020	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 209130)</b>											
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 211961)</b>											
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0055	0.0005	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 209931)</b>											
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.78	1.87	0.09	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 209933)</b>											
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.25	1.17	0.08	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 206898)</b>											
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0040	0.0049	0.0010	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00013	0.00014	0.000010	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0691	0.0700	1.32%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.011	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0063 µg/L	0.0000057	0.0000006	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	70.5	70.9	0.531%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00250	0.00254	1.35%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000074	0.000077	0.000003	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0065	0.0064	0.00007	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	22.2	22.0	0.925%	20%	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00030	0.00028	0.00002	Diff <2x LOR	----		



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 206898) - continued</b>											
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000930	0.00100	7.83%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.909	0.912	0.301%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	3.22 µg/L	0.00323	0.231%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.30	3.31	0.253%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.26	2.20	2.60%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.189	0.191	0.953%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	11.2	11.3	0.787%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00012	0.00012	0.000002	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00128	0.00127	0.910%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0018	0.00006	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 206899)</b>											
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00017	0.00018	0.000003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 208190)</b>											
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 203904)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 204386)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 204390)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 207932)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 207934)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 208609)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 203658)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 203741)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 203742)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 203743)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 203744)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 203745)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 203746)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 206406)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 207465)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 209130)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 209130) - continued</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 211961)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 209931)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 209933)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 206898)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 206898) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 206899)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 208190)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 203904)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.4	85.0	115	---
<b>Physical Tests (QCLot: 204386)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 204390)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	91.9	85.0	115	---
<b>Physical Tests (QCLot: 207296)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Physical Tests (QCLot: 207932)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.5	90.0	110	---
<b>Physical Tests (QCLot: 207933)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 207934)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 208609)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 208844)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100.0	95.4	104	---
<b>Anions and Nutrients (QCLot: 203658)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	100	80.0	120	---
<b>Anions and Nutrients (QCLot: 203741)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	110	90.0	110	---
<b>Anions and Nutrients (QCLot: 203742)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 203743)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	93.9	85.0	115	---
<b>Anions and Nutrients (QCLot: 203744)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 203745)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 203746)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 206406)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 206406) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	79.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 207465)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	97.7	80.0	120	----
<b>Anions and Nutrients (QCLot: 209130)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	103	80.0	120	----
<b>Anions and Nutrients (QCLot: 211961)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	111	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 209931)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	108	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 209933)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	109	80.0	120	----
<b>Dissolved Metals (QCLot: 206898)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.1	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.8	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.1	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.1	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.3	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.6	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 206898) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.4	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.0	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	94.8	80.0	120	----
<b>Dissolved Metals (QCLot: 206899)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	87.4	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 203658)</b>										
CG2101565-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0465 mg/L	0.05 mg/L	92.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 203741)</b>										
CG2101570-008	Anonymous	fluoride	16984-48-8	E235.F	1.13 mg/L	1 mg/L	113	75.0	125	----
<b>Anions and Nutrients (QCLot: 203742)</b>										
CG2101570-008	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	112 mg/L	100 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 203743)</b>										
CG2101570-008	Anonymous	bromide	24959-67-9	E235.Br-L	0.449 mg/L	0.5 mg/L	89.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 203744)</b>										
CG2101570-008	Anonymous	chloride	16887-00-6	E235.Cl-L	111 mg/L	100 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 203745)</b>										
CG2101570-008	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.80 mg/L	2.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 203746)</b>										
CG2101570-008	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.571 mg/L	0.5 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 206406)</b>										
CG2101569-002	EV_MW_GV4A_WG_2021_Q2_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.47 mg/L	2.5 mg/L	98.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 207465)</b>										
CG2101569-002	EV_MW_GV4A_WG_2021_Q2_NP	phosphorus, total	7723-14-0	E372-U	0.0492 mg/L	0.0676 mg/L	72.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 209130)</b>										
CG2101569-002	EV_MW_GV4A_WG_2021_Q2_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0550 mg/L	0.0676 mg/L	81.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 211961)</b>										
CG2101570-008	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 209931)</b>										
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	carbon, dissolved organic [DOC]	----	E358-L	25.3 mg/L	23.9 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 209933)</b>										
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	carbon, total organic [TOC]	----	E355-L	25.1 mg/L	23.9 mg/L	105	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 206898)</b>										
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	aluminum, dissolved	7429-90-5	E421	0.207 mg/L	0.2 mg/L	103	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00831 mg/L	0.01 mg/L	83.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	92.9	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00406 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	94.9	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.01 mg/L	2 mg/L	100	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0973 mg/L	0.1 mg/L	97.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0375 mg/L	0.04 mg/L	93.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.96 mg/L	4 mg/L	99.1	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0433 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.56 mg/L	10 mg/L	95.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00400 mg/L	0.004 mg/L	99.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----		
sulfur, dissolved	7704-34-9	E421	20.4 mg/L	20 mg/L	102	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00390 mg/L	0.004 mg/L	97.4	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00396 mg/L	0.004 mg/L	99.1	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.384 mg/L	0.4 mg/L	96.0	70.0	130	----		
<b>Dissolved Metals (QCLot: 206899)</b>										
CG2101569-001	EV_GV3GWS_WG_2021_Q2_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
<b>Dissolved Metals (QCLot: 208190)</b>										
CG2101569-002	EV_MW_GV4A_WG_2021_Q2_NP	mercury, dissolved	7439-97-6	E509	0.0000802 mg/L	0.0001 mg/L	80.2	70.0	130	----

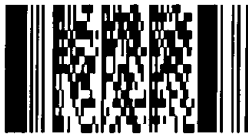


# Teck

COC ID: **20210520Q2GW**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO		LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling	Lab Contact	Lyudmyla Shvets			Email 1:	chris.emslie@teck.com	X	X	X
Project Manager	Jennifer Dane	Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com	Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X	X	X
Address	RR#1 HWY# 3					Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
						Email 5:	teckcoal@equisonline.com			X
City	Calgary	Province	AB							
Country	Canada	Postal Code	T1Y 7B5							
Phone Number	250-865-5289	Phone Number	403-407-1800		PO number	VPO00741597				

Environmental Division  
Calgary  
Work Order Reference  
**CG2101569**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL, Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_GV3GWS_WG_2021_Q2_NP	EV_GV3GWS	WG	N	05/20/21	13:40	G	5	1	1	1	1							1		
EV_MW_GV4A_WG_2021_Q2_NP	EV_MW_GV4A	WG	N	05/20/21	16:10	G	5	1	1	1	1							1		
EV_MW_GV4B_WG_2021_Q2_NP	EV_MW_GV4B	WG	N	05/20/21	17:05	G	5	1	1	1	1							1		
							Total	15												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Bracken/J. Batstone	May 20, 2021	<i>[Signature]</i>	5/26/2021

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X	C. Bracken/J. Batstone	
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time
		May 20, 2021

59



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101620**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210524Q2GW  
**Sampler** : CE/SH  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-May-2021 09:00  
**Date Analysis Commenced** : 26-May-2021  
**Issue Date** : 07-Jun-2021 15:07

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_RCSGW_W G_2021_Q2_NP	EV_GV3GW_W G_2021_Q2_NP	EV_MW_GC1B_ WG_2021_Q2_ NP	----	----
Client sampling date / time					24-May-2021 09:10	24-May-2021 14:50	24-May-2021 17:15	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101620-001 Result	CG2101620-002 Result	CG2101620-003 Result	----- ---	----- ---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	14.6	<2.0	6.7	----	----	
conductivity	----	E100	2.0	µS/cm	2370	615	1100	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1520	336	617	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	451	415	310	----	----	
pH	----	E108	0.10	pH units	7.47	7.93	7.71	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	2170	417	771	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.3	<1.0	<1.0	----	----	
turbidity	----	E121	0.10	NTU	0.83	0.37	0.24	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	278	209	346	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	278	209	346	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	340	255	423	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0058	0.0172	0.0689	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.050	<0.250 <sup>DLHC</sup>	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	17.6	1.47	23.1	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.139	0.466	0.220	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0.096	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	30.1	0.114	0.263	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0050 <sup>DLHC</sup>	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0025	<0.0020	<0.0020	----	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1210	133	286	----	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	30.1	0.114	0.359	----	----	
<b>Organic / Inorganic Carbon</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_RCSGW_W G_2021_Q2_NP	EV_GV3GW_W G_2021_Q2_NP	EV_MW_GC1B_ WG_2021_Q2_ NP	----	----
Client sampling date / time					24-May-2021 09:10	24-May-2021 14:50	24-May-2021 17:15	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101620-001 Result	CG2101620-002 Result	CG2101620-003 Result	----- ----	----- ----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.77	1.55	2.02	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.74	0.90	1.89	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	33.4	7.02	13.6	----	----	
cation sum	----	EC101	0.10	meq/L	31.0	6.88	13.2	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.8	98.0	97.0	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.73	1.01	1.49	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0033	<0.0010	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00024	<0.00010	0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	0.00012	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0371	0.0174	0.101	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.020 <sup>DLA</sup>	0.011	0.053	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.199	0.0065	0.130	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	319	82.1	132	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00021	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.10	0.51	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0797	0.00022	<0.00020	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.051	<0.010	0.040	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000840	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0616	0.0154	0.0439	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	177	31.8	69.7	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0100	<0.00010	0.789	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00138	0.000958	0.00208	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00660	0.00059	0.00392	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.35	0.975	2.16	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	232	4.51	5.92	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_RCSGW_W G_2021_Q2_NP	EV_GV3GW_W G_2021_Q2_NP	EV_MW_GC1B_ WG_2021_Q2_ NP	----	----
Client sampling date / time					24-May-2021 09:10	24-May-2021 14:50	24-May-2021 17:15	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101620-001 Result	CG2101620-002 Result	CG2101620-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.18	3.33	4.10	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	10.4	3.26	18.8	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.430	0.575	0.861	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	418	50.5	104	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	0.000058	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00634	0.00167	0.00161	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0957	<0.0010	0.0020	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101620**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210524Q2GW  
**Sampler** : CE/SH  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-May-2021 09:00  
**Date Analysis Commenced** : 26-May-2021  
**Issue Date** : 07-Jun-2021 15:07

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2101620  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 206011)</b>											
CG2101617-013	Anonymous	turbidity	----	E121	0.10	NTU	1730	1650	4.91%	15%	----
<b>Physical Tests (QC Lot: 206267)</b>											
CG2101617-004	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1190	1190	0.588%	20%	----
<b>Physical Tests (QC Lot: 209326)</b>											
CG2101615-001	Anonymous	pH	----	E108	0.10	pH units	7.92	7.99	0.880%	4%	----
<b>Physical Tests (QC Lot: 209327)</b>											
CG2101615-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	94.8	98.1	3.42%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	94.8	98.1	3.42%	20%	----
<b>Physical Tests (QC Lot: 209328)</b>											
CG2101615-001	Anonymous	conductivity	----	E100	2.0	µS/cm	220	219	0.456%	10%	----
<b>Physical Tests (QC Lot: 209733)</b>											
CG2101616-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.0	2.1	0.1	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 210554)</b>											
CG2101618-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	499	488	2.09%	15%	----
<b>Anions and Nutrients (QC Lot: 205889)</b>											
CG2101620-001	EV_RCSGW_WG_2021_Q2_NP	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	1210	1220	0.524%	20%	----
<b>Anions and Nutrients (QC Lot: 205890)</b>											
CG2101620-001	EV_RCSGW_WG_2021_Q2_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 205891)</b>											
CG2101620-001	EV_RCSGW_WG_2021_Q2_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	17.6	17.7	0.317%	20%	----
<b>Anions and Nutrients (QC Lot: 205892)</b>											
CG2101620-001	EV_RCSGW_WG_2021_Q2_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	30.1	30.3	0.499%	20%	----
<b>Anions and Nutrients (QC Lot: 205893)</b>											
CG2101620-001	EV_RCSGW_WG_2021_Q2_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 205894)</b>											
CG2101620-001	EV_RCSGW_WG_2021_Q2_NP	fluoride	16984-48-8	E235.F	0.100	mg/L	0.139	0.133	0.006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 205909)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 205909) - continued</b>											
CG2101620-001	EV_RCSGW_WG_2021_Q2_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 206761)</b>											
CG2101614-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 209126)</b>											
CG2101613-017	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0034	0.0039	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 209130)</b>											
CG2101569-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 212982)</b>											
CG2101613-016	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 211468)</b>											
CG2101610-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 211469)</b>											
CG2101618-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.37	2.40	0.03	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 208223)</b>											
YL2100421-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 208224)</b>											
YL2100421-001	Anonymous	copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00035	0.00036	0.00001	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	5.48	5.39	1.63%	20%	----
YL2100421-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00128	0.00127	0.699%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.066	0.067	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000490	0.0000473	0.0000017	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	3.09	3.12	1.01%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.014	0.013	0.0002	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.19	1.19	0.00946%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00850	0.00876	3.03%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000312	0.000333	0.000021	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00095	0.00097	0.00002	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 208224) - continued</b>											
YL2100421-001	Anonymous	selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	0.136	0.138	0.002	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000091	0.000097	0.000005	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.62	1.61	0.616%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0267	0.0273	2.10%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.48	2.52	0.04	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000050	0.000050	0.0000006	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0021	0.0021	0.000009	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 210471)</b>											
CG2101613-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 206011)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 206261)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 206267)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 209327)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 209328)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 209733)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 205889)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 205890)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 205891)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 205892)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 205893)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 205894)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 205909)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 206761)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 209126)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 209130)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 209130) - continued</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 212982)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 211468)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 211469)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 208223)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 208224)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Page : 8 of 14  
 Work Order : CG2101620  
 Client : Teck Coal Limited  
 Project : ELKVIEW OPERATIONS



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 208224) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 210471)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 206011)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100.0	85.0	115	---
<b>Physical Tests (QCLot: 206261)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	96.1	85.0	115	---
<b>Physical Tests (QCLot: 206267)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 209326)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 209327)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 209328)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	---
<b>Physical Tests (QCLot: 209733)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 210554)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Anions and Nutrients (QCLot: 205889)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 205890)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	95.5	85.0	115	---
<b>Anions and Nutrients (QCLot: 205891)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.7	90.0	110	---
<b>Anions and Nutrients (QCLot: 205892)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 205893)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 205894)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 205909)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	105	80.0	120	---
<b>Anions and Nutrients (QCLot: 206761)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	96.4	75.0	125	---
<b>Anions and Nutrients (QCLot: 209126)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 209126) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 209130)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	103	80.0	120	----
<b>Anions and Nutrients (QCLot: 212982)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 211468)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	98.8	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 211469)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 208223)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
<b>Dissolved Metals (QCLot: 208224)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.2	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.0	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	95.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.4	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.6	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.5	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	95.7	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.7	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 208224) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	89.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.0	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	91.2	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 205889)</b>										
CG2101621-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 205890)</b>										
CG2101621-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.484 mg/L	0.5 mg/L	96.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 205891)</b>										
CG2101621-004	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 205892)</b>										
CG2101621-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.57 mg/L	2.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 205893)</b>										
CG2101621-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.488 mg/L	0.5 mg/L	97.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 205894)</b>										
CG2101621-004	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 205909)</b>										
CG2101620-002	EV_GV3GW_WG_2021_Q2_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0567 mg/L	0.05 mg/L	113	70.0	130	----
<b>Anions and Nutrients (QCLot: 206761)</b>										
CG2101614-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.21 mg/L	2.5 mg/L	88.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 209126)</b>										
CG2101615-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0654 mg/L	0.0676 mg/L	96.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 209130)</b>										
CG2101569-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0550 mg/L	0.0676 mg/L	81.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 212982)</b>										
CG2101621-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0842 mg/L	0.1 mg/L	84.2	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 211468)</b>										
CG2101610-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	26.1 mg/L	23.9 mg/L	109	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 211469)</b>										
CG2101618-001	Anonymous	carbon, total organic [TOC]	----	E355-L	26.4 mg/L	23.9 mg/L	110	70.0	130	----
<b>Dissolved Metals (QCLot: 208223)</b>										
YL2100421-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0400 mg/L	0.04 mg/L	100	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 208224)</b>										
YL2100421-001	Anonymous	copper, dissolved	7440-50-8	E421	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
YL2100421-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.197 mg/L	0.2 mg/L	98.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00995 mg/L	0.01 mg/L	99.5	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	99.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	3.88 mg/L	4 mg/L	97.1	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.01 mg/L	2 mg/L	100	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0995 mg/L	0.1 mg/L	99.5	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.44 mg/L	10 mg/L	94.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00394 mg/L	0.004 mg/L	98.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.99 mg/L	2 mg/L	99.6	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.3 mg/L	20 mg/L	102	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00386 mg/L	0.004 mg/L	96.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0392 mg/L	0.04 mg/L	98.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00382 mg/L	0.004 mg/L	95.4	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.434 mg/L	0.4 mg/L	108	70.0	130	----
<b>Dissolved Metals (QCLot: 210471)</b>										
CG2101613-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000914 mg/L	0.0001 mg/L	91.4	70.0	130	----

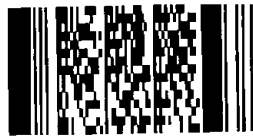


COC ID: 20210524Q2GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emslie@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
City	Calgary	Phone Number	403-407-1800	PO number	VPO00741597							

Environmental Division  
Calgary

Work Order Reference  
**CG2101620**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305-1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_RCSGW_WG_2021_Q2_NP	EV_RCSGW	WG	N	05/24/21	9:10	G	5	1	1	1	1	1	1					1		
EV_GV3GW_WG_2021_Q2_NP	EV_GV3GW	WG	N	05/24/21	14:50	G	5	1	1	1	1	1	1					1		
EV_MW_GC1B_WG_2021_Q2_NP	EV_MW_GC1B	WG	N	05/24/21	17:15	G	5	1	1	1	1	1	1					1		
							Total	15												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Emslie/S. Hansen	April 24, 2021	<i>[Signature]</i>	April 24, 2021

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	C. Emslie/S. Hansen	
	Sampler's Signature	Date/Time
		April 24, 2021

30





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101728**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210530Q2GW  
**Sampler** : C. Emslie/J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 10  
**No. of samples analysed** : 10

**Page** : 1 of 8  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 01-Jun-2021 08:40  
**Date Analysis Commenced** : 01-Jun-2021  
**Issue Date** : 11-Jun-2021 09:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Shirley Li		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

Sample	Client Id	Comment
CG2101728-003	EV_EC5GW_WG_2021_Q2_N P	Sample 003: Vial for dissolved mercury was received broken.
CG2101728-003	EV_EC5GW_WG_2021_Q2_N P	Sample 3: Water sample for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

## Qualifiers

Qualifier	Description
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MCGWD_W G_2021_Q2_NP	EV_MCGWS_W G_2021_Q2_NP	EV_EC5GW_W G_2021_Q2_NP	EV_EC6GW_W G_2021_Q2_NP	EV_EC7GW_W G_2021_Q2_NP
Client sampling date / time					30-May-2021 11:38	30-May-2021 13:27	30-May-2021 13:30	30-May-2021 13:31	30-May-2021 13:32	
Analyte	CAS Number	Method	LOR	Unit	CG2101728-001	CG2101728-002	CG2101728-003	CG2101728-004	CG2101728-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	2.5	<2.0	<2.0	<2.0	
conductivity	----	E100	2.0	µS/cm	567	766	764	<2.0	<2.0	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	222	421	421	<0.50	<0.50	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	276	400	394	437	453	
pH	----	E108	0.10	pH units	8.14	7.96	7.97	5.46	5.24	
solids, total dissolved [TDS]	----	E162	10	mg/L	348	509	464	<10	<10	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	47.6	4.4	3.8	<1.0	<1.0	
turbidity	----	E121	0.10	NTU	37.5	31.0	31.3	<0.10	<0.10	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	254	276	274	<2.0	<2.0	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	254	276	274	<2.0	<2.0	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	310	337	335	<2.0	<2.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.250	0.126	0.127	<0.0050	<0.0050	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	0.295	0.302	<0.050	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.02	46.7	47.1	<0.10	<0.10	
fluoride	16984-48-8	E235.F	0.020	mg/L	1.14	0.276	0.269	<0.020	<0.020	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.501	0.330	0.214	<0.050	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0226	<0.0050	<0.0050	<0.0050	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0087	<0.0010	<0.0010	<0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0054	<0.0010	<0.0010	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0452	<0.0020	0.0026	<0.0020	<0.0020	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0038	<0.0020	<0.0020	<0.0020	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	74.4	103	101	<0.30	<0.30	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.532	0.330	0.214	<0.050	<0.050	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.04 <sup>DTC,RRV</sup>	0.65	0.61	<0.50	<0.50	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MCGWD_W G_2021_Q2_NP	EV_MCGWS_W G_2021_Q2_NP	EV_EC5GW_W G_2021_Q2_NP	EV_EC6GW_W G_2021_Q2_NP	EV_EC7GW_W G_2021_Q2_NP
Client sampling date / time					30-May-2021 11:38	30-May-2021 13:27	30-May-2021 13:30	30-May-2021 13:31	30-May-2021 13:32	
Analyte	CAS Number	Method	LOR	Unit	CG2101728-001	CG2101728-002	CG2101728-003	CG2101728-004	CG2101728-005	
					Result	Result	Result	Result	Result	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.85 <sup>DTC.RRV</sup>	0.90	0.61	<0.50	<0.50	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.72	8.99	8.92	<0.10	<0.10	
cation sum	----	EC101	0.10	meq/L	6.42	9.27	9.28	<0.10	<0.10	
ion balance (cations/anions ratio)	----	EC101	0.010	%	95.5	103	104	100	100	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.28	1.53	1.98	<0.010	<0.010	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00090	0.00149	0.00154	<0.00010	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0559	0.0264	0.0250	<0.00010	<0.00010	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.072	0.027	0.026	<0.010	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0253	<0.0050	<0.0050	<0.0050	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	48.2	110	110	<0.050	<0.050	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.79	<0.10	<0.10	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00078	0.00020	<0.00020	<0.00020	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.066	1.96	1.97	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0106	0.0248	0.0244	<0.0010	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	24.6	35.6	35.6	<0.0050	<0.0050	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.432	0.129	0.130	<0.00010	<0.00010	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0183	0.00286	0.00284	<0.000050	<0.000050	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00197	<0.00050	<0.00050	<0.00050	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.39	1.47	1.48	<0.050	<0.050	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.053	<0.050	<0.050	<0.050	<0.050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.25	4.86	4.81	<0.050	<0.050	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MCGWD_W G_2021_Q2_NP	EV_MCGWS_W G_2021_Q2_NP	EV_EC5GW_W G_2021_Q2_NP	EV_EC6GW_W G_2021_Q2_NP	EV_EC7GW_W G_2021_Q2_NP
Client sampling date / time					30-May-2021 11:38	30-May-2021 13:27	30-May-2021 13:30	30-May-2021 13:31	30-May-2021 13:32	
Analyte	CAS Number	Method	LOR	Unit	CG2101728-001	CG2101728-002	CG2101728-003	CG2101728-004	CG2101728-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	44.2	16.9	17.0	<0.050	<0.050	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.513	0.348	0.350	<0.00020	<0.00020	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	20.4	32.4	32.5	<0.50	<0.50	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000024	<0.000010	<0.000010	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00360	0.00184	0.00189	<0.000010	<0.000010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0192	<0.0010	<0.0010	<0.0010	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SPR1B _WG_2021_Q2 _NP	EV_MW_SPR1A _WG_2021_Q2 _NP	EV_MW_BC10A _WG_2021_Q2 _NP	EV_MW_BC10B _WG_2021_Q2 _NP	EV_MW_BC10C _WG_2021_Q2 _NP
Client sampling date / time					30-May-2021 15:36	30-May-2021 16:53	30-May-2021 16:55	30-May-2021 16:56	30-May-2021 16:57	
Analyte	CAS Number	Method	LOR	Unit	CG2101728-006 Result	CG2101728-007 Result	CG2101728-008 Result	CG2101728-009 Result	CG2101728-010 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	2.0	<2.0	
conductivity	----	E100	2.0	µS/cm	428	603	602	<2.0	<2.0	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	152	353	356	<0.50	<0.50	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	364	445	301	422	505	
pH	----	E108	0.10	pH units	8.15	8.05	8.07	5.49	5.15	
solids, total dissolved [TDS]	----	E162	10	mg/L	258	347	363	<10	<10	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	188	1.2	<1.0	<1.0	<1.0	
turbidity	----	E121	0.10	NTU	121	1.64	1.56	<0.10	<0.10	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	200	298	298	<2.0	<2.0	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	200	298	298	<2.0	<2.0	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	244	363	363	<2.0	<2.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.160	0.0559	0.0582	<0.0050	<0.0050	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.57	18.9	19.0	<0.10	<0.10	
fluoride	16984-48-8	E235.F	0.020	mg/L	1.27	0.252	0.248	<0.020	<0.020	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.257	0.240	0.078	<0.050	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0065	<0.0050	<0.0050	<0.0050	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0940	<0.0020	<0.0020	<0.0020	<0.0020	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	47.4	28.8	28.9	<0.30	<0.30	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.264	0.240	0.078	<0.050	<0.050	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.68	<0.50	<0.50	<0.50	<0.50	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SPR1B _WG_2021_Q2 _NP	EV_MW_SPR1A _WG_2021_Q2 _NP	EV_MW_BC10A _WG_2021_Q2 _NP	EV_MW_BC10B _WG_2021_Q2 _NP	EV_MW_BC10C _WG_2021_Q2 _NP
Client sampling date / time					30-May-2021 15:36	30-May-2021 16:53	30-May-2021 16:55	30-May-2021 16:56	30-May-2021 16:57	
Analyte	CAS Number	Method	LOR	Unit	CG2101728-006 Result	CG2101728-007 Result	CG2101728-008 Result	CG2101728-009 Result	CG2101728-010 Result	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.34	<0.50	<0.50	<0.50	<0.50	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.07	7.10	7.10	<0.10	<0.10	
cation sum	----	EC101	0.10	meq/L	5.12	7.31	7.37	<0.10	<0.10	
ion balance (cations/anions ratio)	----	EC101	0.010	%	101	103	104	100	100	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.491	1.46	1.86	<0.010	<0.010	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	<0.0010	0.0015	<0.0010	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00080	0.00093	0.00094	<0.00010	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0419	0.379	0.383	<0.00010	<0.00010	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.153	0.024	0.024	<0.010	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	38.1	90.4	91.9	<0.050	<0.050	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.60	0.61	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.096	0.160	0.165	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0121	0.0158	0.0162	<0.0010	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	13.9	31.0	30.8	<0.0050	<0.0050	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.111	0.302	0.304	<0.00010	<0.00010	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0294	0.00135	0.00131	<0.000050	<0.000050	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00164	0.00164	<0.00050	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.20	1.52	1.52	<0.050	<0.050	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.37	4.81	4.91	<0.050	<0.050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SPR1B _WG_2021_Q2 _NP	EV_MW_SPR1A _WG_2021_Q2 _NP	EV_MW_BC10A _WG_2021_Q2 _NP	EV_MW_BC10B _WG_2021_Q2 _NP	EV_MW_BC10C _WG_2021_Q2 _NP
Client sampling date / time					30-May-2021 15:36	30-May-2021 16:53	30-May-2021 16:55	30-May-2021 16:56	30-May-2021 16:57	
Analyte	CAS Number	Method	LOR	Unit	CG2101728-006 Result	CG2101728-007 Result	CG2101728-008 Result	CG2101728-009 Result	CG2101728-010 Result	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	46.7	4.30	4.42	<0.050	<0.050	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.884	0.335	0.340	<0.00020	<0.00020	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	15.2	9.20	9.55	<0.50	<0.50	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000011	0.000010	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00165	0.00101	0.000994	<0.000010	<0.000010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL REPORT

**Work Order** : **CG2101728**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210530Q2GW  
**Sampler** : C. Emslie/J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 10  
**No. of samples analysed** : 10

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 01-Jun-2021 08:40  
**Date Analysis Commenced** : 01-Jun-2021  
**Issue Date** : 11-Jun-2021 09:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Shirley Li		Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2101728  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 210549)</b>											
CG2101715-021	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 210855)</b>											
CG2101715-010	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1640	1690	3.30%	20%	----
<b>Physical Tests (QC Lot: 211924)</b>											
CG2101713-013	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2690	2840	5.50%	20%	----
<b>Physical Tests (QC Lot: 211925)</b>											
CG2101728-007	EV_MW_SPR1A_WG_2021_Q2_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	347	359	3.40%	20%	----
<b>Physical Tests (QC Lot: 214355)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q2_NP	pH	----	E108	0.10	pH units	8.14	8.13	0.123%	4%	----
<b>Physical Tests (QC Lot: 214356)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q2_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	254	253	0.237%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	254	253	0.237%	20%	----
<b>Physical Tests (QC Lot: 214357)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q2_NP	conductivity	----	E100	2.0	µS/cm	567	564	0.530%	10%	----
<b>Physical Tests (QC Lot: 214556)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q2_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 214574)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q2_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	276	273	1.38%	15%	----
<b>Anions and Nutrients (QC Lot: 210129)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q2_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	74.4	74.4	0.105%	20%	----
<b>Anions and Nutrients (QC Lot: 210130)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q2_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210131)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q2_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.02	1.00	1.82%	20%	----
<b>Anions and Nutrients (QC Lot: 210132)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 210132) - continued</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q 2_NP	nitrate (as N)	14797-55-8	E235.N03-L	0.0050	mg/L	0.0226	0.0220	0.0006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210133)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q 2_NP	nitrite (as N)	14797-65-0	E235.N02-L	0.0010	mg/L	0.0087	0.0083	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210134)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q 2_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	1.14	1.14	0.395%	20%	----
<b>Anions and Nutrients (QC Lot: 210226)</b>											
CG2101715-021	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0023	0.0019	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 212299)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q 2_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.501	0.407	0.094	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 213237)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q 2_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0452	0.0428	5.50%	20%	----
<b>Anions and Nutrients (QC Lot: 213960)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q 2_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0038	0.0026	0.0012	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 214680)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q 2_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.250	0.248	0.722%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 216418)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q 2_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.04	2.07	0.03	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 216421)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q 2_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.85	0.85	0.002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 211497)</b>											
VA21B0840-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00966	0.00970	0.437%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	25.0	27.6	10.00%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 211497) - continued</b>											
VA21B0840-001	Anonymous	iron, dissolved	7439-89-6	E421	0.010	mg/L	0.645	0.652	1.13%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0240	0.0264	9.47%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.22	4.24	0.519%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0864	0.0869	0.509%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00146	0.00153	4.83%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.86	1.87	0.756%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	7.60	7.55	0.652%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.74	6.79	0.637%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.126	0.134	6.42%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.88	4.84	0.03	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00104	0.00110	4.94%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 211498)</b>											
VA21B0840-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 214025)</b>											
CG2101728-001	EV_MCGWD_WG_2021_Q2_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 215604)</b>											
CG2101728-003	EV_EC5GW_WG_2021_Q2_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 210549)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 210855)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 211924)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 211925)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 211929)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 211930)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 214356)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 214357)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 214556)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 210129)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 210130)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 210131)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 210132)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 210133)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 210134)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 210226)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 210226) - continued</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 212299)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 213237)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 213960)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 214680)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 216418)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 216421)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 211497)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 211497) - continued</b>						
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 211498)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 214025)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 215604)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 210549)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	100.0	85.0	115	----
<b>Physical Tests (QCLot: 210855)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	97.6	85.0	115	----
<b>Physical Tests (QCLot: 211924)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	100	85.0	115	----
<b>Physical Tests (QCLot: 211925)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	104	85.0	115	----
<b>Physical Tests (QCLot: 211929)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	88.5	85.0	115	----
<b>Physical Tests (QCLot: 211930)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	90.6	85.0	115	----
<b>Physical Tests (QCLot: 214355)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 214356)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	100	85.0	115	----
<b>Physical Tests (QCLot: 214357)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	----
<b>Physical Tests (QCLot: 214556)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	110	85.0	115	----
<b>Physical Tests (QCLot: 214574)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
<b>Anions and Nutrients (QCLot: 210129)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 210130)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 210131)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 210132)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 210133)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 210134)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 210134) - continued</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 210226)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	107	80.0	120	----
<b>Anions and Nutrients (QCLot: 212299)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	88.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 213237)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	106	80.0	120	----
<b>Anions and Nutrients (QCLot: 213960)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	100	80.0	120	----
<b>Anions and Nutrients (QCLot: 214680)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 216418)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.1	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 216421)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	99.6	80.0	120	----
<b>Dissolved Metals (QCLot: 211497)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.4	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier	
					Concentration	LCS	Low	High		
<b>Dissolved Metals (QCLot: 211497) - continued</b>										
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----	
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----	
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----	
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----	
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----	
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	95.1	80.0	120	----	
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----	
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.7	80.0	120	----	
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.1	80.0	120	----	
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----	
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----	
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100	80.0	120	----	
<b>Dissolved Metals (QCLot: 211498)</b>										
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	105	80.0	120	----	
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.5	80.0	120	----	
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	93.2	80.0	120	----	



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 210129)</b>										
CG2101728-004	EV_EC6GW_WG_2021_Q2_NP	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 210130)</b>										
CG2101728-004	EV_EC6GW_WG_2021_Q2_NP	bromide	24959-67-9	E235.Br-L	0.519 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 210131)</b>										
CG2101728-004	EV_EC6GW_WG_2021_Q2_NP	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 210132)</b>										
CG2101728-004	EV_EC6GW_WG_2021_Q2_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.59 mg/L	2.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 210133)</b>										
CG2101728-004	EV_EC6GW_WG_2021_Q2_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.530 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 210134)</b>										
CG2101728-004	EV_EC6GW_WG_2021_Q2_NP	fluoride	16984-48-8	E235.F	0.995 mg/L	1 mg/L	99.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 210226)</b>										
CG2101715-022	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0505 mg/L	0.05 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 212299)</b>										
CG2101728-002	EV_MCGWS_WG_2021_Q2_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.90 mg/L	2.5 mg/L	116	70.0	130	----
<b>Anions and Nutrients (QCLot: 213237)</b>										
CG2101728-002	EV_MCGWS_WG_2021_Q2_NP	phosphorus, total	7723-14-0	E372-U	0.0551 mg/L	0.0676 mg/L	81.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 213960)</b>										
CG2101728-002	EV_MCGWS_WG_2021_Q2_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0584 mg/L	0.0676 mg/L	86.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 214680)</b>										
CG2101728-002	EV_MCGWS_WG_2021_Q2_NP	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 216418)</b>										
CG2101728-001	EV_MCGWD_WG_2021_Q2_NP	carbon, dissolved organic [DOC]	----	E358-L	20.3 mg/L	23.9 mg/L	85.0	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Organic / Inorganic Carbon (QCLot: 216421)</b>										
CG2101728-001	EV_MCGWD_WG_2021_Q2_NP	carbon, total organic [TOC]	----	E355-L	21.6 mg/L	23.9 mg/L	90.3	70.0	130	----
<b>Dissolved Metals (QCLot: 211497)</b>										
VA21B0840-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.197 mg/L	0.2 mg/L	98.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0382 mg/L	0.04 mg/L	95.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00862 mg/L	0.01 mg/L	86.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.090 mg/L	0.1 mg/L	89.9	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00398 mg/L	0.004 mg/L	99.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.86 mg/L	2 mg/L	92.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0178 mg/L	0.02 mg/L	88.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0925 mg/L	0.1 mg/L	92.5	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0190 mg/L	0.02 mg/L	95.3	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.80 mg/L	4 mg/L	95.1	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.84 mg/L	10 mg/L	88.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.4 mg/L	20 mg/L	96.9	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00350 mg/L	0.004 mg/L	87.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00383 mg/L	0.004 mg/L	95.8	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.411 mg/L	0.4 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 211498)</b>										
VA21B0840-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	----

Page : 14 of 14  
 Work Order : CG2101728  
 Client : Teck Coal Limited  
 Project : ELKVIEW OPERATIONS



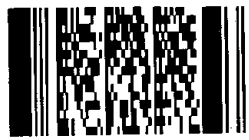
Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 214025)</b>										
CG2101728-002	EV_MCGWS_WG_2021_Q2_NP	mercury, dissolved	7439-97-6	E509	0.0000948 mg/L	0.0001 mg/L	94.8	70.0	130	----
<b>Dissolved Metals (QCLot: 215604)</b>										
CG2101747-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000899 mg/L	0.0001 mg/L	89.9	70.0	130	----

COC ID: 20210530Q2GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO		LABORATORY				OTHER INFO			
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling	Lab Contact	Lyudmyla Shvets		Email 1:	chris.emslie@teck.com	X	X	
Project Manager	Jennifer Dane	Email	lyudmyla.shvets@alsglobal.com		Email 2:	colby.bracken@teck.com	X	X	
Email	jennifer.dane@teck.com	Address	2559 29 Street NE		Email 3:	kennedy.allen@teck.com	X	X	
Address	RR#1 HWY# 3				Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	
					Email 5:	teckcoal@equisonline.com		X	
Wood		Province	BC		City	Calgary		Province	AB
Environmental Division Calgary		Country	Canada		Postal Code	T1Y 7B5		Country	Canada
-865-5289		Phone Number	403-407-1800		PO number	VPO00741597			

Work Order Reference  
**CG2101728**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, H-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CVI	
EV_MCGWD_WG_2021_Q2_NP	EV_MCGWD	WG	N	05/30/21	11:38	G	5	1	1	1	1	1	1					1		
EV_MCGWS_WG_2021_Q2_NP	EV_MCGWS	WG	N	05/30/21	13:27	G	5	1	1	1	1	1	1					1		
EV_EC5GW_WG_2021_Q2_NP	EV_EC5GW	WG	N	05/30/21	13:30	G	5	1	1	1	1	1	1					1		
EV_EC6GW_WG_2021_Q2_NP	EV_EC6GW	WG	N	05/30/21	13:31	G	5	1	1	1	1	1	1					1		
EV_EC7GW_WG_2021_Q2_NP	EV_EC7GW	WG	N	05/30/21	13:32	G	5	1	1	1	1	1	1					1		
EV_MW_SPRIB_WG_2021_Q2_NP	EV_MW_SPRIB	WG	N	05/30/21	15:36	G	5	1	1	1	1	1	1					1		
Total							30													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Emslie/J. Batstone	May 30, 2021	<i>DK</i>	<i>6/1 0840</i>
SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	C. Emslie/J. Batstone	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	May 30, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

90

Teck

RUSH:

COC ID: 20210530Q2GW

TURNAROUND TIME:

OTHER INFO

PROJECT/CLIENT INFO		LABORATORY		Report Format / Distribution				
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary	Email 1:	chris.emsle@teck.com	Excel	PDF	EDD
Job Description	Q2 Ground Water Sampling	Lab Contact	Lyudmyla Shvets	Email 2:	colby.bracken@teck.com	X	X	X
Project Manager	Jennifer Dane	Email	lyudmyla.shvets@alsglobal.com	Email 3:	kennedy.allen@teck.com	X	X	X
Email	jennifer.dane@teck.com	Address	2559 29 Street NE	Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
Address	RR#1 HWY#3			Email 5:	teckcoal@equisonline.com			

Environmental Division  
Calgary

Work Order Reference  
**CG2101728**



Telephone: +1 403 407 1800

Province	BC	City	Calgary	Province	AB
Country	Canada	Postal Code	T1Y 7B5	Country	Canada
5-5289		Phone Number	403-407-1800		

VPO00741597

SAMPLE DETAILS	ANALYSIS REQUESTED																	
	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CVI						
Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	PRESENT	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
EV_MW_SPRIA_WG_2021_Q2_NP	EV_MW_SPRIA	WG	N	05/30/21	16:53	G	5											
EV_MW_BC10A_WG_2021_Q2_NP	EV_MW_BC10A	WG	N	05/30/21	16:55	G	5											
EV_MW_BC10B_WG_2021_Q2_NP	EV_MW_BC10B	WG	N	05/30/21	16:56	G	5											
EV_MW_BC10C_WG_2021_Q2_NP	EV_MW_BC10C	WG	N	05/30/21	16:57	G	5											
						Total	20											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION  
C. Emslie/J. Batstone

DATE/TIME  
May 30, 2021

ACCEPTED BY/AFFILIATION

DATE/TIME  
6/1/2021

SERVICE REQUEST (rush - subject to availability)

Regular (default) X  
Priority (2-3 business days) - 50% surcharge  
Emergency (1 Business Day) - 100% surcharge  
For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name  
C. Emslie/J. Batstone

Sampler's Signature

Mobile #

Date/Time

May 30, 2021

9<sup>00</sup>





## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2101730**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210531Q2GW  
**Sampler** : C. Emslie/S. Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 01-Jun-2021 08:40  
**Date Analysis Commenced** : 01-Jun-2021  
**Issue Date** : 14-Jun-2021 10:33

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
James Diacon	Laboratory Analyst	Metals, Calgary, Alberta
Jyotsnarani Devi	Laboratory Analyst	Organics, Calgary, Alberta
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Shirley Li		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_OCGW_WG _2021_Q2_NP	EV_MC5GW_W G_2021_Q2_NP	EV_MC6GW_W G_2021_Q2_NP	EV_MC7GW_W G_2021_Q2_NP	----
(Matrix: Water)					Client sampling date / time	31-May-2021 13:40	31-May-2021 13:43	31-May-2021 13:44	31-May-2021 13:45	----
Analyte	CAS Number	Method	LOR	Unit	CG2101730-001	CG2101730-002	CG2101730-003	CG2101730-004	-----	
					Result	Result	Result	Result	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----	
conductivity	----	E100	2.0	µS/cm	450	450	<2.0	<2.0	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	153	156	<0.50	<0.50	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	368	314	514	520	----	
pH	----	E108	0.10	pH units	8.26	8.24	5.38	5.20	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	282	253	<10	<10	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----	
turbidity	----	E121	0.10	NTU	0.38	0.38	<0.10	<0.10	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	186	183	<2.0	<2.0	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	186	183	<2.0	<2.0	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	227	223	<2.0	<2.0	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0148	<0.0050	<0.0050	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.98	2.00	<0.10	<0.10	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	1.19	1.19	<0.020	<0.020	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.066	0.051	<0.050	<0.050	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.115	0.105	<0.0050	<0.0050	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0082	0.0085	<0.0010	<0.0010	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0100	0.0086	<0.0020	<0.0020	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0087	0.0086	<0.0020	0.0020	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	63.1	63.0	<0.30	<0.30	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.181	0.156	<0.050	<0.050	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_OCGW_WG _2021_Q2_NP	EV_MC5GW_W G_2021_Q2_NP	EV_MC6GW_W G_2021_Q2_NP	EV_MC7GW_W G_2021_Q2_NP	----
Client sampling date / time					31-May-2021 13:40	31-May-2021 13:43	31-May-2021 13:44	31-May-2021 13:45	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101730-001	CG2101730-002	CG2101730-003	CG2101730-004	-----	
					Result	Result	Result	Result	---	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.16	5.10	<0.10	<0.10	----	
cation sum	----	EC101	0.10	meq/L	4.98	5.03	<0.10	<0.10	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.5	98.6	100	100	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.78	0.691	<0.010	<0.010	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0017	0.0018	<0.0010	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00104	0.00098	<0.00010	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0526	0.0526	<0.00010	<0.00010	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.131	0.132	<0.010	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0060	0.0071	<0.0050	<0.0050	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	29.6	29.7	<0.050	<0.050	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0259	0.0256	<0.0010	<0.0010	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	19.3	19.8	<0.0050	<0.0050	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0232	0.0233	<0.00010	<0.00010	----	
mercury, dissolved	7439-97-6	E509-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0145	0.0147	<0.000050	<0.000050	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.41	1.43	<0.050	<0.050	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.49	4.58	<0.050	<0.050	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_OCGW_WG _2021_Q2_NP	EV_MC5GW_W G_2021_Q2_NP	EV_MC6GW_W G_2021_Q2_NP	EV_MC7GW_W G_2021_Q2_NP	----
Client sampling date / time					31-May-2021 13:40	31-May-2021 13:43	31-May-2021 13:44	31-May-2021 13:45	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101730-001	CG2101730-002	CG2101730-003	CG2101730-004	-----	
					Result	Result	Result	Result	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	43.3	43.2	<0.050	<0.050	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.395	0.396	<0.00020	<0.00020	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	23.4	24.0	<0.50	<0.50	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000010	0.000012	<0.000010	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00122	0.00122	<0.000010	<0.000010	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----	
dissolved mercury filtration location	----	EP509-L	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	
<b>Speciated Metals</b>										
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	<0.40	<0.40	<0.40	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	73.0	76.0	98.0	78.0	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101730</b>	Page	: 1 of 20
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 01-Jun-2021 08:40
PO	: VPO00741597	Issue Date	: 14-Jun-2021 10:33
C-O-C number	: 20210531Q2GW		
Sampler	: C. Emslie/S. Hansen		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q2_NP	E298	31-May-2021	07-Jun-2021	----	7 days	✓	07-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q2_NP	E298	31-May-2021	07-Jun-2021	----	7 days	✓	07-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC7GW_WG_2021_Q2_NP	E298	31-May-2021	07-Jun-2021	----	7 days	✓	07-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q2_NP	E298	31-May-2021	07-Jun-2021	----	7 days	✓	07-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q2_NP	E235.Br-L	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q2_NP	E235.Br-L	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC7GW_WG_2021_Q2_NP	E235.Br-L	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE EV_OCGW_WG_2021_Q2_NP	E235.Br-L	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MC5GW_WG_2021_Q2_NP	E235.Cl-L	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MC6GW_WG_2021_Q2_NP	E235.Cl-L	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MC7GW_WG_2021_Q2_NP	E235.Cl-L	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_OCGW_WG_2021_Q2_NP	E235.Cl-L	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MC5GW_WG_2021_Q2_NP	E378-U	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MC6GW_WG_2021_Q2_NP	E378-U	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MC7GW_WG_2021_Q2_NP	E378-U	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_OCGW_WG_2021_Q2_NP	E378-U	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MC5GW_WG_2021_Q2_NP	E235.F	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MC6GW_WG_2021_Q2_NP	E235.F	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MC7GW_WG_2021_Q2_NP	E235.F	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_OCGW_WG_2021_Q2_NP	E235.F	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MC5GW_WG_2021_Q2_NP	E235.NO3-L	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MC6GW_WG_2021_Q2_NP	E235.NO3-L	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MC7GW_WG_2021_Q2_NP	E235.NO3-L	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_OCGW_WG_2021_Q2_NP	E235.NO3-L	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MC5GW_WG_2021_Q2_NP	E235.NO2-L	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MC6GW_WG_2021_Q2_NP	E235.NO2-L	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MC7GW_WG_2021_Q2_NP	E235.NO2-L	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_OCGW_WG_2021_Q2_NP	E235.NO2-L	31-May-2021	----	----	----		01-Jun-2021	3 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE EV_MC5GW_WG_2021_Q2_NP	E235.SO4	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE EV_MC6GW_WG_2021_Q2_NP	E235.SO4	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE EV_MC7GW_WG_2021_Q2_NP	E235.SO4	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE EV_OCGW_WG_2021_Q2_NP	E235.SO4	31-May-2021	----	----	----		01-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
Amber glass dissolved (sulfuric acid) EV_MC5GW_WG_2021_Q2_NP	E375-T	31-May-2021	07-Jun-2021	----	7 days	✔	07-Jun-2021	28 days	1 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
Amber glass dissolved (sulfuric acid) EV_MC6GW_WG_2021_Q2_NP	E375-T	31-May-2021	07-Jun-2021	----	7 days	✔	07-Jun-2021	28 days	1 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC7GW_WG_2021_Q2_NP	E375-T	31-May-2021	07-Jun-2021	----	7 days	✔	07-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_OCGW_WG_2021_Q2_NP	E375-T	31-May-2021	07-Jun-2021	----	7 days	✔	07-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q2_NP	E318	31-May-2021	04-Jun-2021	----	4 days	✔	04-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q2_NP	E318	31-May-2021	04-Jun-2021	----	4 days	✔	04-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC7GW_WG_2021_Q2_NP	E318	31-May-2021	04-Jun-2021	----	4 days	✔	04-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q2_NP	E318	31-May-2021	04-Jun-2021	----	4 days	✔	04-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q2_NP	E372-U	31-May-2021	05-Jun-2021	----	5 days	✔	05-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q2_NP	E372-U	31-May-2021	05-Jun-2021	----	5 days	✔	05-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC7GW_WG_2021_Q2_NP	E372-U	31-May-2021	05-Jun-2021	----	5 days	✔	05-Jun-2021	28 days	1 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q2_NP	E372-U	31-May-2021	05-Jun-2021	----	5 days	✔	05-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC5GW_WG_2021_Q2_NP	E421.Cr-L	31-May-2021	02-Jun-2021	----	12 days	✔	02-Jun-2021	180 days	-9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC6GW_WG_2021_Q2_NP	E421.Cr-L	31-May-2021	02-Jun-2021	----	2 days	✔	02-Jun-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC7GW_WG_2021_Q2_NP	E421.Cr-L	31-May-2021	02-Jun-2021	----	2 days	✔	02-Jun-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_OCGW_WG_2021_Q2_NP	E421.Cr-L	31-May-2021	02-Jun-2021	----	2 days	✔	02-Jun-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_MC5GW_WG_2021_Q2_NP	E509-L	31-May-2021	08-Jun-2021	----	8 days	✔	08-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_MC6GW_WG_2021_Q2_NP	E509-L	31-May-2021	08-Jun-2021	----	8 days	✔	08-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_MC7GW_WG_2021_Q2_NP	E509-L	31-May-2021	08-Jun-2021	----	8 days	✔	08-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_OCGW_WG_2021_Q2_NP	E509-L	31-May-2021	08-Jun-2021	----	8 days	✔	08-Jun-2021	28 days	1 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MC5GW_WG_2021_Q2_NP	E421	31-May-2021	02-Jun-2021	----	2 days	✓	02-Jun-2021	180 days	1 days	✓
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MC6GW_WG_2021_Q2_NP	E421	31-May-2021	02-Jun-2021	----	2 days	✓	02-Jun-2021	180 days	1 days	✓
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MC7GW_WG_2021_Q2_NP	E421	31-May-2021	02-Jun-2021	----	2 days	✓	02-Jun-2021	180 days	1 days	✓
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_OCGW_WG_2021_Q2_NP	E421	31-May-2021	02-Jun-2021	----	2 days	✓	02-Jun-2021	180 days	1 days	✓
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>										
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC5GW_WG_2021_Q2_NP	E601A	31-May-2021	01-Jun-2021	14 days	2 days	✓	02-Jun-2021	40 days	1 days	✓
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>										
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC6GW_WG_2021_Q2_NP	E601A	31-May-2021	01-Jun-2021	14 days	2 days	✓	02-Jun-2021	40 days	1 days	✓
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>										
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC7GW_WG_2021_Q2_NP	E601A	31-May-2021	01-Jun-2021	14 days	2 days	✓	02-Jun-2021	40 days	1 days	✓
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>										
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_OCGW_WG_2021_Q2_NP	E601A	31-May-2021	01-Jun-2021	14 days	2 days	✓	02-Jun-2021	40 days	1 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC5GW_WG_2021_Q2_NP	E358-L	31-May-2021	08-Jun-2021	----	9 days	✓	08-Jun-2021	28 days	1 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC6GW_WG_2021_Q2_NP	E358-L	31-May-2021	08-Jun-2021	----	9 days	✔	08-Jun-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC7GW_WG_2021_Q2_NP	E358-L	31-May-2021	08-Jun-2021	----	9 days	✔	08-Jun-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_OCGW_WG_2021_Q2_NP	E358-L	31-May-2021	08-Jun-2021	----	9 days	✔	08-Jun-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q2_NP	E355-L	31-May-2021	08-Jun-2021	----	9 days	✔	08-Jun-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q2_NP	E355-L	31-May-2021	08-Jun-2021	----	9 days	✔	08-Jun-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC7GW_WG_2021_Q2_NP	E355-L	31-May-2021	08-Jun-2021	----	9 days	✔	08-Jun-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q2_NP	E355-L	31-May-2021	08-Jun-2021	----	9 days	✔	08-Jun-2021	28 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q2_NP	E283	31-May-2021	----	----	----		06-Jun-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q2_NP	E283	31-May-2021	----	----	----		06-Jun-2021	14 days	6 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_MC7GW_WG_2021_Q2_NP	E283	31-May-2021	----	----	----		06-Jun-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_OCGW_WG_2021_Q2_NP	E283	31-May-2021	----	----	----		06-Jun-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MC5GW_WG_2021_Q2_NP	E290	31-May-2021	----	----	----		06-Jun-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MC6GW_WG_2021_Q2_NP	E290	31-May-2021	----	----	----		06-Jun-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MC7GW_WG_2021_Q2_NP	E290	31-May-2021	----	----	----		06-Jun-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_OCGW_WG_2021_Q2_NP	E290	31-May-2021	----	----	----		06-Jun-2021	14 days	6 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MC5GW_WG_2021_Q2_NP	E100	31-May-2021	----	----	----		06-Jun-2021	28 days	6 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MC6GW_WG_2021_Q2_NP	E100	31-May-2021	----	----	----		06-Jun-2021	28 days	6 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MC7GW_WG_2021_Q2_NP	E100	31-May-2021	----	----	----		06-Jun-2021	28 days	6 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_OCGW_WG_2021_Q2_NP	E100	31-May-2021	----	----	----		06-Jun-2021	28 days	6 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MC5GW_WG_2021_Q2_NP	E125	31-May-2021	----	----	----		07-Jun-2021	0.34 hrs	164 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MC6GW_WG_2021_Q2_NP	E125	31-May-2021	----	----	----		07-Jun-2021	0.34 hrs	164 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MC7GW_WG_2021_Q2_NP	E125	31-May-2021	----	----	----		07-Jun-2021	0.34 hrs	164 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_OCGW_WG_2021_Q2_NP	E125	31-May-2021	----	----	----		07-Jun-2021	0.34 hrs	164 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MC5GW_WG_2021_Q2_NP	E108	31-May-2021	----	----	----		06-Jun-2021	0.25 hrs	139 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MC6GW_WG_2021_Q2_NP	E108	31-May-2021	----	----	----		06-Jun-2021	0.25 hrs	139 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MC7GW_WG_2021_Q2_NP	E108	31-May-2021	----	----	----		06-Jun-2021	0.25 hrs	139 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_OCGW_WG_2021_Q2_NP	E108	31-May-2021	----	----	----		06-Jun-2021	0.25 hrs	139 hrs	* EHTR-FM



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MC5GW_WG_2021_Q2_NP	E162	31-May-2021	----	----	----		04-Jun-2021	7 days	4 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MC6GW_WG_2021_Q2_NP	E162	31-May-2021	----	----	----		04-Jun-2021	7 days	4 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MC7GW_WG_2021_Q2_NP	E162	31-May-2021	----	----	----		04-Jun-2021	7 days	4 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_OCGW_WG_2021_Q2_NP	E162	31-May-2021	----	----	----		04-Jun-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MC5GW_WG_2021_Q2_NP	E160-L	31-May-2021	----	----	----		04-Jun-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MC6GW_WG_2021_Q2_NP	E160-L	31-May-2021	----	----	----		04-Jun-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MC7GW_WG_2021_Q2_NP	E160-L	31-May-2021	----	----	----		04-Jun-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_OCGW_WG_2021_Q2_NP	E160-L	31-May-2021	----	----	----		04-Jun-2021	7 days	4 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MC5GW_WG_2021_Q2_NP	E121	31-May-2021	----	----	----		02-Jun-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MC6GW_WG_2021_Q2_NP	E121	31-May-2021	----	----	----		02-Jun-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MC7GW_WG_2021_Q2_NP	E121	31-May-2021	----	----	----		02-Jun-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_OCGW_WG_2021_Q2_NP	E121	31-May-2021	----	----	----		02-Jun-2021	3 days	2 days	✔
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>										
<b>HDPE - dissolved (sodium hydroxide)</b> EV_MC5GW_WG_2021_Q2_NP	E532A	31-May-2021	----	----	----		08-Jun-2021	28 days	8 days	✔
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>										
<b>HDPE - dissolved (sodium hydroxide)</b> EV_MC6GW_WG_2021_Q2_NP	E532A	31-May-2021	----	----	----		08-Jun-2021	28 days	8 days	✔
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>										
<b>HDPE - dissolved (sodium hydroxide)</b> EV_MC7GW_WG_2021_Q2_NP	E532A	31-May-2021	----	----	----		08-Jun-2021	28 days	8 days	✔
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>										
<b>HDPE - dissolved (sodium hydroxide)</b> EV_OCGW_WG_2021_Q2_NP	E532A	31-May-2021	----	----	----		08-Jun-2021	28 days	8 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	214556	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	214356	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	214680	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	210130	1	15	6.6	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	210131	1	15	6.6	5.0	✔
Conductivity in Water	E100	214357	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	210336	0	26	0.0	5.0	✖
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	216356	1	4	25.0	5.0	✔
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	215724	1	4	25.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	210337	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	216418	1	15	6.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	210226	2	40	5.0	5.0	✔
Fluoride in Water by IC	E235.F	210134	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	210132	1	15	6.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	210133	1	15	6.6	5.0	✔
ORP by Electrode	E125	214574	1	20	5.0	5.0	✔
pH by Meter	E108	214355	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	210129	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	212997	1	20	5.0	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	213960	1	14	7.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	212299	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	216421	1	15	6.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	213237	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	210979	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	214556	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	214356	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	214680	1	20	5.0	5.0	✔
BC PHC - EPH by GC-FID	E601A	210442	1	7	14.2	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	210130	1	15	6.6	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	210131	1	15	6.6	5.0	✔
Conductivity in Water	E100	214357	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	210336	2	26	7.6	5.0	✔
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	216356	1	4	25.0	5.0	✔
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	215724	1	4	25.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	210337	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	216418	1	15	6.6	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	210226	2	40	5.0	5.0	✓
Fluoride in Water by IC	E235.F	210134	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	210132	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	210133	1	15	6.6	5.0	✓
ORP by Electrode	E125	214574	1	20	5.0	5.0	✓
pH by Meter	E108	214355	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	210129	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	212997	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	213960	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	212299	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	216421	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	213237	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	212992	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	210979	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	214556	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	214356	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	214680	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	210442	1	7	14.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	210130	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	210131	1	15	6.6	5.0	✓
Conductivity in Water	E100	214357	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	210336	2	26	7.6	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	216356	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	215724	1	4	25.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	210337	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	216418	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	210226	2	40	5.0	5.0	✓
Fluoride in Water by IC	E235.F	210134	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	210132	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	210133	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	210129	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	212997	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	213960	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	212299	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	216421	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	213237	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	212992	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	210979	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Ammonia by Fluorescence	E298	214680	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	210130	1	15	6.6	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	210131	1	15	6.6	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	210336	0	26	0.0	5.0	✖
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	216356	1	4	25.0	5.0	✔
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	215724	1	4	25.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	210337	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	216418	1	15	6.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	210226	2	40	5.0	5.0	✔
Fluoride in Water by IC	E235.F	210134	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	210132	1	15	6.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	210133	1	15	6.6	5.0	✔
Sulfate in Water by IC	E235.SO4	210129	1	20	5.0	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	213960	1	14	7.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	212299	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	216421	1	15	6.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	213237	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Calgary - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Calgary - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A Edmonton - Environmental	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection.  sample pretreatment involved field or lab filtration following by sample preservation.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100 Calgary - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Calgary - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Mercury Water Filtration (Low Level)	EP509-L Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
PHCs and PAHs Hexane Extraction	EP601 Calgary - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101730**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210531Q2GW  
**Sampler** : C. Emslie/S. Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 01-Jun-2021 08:40  
**Date Analysis Commenced** : 01-Jun-2021  
**Issue Date** : 14-Jun-2021 10:33

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

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Page : 2 of 14  
Work Order : CG2101730  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 210979)</b>											
CG2101729-001	Anonymous	turbidity	----	E121	0.10	NTU	7.19	7.18	0.139%	15%	----
<b>Physical Tests (QC Lot: 212997)</b>											
CG2101730-001	EV_OCGW_WG_2021_Q2_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	282	257	9.08%	20%	----
<b>Physical Tests (QC Lot: 214355)</b>											
CG2101728-001	Anonymous	pH	----	E108	0.10	pH units	8.14	8.13	0.123%	4%	----
<b>Physical Tests (QC Lot: 214356)</b>											
CG2101728-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	254	253	0.237%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	254	253	0.237%	20%	----
<b>Physical Tests (QC Lot: 214357)</b>											
CG2101728-001	Anonymous	conductivity	----	E100	2.0	µS/cm	567	564	0.530%	10%	----
<b>Physical Tests (QC Lot: 214556)</b>											
CG2101728-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 214574)</b>											
CG2101728-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	276	273	1.38%	15%	----
<b>Anions and Nutrients (QC Lot: 210129)</b>											
CG2101728-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	74.4	74.4	0.105%	20%	----
<b>Anions and Nutrients (QC Lot: 210130)</b>											
CG2101728-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210131)</b>											
CG2101728-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.02	1.00	1.82%	20%	----
<b>Anions and Nutrients (QC Lot: 210132)</b>											
CG2101728-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0226	0.0220	0.0006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210133)</b>											
CG2101728-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0087	0.0083	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210134)</b>											
CG2101728-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	1.14	1.14	0.395%	20%	----
<b>Anions and Nutrients (QC Lot: 210226)</b>											
CG2101715-021	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0023	0.0019	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210227)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 210227) - continued</b>											
CG2101730-004	EV_MC7GW_WG_2021_Q2_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 212299)</b>											
CG2101728-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.501	0.407	0.094	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 213237)</b>											
CG2101728-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0452	0.0428	5.50%	20%	----
<b>Anions and Nutrients (QC Lot: 213960)</b>											
CG2101728-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0038	0.0026	0.0012	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 214680)</b>											
CG2101728-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.250	0.248	0.722%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 216418)</b>											
CG2101728-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.04	2.07	0.03	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 216421)</b>											
CG2101728-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.85	0.85	0.002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 210337)</b>											
CG2101710-004	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0015	<0.0010	0.0005	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00023	0.00022	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0826	0.0846	2.43%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0135 µg/L	0.0000142	0.0000007	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	71.7	74.9	4.36%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0040	0.0042	0.0002	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	40.5	41.3	1.84%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.00010	0.0000009	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00209	0.00226	7.74%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00072	0.00070	0.00002	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.710	0.715	0.712%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	42.8 µg/L	0.0443	3.42%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.20	2.23	1.60%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 210337) - continued</b>											
CG2101710-004	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.530	0.539	1.74%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0607	0.0646	6.17%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	58.2	58.2	0.0536%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00333	0.00353	5.93%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0032	0.0032	0.000008	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 215724)</b>											
CG2101730-001	EV_OCGW_WG_2021_Q2_NP	mercury, dissolved	7439-97-6	E509-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Speciated Metals (QC Lot: 216356)</b>											
CG2101730-001	EV_OCGW_WG_2021_Q2_NP	chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 210979)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 212992)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 212997)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 214356)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 214357)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 214556)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 210129)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 210130)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 210131)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 210132)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 210133)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 210134)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 210226)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 210227)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 212299)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 213237)</b>						





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 213237) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 213960)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 214680)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 216418)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 216421)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 210336)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 210337)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 210337) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 210338)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 215724)</b>						
mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	<0.50	----
<b>Speciated Metals (QCLot: 216356)</b>						
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	<0.00050	----
<b>Hydrocarbons (QCLot: 210442)</b>						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
TEH (C10-C30), BC	----	E601A	250	µg/L	<250	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 210979)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
<b>Physical Tests (QCLot: 212992)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	96.5	85.0	115	----
<b>Physical Tests (QCLot: 212997)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	92.1	85.0	115	----
<b>Physical Tests (QCLot: 214355)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 214356)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	500 mg/L	100	85.0	115	----
<b>Physical Tests (QCLot: 214357)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	----
<b>Physical Tests (QCLot: 214556)</b>									
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	50 mg/L	110	85.0	115	----
<b>Physical Tests (QCLot: 214574)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
<b>Anions and Nutrients (QCLot: 210129)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 210130)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 210131)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 210132)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 210133)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 210134)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 210226)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	107	80.0	120	----
<b>Anions and Nutrients (QCLot: 210227)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	----
<b>Anions and Nutrients (QCLot: 212299)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 212299) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	88.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 213237)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	106	80.0	120	----
<b>Anions and Nutrients (QCLot: 213960)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	100	80.0	120	----
<b>Anions and Nutrients (QCLot: 214680)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 216418)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.1	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 216421)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	99.6	80.0	120	----
<b>Dissolved Metals (QCLot: 210336)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	94.3	80.0	120	----
<b>Dissolved Metals (QCLot: 210337)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	94.8	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	96.0	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	95.2	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	95.7	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.5	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	110	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	94.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	83.0	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.3	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	89.9	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	92.4	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	96.9	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.5	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	100	60.0	140	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 210337) - continued</b>									
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.8	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	95.3	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	87.5	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	80.2	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	87.4	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	114	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	97.1	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.6	80.0	120	----
<b>Dissolved Metals (QCLot: 210338)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	96.8	80.0	120	----
mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	97.0	80.0	120	----
<b>Speciated Metals (QCLot: 216356)</b>									
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
<b>Hydrocarbons (QCLot: 210442)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	124	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	116	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	122	70.0	130	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 210129)</b>										
CG2101728-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 210130)</b>										
CG2101728-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.519 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 210131)</b>										
CG2101728-004	Anonymous	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 210132)</b>										
CG2101728-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.59 mg/L	2.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 210133)</b>										
CG2101728-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.530 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 210134)</b>										
CG2101728-004	Anonymous	fluoride	16984-48-8	E235.F	0.995 mg/L	1 mg/L	99.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 210226)</b>										
CG2101715-022	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0505 mg/L	0.05 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 210227)</b>										
CG2101731-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0491 mg/L	0.05 mg/L	98.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 212299)</b>										
CG2101728-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.90 mg/L	2.5 mg/L	116	70.0	130	----
<b>Anions and Nutrients (QCLot: 213237)</b>										
CG2101728-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0551 mg/L	0.0676 mg/L	81.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 213960)</b>										
CG2101728-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0584 mg/L	0.0676 mg/L	86.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 214680)</b>										
CG2101728-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 216418)</b>										
CG2101728-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	20.3 mg/L	23.9 mg/L	85.0	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 216421)</b>										
CG2101728-001	Anonymous	carbon, total organic [TOC]	----	E355-L	21.6 mg/L	23.9 mg/L	90.3	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 210337)</b>										
CG2101710-005	Anonymous	aluminum, dissolved	7429-90-5	E421	1.85 mg/L	2 mg/L	92.5	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.227 mg/L	0.2 mg/L	113	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.193 mg/L	0.2 mg/L	96.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.240 mg/L	0.2 mg/L	120	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.362 mg/L	0.4 mg/L	90.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.920 mg/L	1 mg/L	92.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.197 mg/L	0.2 mg/L	98.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.196 mg/L	0.2 mg/L	97.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	19.5 mg/L	20 mg/L	97.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.184 mg/L	0.2 mg/L	92.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.950 mg/L	1 mg/L	95.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.190 mg/L	0.2 mg/L	94.9	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.207 mg/L	0.2 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.385 mg/L	0.4 mg/L	96.2	70.0	130	----
		potassium, dissolved	7440-09-7	E421	38.1 mg/L	40 mg/L	95.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.404 mg/L	0.4 mg/L	101	70.0	130	----
		silicon, dissolved	7440-21-3	E421	91.2 mg/L	100 mg/L	91.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		sodium, dissolved	17341-25-2	E421	18.5 mg/L	20 mg/L	92.4	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.179 mg/L	0.2 mg/L	89.4	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	200 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0384 mg/L	0.04 mg/L	96.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.395 mg/L	0.4 mg/L	98.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0474 mg/L	0.04 mg/L	119	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.976 mg/L	1 mg/L	97.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.98 mg/L	4 mg/L	99.5	70.0	130	----
<b>Dissolved Metals (QCLot: 215724)</b>										
CG2101730-002	EV_MC5GW_WG_2021_Q2_NP	mercury, dissolved	7439-97-6	E509-L	4.54 ng/L	5 ng/L	90.8	70.0	130	----
<b>Speciated Metals (QCLot: 216356)</b>										
CG2101730-001	EV_OCGW_WG_2021_Q2_NP	chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0495 mg/L	0.05 mg/L	99.0	70.0	130	----

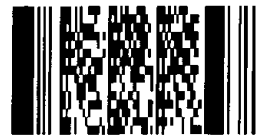




COC ID: 20210531Q2GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO		LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling	Lab Contact	Lyudmyla Shvets			Email 1:	chris.emslie@teck.com	X	X	X
Project Manager	Jennifer Dane	Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com	Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X	X	X
Address	RR#1 HWY# 3					Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
						Email 5:	teckcoal@equisonline.com			X
City	Calgary	Province	BC		City	Calgary	Province	AB		
Country	Canada	Country	Canada		Postal Code	T1Y 7B5	Country	Canada		
Phone Number	403-407-1800	Phone Number	403-407-1800			PO number	VPO00741597			

Environmental Division  
Calgary  
Work Order Reference  
**CG2101730**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECK COAL-ROUTINE-V/A (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECK COAL-MET-D-V/A (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_OCGW_WG_2021_Q2_NP	EV_OCGW	WG	N	05/31/21	13:40	G	8	1	1	1	1	1	1	1	1	2	1			1
EV_MC5GW_WG_2021_Q2_NP	EV_MC5GW	WG	N	05/31/21	13:43	G	8	1	1	1	1	1	1	1	1	2	1			1
EV_MC6GW_WG_2021_Q2_NP	EV_MC6GW	WG	N	05/31/21	13:44	G	8	1	1	1	1	1	1	1	1	2	1			1
EV_MC7GW_WG_2021_Q2_NP	EV_MC7GW	WG	N	05/31/21	13:45	G	8	1	1	1	1	1	1	1	1	2	1			1
<b>Total</b>							<b>32</b>													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Emslie/S. Hansen	May 31, 2021	<i>[Signature]</i>	6/1/2021

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	<input checked="" type="checkbox"/>	Sampler's Name	C. Emslie/S. Hansen	Mobile #
Priority (2-3 business days) - 50% surcharge	<input type="checkbox"/>	Sampler's Signature	<i>[Signature]</i>	Date/Time
Emergency (1 Business Day) - 100% surcharge	<input type="checkbox"/>			May 31, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

99



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101868**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210606Q2GW  
**Sampler** : C. Emslie/J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 08-Jun-2021 08:30  
**Date Analysis Commenced** : 08-Jun-2021  
**Issue Date** : 18-Jun-2021 09:27

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_WF_SW_W	----	----	----	----
(Matrix: Water)					G_2021_Q2_NP					
					Client sampling date / time	06-Jun-2021 12:08	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2101868-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	598	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	340	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	230	----	----	----	----	----
pH	----	E108	0.10	pH units	8.40	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	444	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	5.6	----	----	----	----	----
turbidity	----	E121	0.10	NTU	10.6	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	127	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	3.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	124	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	151	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0667 <sup>RRV</sup>	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.80	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.022	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.111	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0100	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0045	----	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0042	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	192	----	----	----	----	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.121	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.08	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_WF_SW_W	----	----	----	----
(Matrix: Water)					G_2021_Q2_NP					
Client sampling date / time					06-Jun-2021 12:08	----	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2101868-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.55	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.62	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	7.08	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	107	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	3.36	----	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00127	----	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	----	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	19.1	----	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.025	----	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0216	----	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	71.0	----	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.588	----	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00167	----	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.95	----	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.212	----	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	0.068	----	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_WF_SW_W G_2021_Q2_NP	----	----	----	----
Client sampling date / time					06-Jun-2021 12:08	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101868-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.21	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0110	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	71.2	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000047	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101868</b>	Page	: 1 of 10
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 08-Jun-2021 08:30
PO	: VPO00741597	Issue Date	: 18-Jun-2021 09:27
C-O-C number	: 20210606Q2GW		
Sampler	: C. Emslie/J. Batstone		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q2_NP	E298	06-Jun-2021	15-Jun-2021	----	9 days	✓	15-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q2_NP	E235.Br-L	06-Jun-2021	----	----	----		08-Jun-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q2_NP	E235.Cl-L	06-Jun-2021	----	----	----		08-Jun-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q2_NP	E378-U	06-Jun-2021	----	----	----		08-Jun-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q2_NP	E235.F	06-Jun-2021	----	----	----		08-Jun-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q2_NP	E235.NO3-L	06-Jun-2021	----	----	----		08-Jun-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q2_NP	E235.NO2-L	06-Jun-2021	----	----	----		08-Jun-2021	3 days	3 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q2_NP	E235.SO4	06-Jun-2021	----	----	----		08-Jun-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_WF_SW_WG_2021_Q2_NP	E375-T	06-Jun-2021	14-Jun-2021	----	8 days	✓	14-Jun-2021	28 days	0 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q2_NP	E318	06-Jun-2021	13-Jun-2021	----	7 days	✓	13-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q2_NP	E372-U	06-Jun-2021	14-Jun-2021	----	8 days	✓	14-Jun-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_WF_SW_WG_2021_Q2_NP	E421.Cr-L	06-Jun-2021	11-Jun-2021	----	6 days	✓	14-Jun-2021	180 days	3 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_WF_SW_WG_2021_Q2_NP	E509	06-Jun-2021	14-Jun-2021	----	9 days	✓	14-Jun-2021	28 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_WF_SW_WG_2021_Q2_NP	E421	06-Jun-2021	11-Jun-2021	----	6 days	✓	14-Jun-2021	180 days	3 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_WF_SW_WG_2021_Q2_NP	E358-L	06-Jun-2021	14-Jun-2021	----	8 days	✓	14-Jun-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q2_NP	E355-L	06-Jun-2021	14-Jun-2021	----	8 days	✓	14-Jun-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_WF_SW_WG_2021_Q2_NP	E283	06-Jun-2021	----	----	----		14-Jun-2021	14 days	8 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_WF_SW_WG_2021_Q2_NP	E290	06-Jun-2021	----	----	----		14-Jun-2021	14 days	8 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_WF_SW_WG_2021_Q2_NP	E100	06-Jun-2021	----	----	----		14-Jun-2021	28 days	8 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_WF_SW_WG_2021_Q2_NP	E125	06-Jun-2021	----	----	----		14-Jun-2021	0.34 hrs	196 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_WF_SW_WG_2021_Q2_NP	E108	06-Jun-2021	----	----	----		14-Jun-2021	0.25 hrs	188 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_WF_SW_WG_2021_Q2_NP	E162	06-Jun-2021	----	----	----		10-Jun-2021	7 days	4 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] EV_WF_SW_WG_2021_Q2_NP	E160-L	06-Jun-2021	----	----	----		10-Jun-2021	7 days	4 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_WF_SW_WG_2021_Q2_NP	E121	06-Jun-2021	----	----	----		08-Jun-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	220235	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	220226	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	221168	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	216227	1	19	5.2	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	216228	1	19	5.2	5.0	✔
Conductivity in Water	E100	220224	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218939	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	220699	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	218938	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	220361	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	216210	1	18	5.5	5.0	✔
Fluoride in Water by IC	E235.F	216231	1	19	5.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	216229	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	216230	1	19	5.2	5.0	✔
ORP by Electrode	E125	220018	1	13	7.6	5.0	✔
pH by Meter	E108	220225	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	216226	1	19	5.2	5.0	✔
TDS by Gravimetry	E162	217640	1	20	5.0	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	218554	1	1	100.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	218815	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	220369	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	218552	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	216393	1	9	11.1	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	220235	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	220226	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	221168	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	216227	1	19	5.2	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	216228	1	19	5.2	5.0	✔
Conductivity in Water	E100	220224	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218939	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	220699	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	218938	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	220361	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	216210	1	18	5.5	5.0	✔
Fluoride in Water by IC	E235.F	216231	1	19	5.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	216229	1	19	5.2	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	216230	1	19	5.2	5.0	✓
ORP by Electrode	E125	220018	1	13	7.6	5.0	✓
pH by Meter	E108	220225	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	216226	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	217640	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	218554	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	218815	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	220369	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	218552	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	217632	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	216393	1	9	11.1	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	220235	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	220226	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	221168	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	216227	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	216228	1	19	5.2	5.0	✓
Conductivity in Water	E100	220224	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218939	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	220699	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	218938	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	220361	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	216210	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	216231	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	216229	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	216230	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	216226	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	217640	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	218554	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	218815	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	220369	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	218552	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	217632	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	216393	1	9	11.1	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	221168	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	216227	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	216228	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	218939	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	220699	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	218938	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	220361	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	216210	1	18	5.5	5.0	✔
Fluoride in Water by IC	E235.F	216231	1	19	5.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	216229	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	216230	1	19	5.2	5.0	✔
Sulfate in Water by IC	E235.SO4	216226	1	19	5.2	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	218554	0	1	0.0	5.0	✖
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	218815	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	220369	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	218552	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2101868**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210606Q2GW  
**Sampler** : C. Emslie/J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 08-Jun-2021 08:30  
**Date Analysis Commenced** : 08-Jun-2021  
**Issue Date** : 18-Jun-2021 09:27

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2101868  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 216393)</b>											
CG2101866-001	Anonymous	turbidity	----	E121	0.10	NTU	0.34	0.34	0.002	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 217640)</b>											
CG2101866-005	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 220018)</b>											
CG2101866-004	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	328	317	3.47%	15%	----
<b>Physical Tests (QC Lot: 220224)</b>											
CG2101865-001	Anonymous	conductivity	----	E100	2.0	µS/cm	300	295	1.68%	10%	----
<b>Physical Tests (QC Lot: 220225)</b>											
CG2101865-001	Anonymous	pH	----	E108	0.10	pH units	8.11	8.21	1.22%	4%	----
<b>Physical Tests (QC Lot: 220226)</b>											
CG2101865-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	112	113	1.34%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	112	113	1.34%	20%	----
<b>Physical Tests (QC Lot: 220235)</b>											
CG2101865-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 216210)</b>											
CG2101865-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0037	0.0035	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 216226)</b>											
CG2101861-004	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	70.6	70.7	0.164%	20%	----
<b>Anions and Nutrients (QC Lot: 216227)</b>											
CG2101861-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 216228)</b>											
CG2101861-004	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.09	1.10	0.256%	20%	----
<b>Anions and Nutrients (QC Lot: 216229)</b>											
CG2101861-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.503	0.502	0.179%	20%	----
<b>Anions and Nutrients (QC Lot: 216230)</b>											
CG2101861-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.483	0.494	2.27%	20%	----
<b>Anions and Nutrients (QC Lot: 216231)</b>											
CG2101861-004	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.501	0.468	6.82%	20%	----
<b>Anions and Nutrients (QC Lot: 218552)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 218552) - continued</b>											
CG2101866-006	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 218554)</b>											
CG2101868-001	EV_WF_SW_WG_2021_Q 2_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0042	0.0049	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 218815)</b>											
CG2101863-014	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 221168)</b>											
CG2101866-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.250	mg/L	7.24	6.49	10.8%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 220361)</b>											
CG2101865-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.53	1.58	0.04	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 220369)</b>											
CG2101865-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.56	1.58	0.03	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 218938)</b>											
CG2101866-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0023	0.0020	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00317	0.00318	0.340%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0197	0.0199	0.921%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.113	0.113	0.00002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.766 µg/L	0.000788	2.73%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	428	438	2.24%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	54.6 µg/L	0.0546	0.109%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	0.00046	0.00006	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.988	0.980	0.834%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	172	173	1.02%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.357	0.360	0.684%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00525	0.00541	3.14%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.384	0.388	0.875%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	17.0	17.4	1.74%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	7.39 µg/L	0.00702	5.16%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.94	2.81	4.48%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	28.5	29.0	1.72%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 218938) - continued</b>											
CG2101866-001	Anonymous	strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.869	0.913	4.92%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	346	336	3.18%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000308	0.000299	2.91%	20%	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0289	0.0286	1.21%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0631	0.0644	1.90%	20%	----
<b>Dissolved Metals (QC Lot: 218939)</b>											
CG2101866-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 220699)</b>											
CG2101866-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 216393)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 217632)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 217640)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 220224)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 220226)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 220235)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 216210)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 216226)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 216227)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 216228)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 216229)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 216230)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 216231)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 218552)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 218554)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 218815)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 218815) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 221168)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 220361)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 220369)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 218938)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 218938) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 218939)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 220699)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 216393)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100	85.0	115	---
<b>Physical Tests (QCLot: 217632)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	91.3	85.0	115	---
<b>Physical Tests (QCLot: 217640)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 220018)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 220224)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 220225)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 220226)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 220235)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 216210)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	103	80.0	120	---
<b>Anions and Nutrients (QCLot: 216226)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 216227)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	92.6	85.0	115	---
<b>Anions and Nutrients (QCLot: 216228)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 216229)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 216230)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 216231)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 218552)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	97.6	80.0	120	---
<b>Anions and Nutrients (QCLot: 218554)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 218554) - continued</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	96.4	80.0	120	----
<b>Anions and Nutrients (QCLot: 218815)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	85.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 221168)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	111	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 220361)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	88.1	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 220369)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	88.5	80.0	120	----
<b>Dissolved Metals (QCLot: 218938)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	93.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.2	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 218938) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.9	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.4	80.0	120	----
<b>Dissolved Metals (QCLot: 218939)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	85.6	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 216210)</b>										
CG2101865-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0532 mg/L	0.05 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 216226)</b>										
CG2101865-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 216227)</b>										
CG2101865-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.462 mg/L	0.5 mg/L	92.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 216228)</b>										
CG2101865-002	Anonymous	chloride	16887-00-6	E235.Cl-L	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 216229)</b>										
CG2101865-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.62 mg/L	2.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 216230)</b>										
CG2101865-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.516 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 216231)</b>										
CG2101865-002	Anonymous	fluoride	16984-48-8	E235.F	1.06 mg/L	1 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 218552)</b>										
CG2101866-007	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0510 mg/L	0.0676 mg/L	75.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 218815)</b>										
CG2101864-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.78 mg/L	2.5 mg/L	71.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 221168)</b>										
CG2101866-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 220361)</b>										
CG2101865-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.0 mg/L	23.9 mg/L	100	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 220369)</b>										
CG2101865-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.9 mg/L	23.9 mg/L	99.9	70.0	130	----
<b>Dissolved Metals (QCLot: 218938)</b>										
CG2101866-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.387 mg/L	0.4 mg/L	96.8	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0434 mg/L	0.04 mg/L	108	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0393 mg/L	0.04 mg/L	98.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0372 mg/L	0.04 mg/L	93.1	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 218938) - continued</b>										
CG2101866-001	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0790 mg/L	0.08 mg/L	98.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0161 mg/L	0.02 mg/L	80.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.223 mg/L	0.2 mg/L	112	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00747 mg/L	0.008 mg/L	93.3	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0358 mg/L	0.04 mg/L	89.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.69 mg/L	4 mg/L	92.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0358 mg/L	0.04 mg/L	89.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0425 mg/L	0.04 mg/L	106	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0778 mg/L	0.08 mg/L	97.3	70.0	130	----
		silicon, dissolved	7440-21-3	E421	17.3 mg/L	20 mg/L	86.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00762 mg/L	0.008 mg/L	95.3	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00695 mg/L	0.008 mg/L	86.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0828 mg/L	0.08 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.197 mg/L	0.2 mg/L	98.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.725 mg/L	0.8 mg/L	90.6	70.0	130	----
<b>Dissolved Metals (QCLot: 218939)</b>										
CG2101866-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0779 mg/L	0.08 mg/L	97.4	70.0	130	----
<b>Dissolved Metals (QCLot: 220699)</b>										
CG2101866-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000959 mg/L	0.0001 mg/L	95.9	70.0	130	----



COC ID: **20210606Q2GW**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO		LABORATORY				OTHER INFO		
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary			Report Format / Distribution		
Job Description	Q2 Ground Water Sampling	Lab Contact	Lyudmyla Shvets			Email 1:	chris.emslie@teck.com	X
Project Manager	Jennifer Dane	Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X
Email	jennifer.dane@teck.com	Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X
Address	RR#1 HWY# 3					Email 4:	Teck.Lab.Results@sharepoint.teck.com	X
						Email 5:	jennifer.dane@teck.com	X
						Email 5:	teckcoal@equisonline.com	X
		Province	BC		City	Calgary		
		Country	Canada		Postal Code	T1Y 7B5		
					Province	AB		
					Country	Canada		
					Phone Number	403-407-1800		
					PO number	VPO00741597		

Environmental Division  
Calgary

Work Order Reference

**CG2101868**



Telephone: +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PH	No	Yes	Yes	No	No	Yes	No	Yes	Yes	
								PREP										
								ANALYSIS										
EV_WF_SW_WG_2021_Q2_NP	EV_WF_SW	WG	N	06/06/21	12:08	G	5	TECKCOAL-ROUTINE-V.A (E305.1) Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	1	1	1	1					1	
								TECKCOAL-MET-D-V.A (SW6020)										
								DOC (APHA 5310)										
								Dissolved Phosphorus										
								TKN/TOC (APHA 4500-NORG)										
								Total Nitrogen for BC (NO2 and NO3)										
								T-ULTRA MERCURY (SW6020)										
								D-ULTRA MERCURY (SW6020)										
								EPH (C10-C32)										
								D-Mercury										
								D-CrVI										
							Total											
							5											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Emslie/J. Batstone	June 6, 2021	<i>DE</i>	6/6 0830

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	C. Emslie/J. Batstone	
	Sampler's Signature	Date/Time
		June 6, 2021

*76*

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2101958**

**Page** : 1 of 6

**Amendment** : **1**

**Client** : **Teck Coal Limited**

**Laboratory** : Calgary - Environmental

**Contact** : Cam Jaeger

**Account Manager** : Lyudmyla Shvets

**Address** : 421 Pine Avenue  
Sparwood BC Canada V0B 2G0

**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5

**Telephone** : ----

**Telephone** : +1 403 407 1800

**Project** : Regional Effects Program

**Date Samples Received** : 11-Jun-2021 08:30

**PO** : VPO00762695

**Date Analysis Commenced** : 12-Jun-2021

**C-O-C number** : COC\_RG\_WG\_Q2-2021

**Issue Date** : 27-Jan-2022 10:58

**Sampler** : Monica Bartha

**Site** : ----

**Quote number** : Teck Coal Master Quote

**No. of samples received** : 4

**No. of samples analysed** : 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					RG_MW_WW_ WG_2021_Q2_ NP	RG_MW-03-04_ WG_2021_Q2_ NP	EV_ER1GWD_ WG_2021_Q2_ NP	EV_ER1GWS_ WG_Q2-2021_N P	----
Client sampling date / time					10-Jun-2021 14:35	10-Jun-2021 13:19	10-Jun-2021 10:45	10-Jun-2021 12:19	----
Analyte	CAS Number	Method	LOR	Unit	CG2101958-001	CG2101958-002	CG2101958-003	CG2101958-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	167	143	197	190	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	204	175	240	231	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	167	143	197	190	----
conductivity	----	E100	2.0	µS/cm	436	351	425	502	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	226	201	251	280	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	443	395	445	461	----
pH	----	E108	0.10	pH units	7.94	8.28	8.20	8.15	----
solids, total dissolved [TDS]	----	E162	10	mg/L	302	195	235	292	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.5	<1.0	1.2	<1.0	----
turbidity	----	E121	0.10	NTU	2.47	0.10	0.22	0.42	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0.130	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.59	6.05	5.46	20.0	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.186	0.175	0.245	0.184	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.226	0.140	0.278	0.342	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.06	0.383	0.800	1.29	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0010	0.0045	0.0021	0.0030	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0032	<0.0020	0.0043	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	64.7	42.9	36.6	59.4	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	3.73	0.93	1.20	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.55	3.61	1.09	1.01	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_MW_WW_ WG_2021_Q2_ NP	RG_MW-03-04_ WG_2021_Q2_ NP	EV_ER1GWD_ WG_2021_Q2_ NP	EV_ER1GWS_ WG_Q2-2021_N P	----
Client sampling date / time					10-Jun-2021 14:35	10-Jun-2021 13:19	10-Jun-2021 10:45	10-Jun-2021 12:19	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101958-001	CG2101958-002	CG2101958-003	CG2101958-004	-----	
					Result	Result	Result	Result	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.91	3.96	4.92	5.70	----	
cation sum	----	EC101	0.10	meq/L	4.63	4.28	5.21	6.09	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	94.3	108	106	107	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.94	3.88	2.86	3.31	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0017	0.0060	0.0012	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00011	0.00034	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00016	0.00014	0.00011	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.130	0.0937	0.0894	0.139	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.011	0.011	0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0094	0.0074	0.0064	0.0124	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	61.1	52.1	67.4	77.7	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00018	0.00012	0.00035	0.00026	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00026	0.00036	0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0046	0.0081	0.0082	0.0083	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	17.8	17.3	20.2	20.9	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00034	0.00021	0.00019	<0.00010	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00135	0.00107	0.00182	0.000904	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0.00068	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.655	0.838	0.954	1.01	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	10.3	3.40	3.69	6.56	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.58	2.44	3.49	2.77	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.39	5.41	3.67	10.8	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_MW_WW_ WG_2021_Q2_ NP	RG_MW-03-04_ WG_2021_Q2_ NP	EV_ER1GWD_ WG_2021_Q2_ NP	EV_ER1GWS_ WG_Q2-2021_N P	----
Client sampling date / time					10-Jun-2021 14:35	10-Jun-2021 13:19	10-Jun-2021 10:45	10-Jun-2021 12:19	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101958-001	CG2101958-002	CG2101958-003	CG2101958-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.217	0.120	0.203	0.201	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	22.5	15.0	13.2	20.7	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000877	0.000782	0.00136	0.000960	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0.0052	<0.0010	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101958</b>	Page	: 1 of 18
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Spanwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: Regional Effects Program	Date Samples Received	: 11-Jun-2021 08:30
PO	: VPO00762695	Issue Date	: 27-Jan-2022 10:58
C-O-C number	: COC_RG_WG_Q2-2021		
Sampler	: Monica Bartha		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1GWD_WG_2021_Q2_NP	E298	10-Jun-2021	21-Jun-2021	----	----		21-Jun-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1GWS_WG_Q2-2021_NP	E298	10-Jun-2021	21-Jun-2021	----	----		21-Jun-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW_WW_WG_2021_Q2_NP	E298	10-Jun-2021	21-Jun-2021	----	----		21-Jun-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q2_NP	E298	10-Jun-2021	21-Jun-2021	----	----		21-Jun-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_ER1GWD_WG_2021_Q2_NP	E235.Br-L	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_ER1GWS_WG_Q2-2021_NP	E235.Br-L	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_MW_WW_WG_2021_Q2_NP	E235.Br-L	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE RG_MW-03-04_WG_2021_Q2_NP	E235.Br-L	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_ER1GWD_WG_2021_Q2_NP	E235.Cl-L	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_ER1GWS_WG_Q2-2021_NP	E235.Cl-L	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE RG_MW_WW_WG_2021_Q2_NP	E235.Cl-L	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE RG_MW-03-04_WG_2021_Q2_NP	E235.Cl-L	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_ER1GWD_WG_2021_Q2_NP	E378-U	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_ER1GWS_WG_Q2-2021_NP	E378-U	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE RG_MW_WW_WG_2021_Q2_NP	E378-U	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE RG_MW-03-04_WG_2021_Q2_NP	E378-U	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_ER1GWD_WG_2021_Q2_NP	E235.F	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_ER1GWS_WG_Q2-2021_NP	E235.F	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> RG_MW_WW_WG_2021_Q2_NP	E235.F	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> RG_MW-03-04_WG_2021_Q2_NP	E235.F	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_ER1GWD_WG_2021_Q2_NP	E235.NO3-L	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_ER1GWS_WG_Q2-2021_NP	E235.NO3-L	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_MW_WW_WG_2021_Q2_NP	E235.NO3-L	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_MW-03-04_WG_2021_Q2_NP	E235.NO3-L	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_ER1GWD_WG_2021_Q2_NP	E235.NO2-L	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_ER1GWS_WG_Q2-2021_NP	E235.NO2-L	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_MW_WW_WG_2021_Q2_NP	E235.NO2-L	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_MW-03-04_WG_2021_Q2_NP	E235.NO2-L	10-Jun-2021	----	----	----		12-Jun-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_ER1GWD_WG_2021_Q2_NP	E235.SO4	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_ER1GWS_WG_Q2-2021_NP	E235.SO4	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_MW_WW_WG_2021_Q2_NP	E235.SO4	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_MW-03-04_WG_2021_Q2_NP	E235.SO4	10-Jun-2021	----	----	----		12-Jun-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
Amber glass total (sulfuric acid) EV_ER1GWD_WG_2021_Q2_NP	E318	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
Amber glass total (sulfuric acid) EV_ER1GWS_WG_Q2-2021_NP	E318	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW_WW_WG_2021_Q2_NP	E318	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q2_NP	E318	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1GWD_WG_2021_Q2_NP	E372-U	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1GWS_WG_Q2-2021_NP	E372-U	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW_WW_WG_2021_Q2_NP	E372-U	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q2_NP	E372-U	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_MW_WW_WG_2021_Q2_NP	E421.Cr-L	10-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ER1GWD_WG_2021_Q2_NP	E421.Cr-L	10-Jun-2021	15-Jun-2021	----	----		17-Jun-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ER1GWS_WG_Q2-2021_NP	E421.Cr-L	10-Jun-2021	15-Jun-2021	----	----		17-Jun-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_MW-03-04_WG_2021_Q2_NP	E421.Cr-L	10-Jun-2021	15-Jun-2021	----	----		17-Jun-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_ER1GWD_WG_2021_Q2_NP	E509	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_ER1GWS_WG_Q2-2021_NP	E509	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> RG_MW_WW_WG_2021_Q2_NP	E509	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> RG_MW-03-04_WG_2021_Q2_NP	E509	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_MW_WW_WG_2021_Q2_NP	E421	10-Jun-2021	15-Jun-2021	----	----		15-Jun-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ER1GWD_WG_2021_Q2_NP	E421	10-Jun-2021	15-Jun-2021	----	----		17-Jun-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ER1GWS_WG_Q2-2021_NP	E421	10-Jun-2021	15-Jun-2021	----	----		17-Jun-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_MW-03-04_WG_2021_Q2_NP	E421	10-Jun-2021	15-Jun-2021	----	----		17-Jun-2021	180 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ER1GWD_WG_2021_Q2_NP	E358-L	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ER1GWS_WG_Q2-2021_NP	E358-L	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_MW_WW_WG_2021_Q2_NP	E358-L	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q2_NP	E358-L	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1GWD_WG_2021_Q2_NP	E355-L	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1GWS_WG_Q2-2021_NP	E355-L	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW_WW_WG_2021_Q2_NP	E355-L	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q2_NP	E355-L	10-Jun-2021	17-Jun-2021	----	----		17-Jun-2021	28 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_ER1GWD_WG_2021_Q2_NP	E283	10-Jun-2021	----	----	----		17-Jun-2021	14 days	7 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_ER1GWS_WG_Q2-2021_NP	E283	10-Jun-2021	----	----	----		17-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE RG_MW_WW_WG_2021_Q2_NP	E283	10-Jun-2021	----	----	----		17-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE RG_MW-03-04_WG_2021_Q2_NP	E283	10-Jun-2021	----	----	----		17-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_ER1GWD_WG_2021_Q2_NP	E290	10-Jun-2021	----	----	----		17-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_ER1GWS_WG_Q2-2021_NP	E290	10-Jun-2021	----	----	----		17-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE RG_MW_WW_WG_2021_Q2_NP	E290	10-Jun-2021	----	----	----		17-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE RG_MW-03-04_WG_2021_Q2_NP	E290	10-Jun-2021	----	----	----		17-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_ER1GWD_WG_2021_Q2_NP	E100	10-Jun-2021	----	----	----		17-Jun-2021	28 days	7 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_ER1GWS_WG_Q2-2021_NP	E100	10-Jun-2021	----	----	----		17-Jun-2021	28 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_MW_WW_WG_2021_Q2_NP	E100	10-Jun-2021	----	----	----		17-Jun-2021	28 days	7 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_MW-03-04_WG_2021_Q2_NP	E100	10-Jun-2021	----	----	----		17-Jun-2021	28 days	7 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_MW_WW_WG_2021_Q2_NP	E125	10-Jun-2021	----	----	----		17-Jun-2021	0.25 hrs	172 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_MW-03-04_WG_2021_Q2_NP	E125	10-Jun-2021	----	----	----		17-Jun-2021	0.25 hrs	173 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_ER1GWS_WG_Q2-2021_NP	E125	10-Jun-2021	----	----	----		17-Jun-2021	0.25 hrs	174 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_ER1GWD_WG_2021_Q2_NP	E125	10-Jun-2021	----	----	----		17-Jun-2021	0.25 hrs	175 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE RG_MW_WW_WG_2021_Q2_NP	E108	10-Jun-2021	----	----	----		17-Jun-2021	0.25 hrs	161 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE RG_MW-03-04_WG_2021_Q2_NP	E108	10-Jun-2021	----	----	----		17-Jun-2021	0.25 hrs	162 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_ER1GWS_WG_Q2-2021_NP	E108	10-Jun-2021	----	----	----		17-Jun-2021	0.25 hrs	163 hrs		* EHTR-FM





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : pH by Meter</b>										
<b>HDPE</b> EV_ER1GWD_WG_2021_Q2_NP	E108	10-Jun-2021	----	----	----		17-Jun-2021	0.25 hrs	165 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> EV_ER1GWD_WG_2021_Q2_NP	E162	10-Jun-2021	----	----	----		16-Jun-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> EV_ER1GWS_WG_Q2-2021_NP	E162	10-Jun-2021	----	----	----		16-Jun-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> RG_MW_WW_WG_2021_Q2_NP	E162	10-Jun-2021	----	----	----		16-Jun-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> RG_MW-03-04_WG_2021_Q2_NP	E162	10-Jun-2021	----	----	----		16-Jun-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_ER1GWD_WG_2021_Q2_NP	E160-L	10-Jun-2021	----	----	----		16-Jun-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_ER1GWS_WG_Q2-2021_NP	E160-L	10-Jun-2021	----	----	----		16-Jun-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> RG_MW_WW_WG_2021_Q2_NP	E160-L	10-Jun-2021	----	----	----		16-Jun-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> RG_MW-03-04_WG_2021_Q2_NP	E160-L	10-Jun-2021	----	----	----		16-Jun-2021	7 days	6 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_ER1GWD_WG_2021_Q2_NP	E121	10-Jun-2021	----	----	----		13-Jun-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_ER1GWS_WG_Q2-2021_NP	E121	10-Jun-2021	----	----	----		13-Jun-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> RG_MW_WW_WG_2021_Q2_NP	E121	10-Jun-2021	----	----	----		13-Jun-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> RG_MW-03-04_WG_2021_Q2_NP	E121	10-Jun-2021	----	----	----		13-Jun-2021	3 days	3 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	223225	2	23	8.7	5.0	✓
Alkalinity Species by Titration	E290	223211	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	225883	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	219738	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	219739	1	4	25.0	5.0	✓
Conductivity in Water	E100	223209	1	11	9.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	220158	2	39	5.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	223866	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	220159	3	39	7.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	223606	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	219841	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	219742	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	219740	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	219741	1	4	25.0	5.0	✓
ORP by Electrode	E125	223483	1	18	5.5	5.0	✓
pH by Meter	E108	223210	1	11	9.0	5.0	✓
Sulfate in Water by IC	E235.SO4	219737	1	4	25.0	5.0	✓
TDS by Gravimetry	E162	222064	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	222271	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	223609	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	222476	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	219881	1	12	8.3	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	223225	2	23	8.7	5.0	✓
Alkalinity Species by Titration	E290	223211	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	225883	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	219738	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	219739	1	4	25.0	5.0	✓
Conductivity in Water	E100	223209	1	11	9.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	220158	2	39	5.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	223866	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	220159	2	39	5.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	223606	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	219841	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	219742	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	219740	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	219741	1	4	25.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	223483	1	18	5.5	5.0	✓
pH by Meter	E108	223210	1	11	9.0	5.0	✓
Sulfate in Water by IC	E235.SO4	219737	1	4	25.0	5.0	✓
TDS by Gravimetry	E162	222064	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	222271	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	223609	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	222476	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	222057	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	219881	1	12	8.3	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	223225	2	23	8.7	5.0	✓
Alkalinity Species by Titration	E290	223211	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	225883	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	219738	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	219739	1	4	25.0	5.0	✓
Conductivity in Water	E100	223209	1	11	9.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	220158	2	39	5.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	223866	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	220159	2	39	5.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	223606	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	219841	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	219742	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	219740	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	219741	1	4	25.0	5.0	✓
Sulfate in Water by IC	E235.SO4	219737	1	4	25.0	5.0	✓
TDS by Gravimetry	E162	222064	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	222271	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	223609	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	222476	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	222057	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	219881	1	12	8.3	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	225883	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	219738	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	219739	1	4	25.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	220158	2	39	5.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	223866	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	220159	3	39	7.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	223606	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	219841	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	219742	1	4	25.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	219740	1	4	25.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	219741	1	4	25.0	5.0	✔
Sulfate in Water by IC	E235.SO4	219737	1	4	25.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	222271	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	223609	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	222476	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101958**

**Page** : 1 of 17

**Amendment** : **1**

**Client** : Teck Coal Limited  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : Regional Effects Program  
**PO** : VPO00762695  
**C-O-C number** : COC\_RG\_WG\_Q2-2021  
**Sampler** : Monica Bartha  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 11-Jun-2021 08:30  
**Date Analysis Commenced** : 12-Jun-2021  
**Issue Date** : 27-Jan-2022 10:58

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta





## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 219881)</b>											
CG2101952-004	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 222064)</b>											
CG2101957-007	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	135	138	4	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 223209)</b>											
CG2101957-002	Anonymous	conductivity	----	E100	2.0	µS/cm	575	562	2.29%	10%	----
<b>Physical Tests (QC Lot: 223210)</b>											
CG2101957-002	Anonymous	pH	----	E108	0.10	pH units	8.40	8.44	0.475%	4%	----
<b>Physical Tests (QC Lot: 223211)</b>											
CG2101957-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	201	193	3.85%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	7.8	9.6	1.8	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	209	203	2.82%	20%	----
<b>Physical Tests (QC Lot: 223225)</b>											
CG2101951-021	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	12.2	<10.0	2.2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 223226)</b>											
CG2101958-002	RG_MW-03-04_WG_2021_Q2_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 223483)</b>											
CG2101951-026	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	357	362	1.45%	15%	----
<b>Anions and Nutrients (QC Lot: 219737)</b>											
CG2101958-001	RG_MW_WW_WG_2021_Q2_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	64.7	64.4	0.422%	20%	----
<b>Anions and Nutrients (QC Lot: 219738)</b>											
CG2101958-001	RG_MW_WW_WG_2021_Q2_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 219739)</b>											
CG2101958-001	RG_MW_WW_WG_2021_Q2_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.59	2.55	1.52%	20%	----
<b>Anions and Nutrients (QC Lot: 219740)</b>											
CG2101958-001	RG_MW_WW_WG_2021_Q2_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.06	2.06	0.160%	20%	----
<b>Anions and Nutrients (QC Lot: 219741)</b>											
CG2101958-001	RG_MW_WW_WG_2021_Q2_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 219742)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 219742) - continued</b>											
CG2101958-001	RG_MW_WW_WG_2021_Q2_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.186	0.178	0.008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 219841)</b>											
CG2101958-001	RG_MW_WW_WG_2021_Q2_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0010	<0.0010	0.00005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 222271)</b>											
CG2101953-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.242	0.180	0.062	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 222476)</b>											
CG2101951-025	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 225883)</b>											
CG2101951-026	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.661	0.644	2.62%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 223606)</b>											
CG2101945-009	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 223609)</b>											
CG2101945-008	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.46	4.22	0.24	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 220158)</b>											
CG2101929-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 220159)</b>											
CG2101929-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	0.00011	0.000004	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0734	0.0744	1.23%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.070	0.072	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0057 µg/L	<0.000050	0.0000007	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	58.4	59.8	2.42%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0325	0.0344	5.64%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.2	18.2	0.284%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00445	0.00440	1.14%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00135	0.00138	2.10%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 220159) - continued</b>											
CG2101929-001	Anonymous	potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.16	1.18	1.67%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	1.68 µg/L	0.00178	5.38%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.13	4.27	3.35%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	15.0	15.5	2.87%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.06	1.08	2.11%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	12.9	13.1	1.36%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000288	0.000291	0.887%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0037	0.0034	0.0003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 221021)</b>											
CG2101928-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 221022)</b>											
CG2101928-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0058	0.0058	0.00001	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00129	0.00136	5.93%	20%	----
CG2101928-001	Anonymous	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00021	0.00022	0.000002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00025	0.00026	0.000007	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.196	0.188	4.40%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0535 µg/L	0.0000525	1.82%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	39.8	38.5	3.31%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00030	0.00030	0.000002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0075	0.0073	0.0002	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	14.9	14.7	1.34%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00174	0.00171	1.85%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.58	1.52	4.28%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 221022) - continued</b>											
CG2101928-001	Anonymous	selenium, dissolved	7782-49-2	E421	0.050	mg/L	2.60 µg/L	0.00264	1.28%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.18	2.20	0.468%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	0.252	0.243	0.008	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0392	0.0395	0.928%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.04	3.06	0.02	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000273	0.000253	7.63%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00120	0.00118	0.00002	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0017	0.0014	0.0003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 223866)</b>											
CG2101951-016	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 219881)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 222057)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 222064)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 223209)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 223211)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 223225)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 223226)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 219737)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 219738)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 219739)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 219740)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 219741)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 219742)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 219841)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 222271)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 222476)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 222476) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 225883)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 223606)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 223609)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 220158)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 220159)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 220159) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 221021)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 221022)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----





Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 221022) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 223866)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 219881)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100.0	85.0	115	---
<b>Physical Tests (QCLot: 222057)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	85.9	85.0	115	---
<b>Physical Tests (QCLot: 222064)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.6	85.0	115	---
<b>Physical Tests (QCLot: 223209)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 223210)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 223211)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 223225)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 223226)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	108	85.0	115	---
<b>Physical Tests (QCLot: 223483)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 219737)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 219738)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.2	85.0	115	---
<b>Anions and Nutrients (QCLot: 219739)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 219740)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 219741)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 219742)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 219841)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 222271)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 222271) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	83.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 222476)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 225883)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 223606)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	109	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 223609)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	100.0	80.0	120	----
<b>Dissolved Metals (QCLot: 220158)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.7	80.0	120	----
<b>Dissolved Metals (QCLot: 220159)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.8	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.2	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.0	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	92.9	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	92.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.1	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.0	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	94.3	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	102	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 220159) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	87.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	94.3	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.7	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.5	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.6	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.5	80.0	120	----
<b>Dissolved Metals (QCLot: 221021)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
<b>Dissolved Metals (QCLot: 221022)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	108	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	112	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	106	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	110	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	112	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	106	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	108	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	109	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	106	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	114	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 221022) - continued</b>									
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	104	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	107	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	105	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	87.1	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 219737)</b>										
CG2101958-002	RG_MW-03-04_WG_2021_Q2_NP	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 219738)</b>										
CG2101958-002	RG_MW-03-04_WG_2021_Q2_NP	bromide	24959-67-9	E235.Br-L	0.521 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 219739)</b>										
CG2101958-002	RG_MW-03-04_WG_2021_Q2_NP	chloride	16887-00-6	E235.Cl-L	111 mg/L	100 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 219740)</b>										
CG2101958-002	RG_MW-03-04_WG_2021_Q2_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.72 mg/L	2.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 219741)</b>										
CG2101958-002	RG_MW-03-04_WG_2021_Q2_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.540 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 219742)</b>										
CG2101958-002	RG_MW-03-04_WG_2021_Q2_NP	fluoride	16984-48-8	E235.F	1.09 mg/L	1 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 219841)</b>										
CG2101958-002	RG_MW-03-04_WG_2021_Q2_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0578 mg/L	0.05 mg/L	116	70.0	130	----
<b>Anions and Nutrients (QCLot: 222271)</b>										
CG2101953-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.64 mg/L	2.5 mg/L	105	70.0	130	----
<b>Anions and Nutrients (QCLot: 222476)</b>										
CG2101951-026	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0495 mg/L	0.0676 mg/L	73.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 225883)</b>										
CG2101955-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.110 mg/L	0.1 mg/L	110	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 223606)</b>										
CG2101945-009	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	19.8 mg/L	23.9 mg/L	82.9	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 223609)</b>										
CG2101945-008	Anonymous	carbon, total organic [TOC]	----	E355-L	19.2 mg/L	23.9 mg/L	80.2	70.0	130	----
<b>Dissolved Metals (QCLot: 220158)</b>										
CG2101929-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 220159)</b>										
CG2101929-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.199 mg/L	0.2 mg/L	99.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00752 mg/L	0.01 mg/L	75.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00378 mg/L	0.004 mg/L	94.5	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.88 mg/L	2 mg/L	94.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0932 mg/L	0.1 mg/L	93.2	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.73 mg/L	4 mg/L	93.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.81 mg/L	10 mg/L	88.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00518 mg/L	0.004 mg/L	130	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.0 mg/L	20 mg/L	99.9	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00366 mg/L	0.004 mg/L	91.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0402 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00383 mg/L	0.004 mg/L	95.7	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0997 mg/L	0.1 mg/L	99.7	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.391 mg/L	0.4 mg/L	97.8	70.0	130	----
<b>Dissolved Metals (QCLot: 221021)</b>										
CG2101928-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 221022)</b>										
CG2101928-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.188 mg/L	0.2 mg/L	94.0	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 221022) - continued</b>										
CG2101928-001	Anonymous	antimony, dissolved	7440-36-0	E421	0.0211 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00944 mg/L	0.01 mg/L	94.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00400 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	98.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.04 mg/L	4 mg/L	101	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.52 mg/L	10 mg/L	95.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00413 mg/L	0.004 mg/L	103	70.0	130	----
		sodium, dissolved	7440-23-5	E421	2.02 mg/L	2 mg/L	101	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.2 mg/L	20 mg/L	96.0	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00415 mg/L	0.004 mg/L	104	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.408 mg/L	0.4 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 223866)</b>										
CG2101951-017	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000987 mg/L	0.0001 mg/L	98.7	70.0	130	----



COC ID: **COC\_RG\_WG\_Q2-2021**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program - Groundwater Samples - Q2 - 2021			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	kennedy.allen@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teck.lab.results@sharepoint.teck.com	X	X	
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	lyudmyla.shvets@teck.com	X	X	X
	463			Phone Number	403 407 1794			PO number:	VPO00762695			

Environmental Division  
Calgary  
Work Order Reference  
**CG2101958**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED										
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA				
RG_MW_WW_WG_2021_Q2_NP	RG_MW_WW	WP		10-Jun-21	14:35	G	5	1	1	1		1		1				
RG_MW-03-04_WG_2021_Q2_NP	RG_MW-03-04	WP		10-Jun-21	13:19	G	5	1	1	1		1		1				
EV_ER1GWD_WG_2021_Q2_NP	EV_ER1GWD	WP		10-Jun-21	10:45	G	5	1	1	1		1		1				
EV_ER1GWS_WG_Q2-2021_NP	EV_ER1GWS	WP		10-Jun-21	12:19	G	5	1	1	1		1		1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS:      RELINQUISHED BY/AFFILIATION:      DATE/TIME:      ACCEPTED BY/AFFILIATION:      DATE/TIME:

*[Handwritten signature and date: 6/11/2021]*

SERVICE REQUEST (rush - subject to availability)

Regular (default)       Priority (2-3 business days) - 50% surcharge      Emergency (1 Business Day) - 100% surcharge

Sampler's Name: **Monica Bartha**      Mobile #: **250-425-4784**

Sampler's Signature: *[Handwritten Signature]*      Date/TIME: **June 10, 2021**



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102766**  
**Client** : **Teck Coal Limited**  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_QAQC\_Q3-2021\_3  
**Sampler** : Evan Warner  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Jul-2021 08:50  
**Date Analysis Commenced** : 22-Jul-2021  
**Issue Date** : 04-Aug-2021 16:00

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-T_WP_ Q3-2021_3	RG_DW-F_WP_ Q3-2021_3	RG_DW-02-40_ WP_Q3-2021_3	----	----
(Matrix: Water)					Client sampling date / time	21-Jul-2021	21-Jul-2021 11:00	21-Jul-2021 10:50	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102766-001	CG2102766-002	CG2102766-003	-----	-----	
					Result	Result	Result	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	2.0	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	180	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	180	----	----	
conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	501	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	<0.50	<0.50	263	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	474	480	475	----	----	
pH	----	E108	0.10	pH units	5.45	5.25	8.06	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	350	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
turbidity	----	E121	0.10	NTU	<0.10	<0.10	0.19	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	<1.0	<1.0	219	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	2.43	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0.147	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0.300 <sup>TKN</sup>	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	3.51	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	91.5	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	----	<0.50	0.97	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0.83	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	<0.10	5.83	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-T_WP_ Q3-2021_3	RG_DW-F_WP_ Q3-2021_3	RG_DW-02-40_ WP_Q3-2021_3	----	----
Client sampling date / time					21-Jul-2021	21-Jul-2021 11:00	21-Jul-2021 10:50	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102766-001	CG2102766-002	CG2102766-003	-----	-----	
					Result	Result	Result	---	---	
<b>Ion Balance</b>										
cation sum	----	EC101	0.10	meq/L	<0.10	<0.10	5.40	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	100	92.6	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	<0.010	3.83	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	0.0970	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	<0.010	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	<0.0050	0.0082	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	66.5	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00028	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	<0.10	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0.00140	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0.024	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0.0077	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	21.4	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0.00085	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0.00112	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	<0.050	0.657	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	<0.050	14.7	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	2.40	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	<0.050	<0.050	2.84	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	0.260	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	30.3	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-T_WP_ Q3-2021_3	RG_DW-F_WP_ Q3-2021_3	RG_DW-02-40_ WP_Q3-2021_3	----	----
(Matrix: Water)					Client sampling date / time	21-Jul-2021	21-Jul-2021 11:00	21-Jul-2021 10:50	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102766-001	CG2102766-002	CG2102766-003	-----	-----	
					Result	Result	Result	---	---	
<b>Total Metals</b>										
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0.00110	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0.0030	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	---	<0.0010	<0.0010	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	---	<0.00010	<0.00010	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	---	<0.00010	<0.00010	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	---	<0.00010	0.0973	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	---	<0.020	<0.020	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	---	<0.000050	<0.000050	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	---	<0.010	<0.010	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	---	<0.0050	0.0071	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	70.7	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	---	<0.00010	0.00022	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	---	<0.10	<0.10	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	---	0.00050 <sup>RRV</sup>	0.00142	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	---	<0.010	<0.010	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	---	<0.000050	<0.000050	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	---	<0.0010	0.0078	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	21.0	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	---	<0.00010	0.00063	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	---	<0.000050	0.00109	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	---	<0.00050	<0.00050	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0.670	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	---	<0.050	16.8	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	---	<0.050	2.35	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	---	<0.000010	<0.000010	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	<0.050	2.85	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	---	<0.00020	0.261	---	---	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	---	<0.50	31.3	---	---	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	---	<0.000010	<0.000010	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-T_WP_ Q3-2021_3	RG_DW-F_WP_ Q3-2021_3	RG_DW-02-40_ WP_Q3-2021_3	----	----
Client sampling date / time					21-Jul-2021	21-Jul-2021 11:00	21-Jul-2021 10:50	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102766-001	CG2102766-002	CG2102766-003	-----	-----	
					Result	Result	Result	---	---	
<b>Dissolved Metals</b>										
tin, dissolved	7440-31-5	E421	0.00010	mg/L	----	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	----	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	----	<0.000010	0.00108	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	----	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	----	<0.0010	0.0035	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102766</b>	Page	: 1 of 16
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 22-Jul-2021 08:50
PO	: VPO00762695	Issue Date	: 04-Aug-2021 16:00
C-O-C number	: COC_QAQC_Q3-2021_3		
Sampler	: Evan Warner		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-40_WP_Q3-2021_3	E298	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-F_WP_Q3-2021_3	E298	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-T_WP_Q3-2021_3	E298	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-02-40_WP_Q3-2021_3	E235.Br-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-F_WP_Q3-2021_3	E235.Br-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-T_WP_Q3-2021_3	E235.Br-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-02-40_WP_Q3-2021_3	E235.Cl-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE RG_DW-F_WP_Q3-2021_3	E235.Cl-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE RG_DW-T_WP_Q3-2021_3	E235.Cl-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE RG_DW-02-40_WP_Q3-2021_3	E378-U	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE RG_DW-F_WP_Q3-2021_3	E378-U	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE RG_DW-T_WP_Q3-2021_3	E378-U	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE RG_DW-02-40_WP_Q3-2021_3	E235.F	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE RG_DW-F_WP_Q3-2021_3	E235.F	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE RG_DW-T_WP_Q3-2021_3	E235.F	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE RG_DW-02-40_WP_Q3-2021_3	E235.NO3-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_DW-F_WP_Q3-2021_3	E235.NO3-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_DW-T_WP_Q3-2021_3	E235.NO3-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_DW-02-40_WP_Q3-2021_3	E235.NO2-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_DW-F_WP_Q3-2021_3	E235.NO2-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_DW-T_WP_Q3-2021_3	E235.NO2-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_DW-02-40_WP_Q3-2021_3	E235.SO4	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_DW-F_WP_Q3-2021_3	E235.SO4	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_DW-T_WP_Q3-2021_3	E235.SO4	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
Amber glass total (sulfuric acid) RG_DW-02-40_WP_Q3-2021_3	E318	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-F_WP_Q3-2021_3	E318	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-T_WP_Q3-2021_3	E318	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-40_WP_Q3-2021_3	E372-U	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-F_WP_Q3-2021_3	E372-U	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-T_WP_Q3-2021_3	E372-U	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-02-40_WP_Q3-2021_3	E421.Cr-L	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-F_WP_Q3-2021_3	E421.Cr-L	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-02-40_WP_Q3-2021_3	E421	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-F_WP_Q3-2021_3	E421	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-T_WP_Q3-2021_3	E421	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-F_WP_Q3-2021_3	E358-L	21-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-02-40_WP_Q3-2021_3	E358-L	21-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	28 days	8 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-F_WP_Q3-2021_3	E355-L	21-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	7 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-T_WP_Q3-2021_3	E355-L	21-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	7 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-40_WP_Q3-2021_3	E355-L	21-Jul-2021	27-Jul-2021	----	----		29-Jul-2021	28 days	8 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-02-40_WP_Q3-2021_3	E283	21-Jul-2021	----	----	----		22-Jul-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-F_WP_Q3-2021_3	E283	21-Jul-2021	----	----	----		22-Jul-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-T_WP_Q3-2021_3	E283	21-Jul-2021	----	----	----		22-Jul-2021	14 days	1 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE RG_DW-02-40_WP_Q3-2021_3	E290	21-Jul-2021	----	----	----		25-Jul-2021	14 days	4 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE RG_DW-F_WP_Q3-2021_3	E290	21-Jul-2021	----	----	----		25-Jul-2021	14 days	4 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE RG_DW-T_WP_Q3-2021_3	E290	21-Jul-2021	----	----	----		25-Jul-2021	14 days	4 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_DW-02-40_WP_Q3-2021_3	E100	21-Jul-2021	----	----	----		25-Jul-2021	28 days	4 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_DW-F_WP_Q3-2021_3	E100	21-Jul-2021	----	----	----		25-Jul-2021	28 days	4 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_DW-T_WP_Q3-2021_3	E100	21-Jul-2021	----	----	----		25-Jul-2021	28 days	4 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-T_WP_Q3-2021_3	E125	21-Jul-2021	----	----	----		28-Jul-2021	0.34 hrs	173 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-02-40_WP_Q3-2021_3	E125	21-Jul-2021	----	----	----		28-Jul-2021	0.34 hrs	176 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-F_WP_Q3-2021_3	E125	21-Jul-2021	----	----	----		28-Jul-2021	0.34 hrs	176 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-T_WP_Q3-2021_3	E108	21-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	90 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-02-40_WP_Q3-2021_3	E108	21-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	93 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-F_WP_Q3-2021_3	E108	21-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	93 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-02-40_WP_Q3-2021_3	E162	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-F_WP_Q3-2021_3	E162	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-T_WP_Q3-2021_3	E162	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE RG_DW-02-40_WP_Q3-2021_3	E160-L	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE RG_DW-F_WP_Q3-2021_3	E160-L	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE RG_DW-T_WP_Q3-2021_3	E160-L	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> RG_DW-02-40_WP_Q3-2021_3	E121	21-Jul-2021	----	----	----		23-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> RG_DW-F_WP_Q3-2021_3	E121	21-Jul-2021	----	----	----		23-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> RG_DW-T_WP_Q3-2021_3	E121	21-Jul-2021	----	----	----		23-Jul-2021	3 days	2 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> RG_DW-02-40_WP_Q3-2021_3	E420.Cr-L	21-Jul-2021	----	----	----		25-Jul-2021	180 days	4 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> RG_DW-F_WP_Q3-2021_3	E420.Cr-L	21-Jul-2021	----	----	----		25-Jul-2021	180 days	4 days	✔	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE total (nitric acid)</b> RG_DW-T_WP_Q3-2021_3	E420.Cr-L	21-Jul-2021	----	----	----		25-Jul-2021	180 days	4 days	✔	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> RG_DW-02-40_WP_Q3-2021_3	E420	21-Jul-2021	----	----	----		25-Jul-2021	180 days	4 days	✔	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> RG_DW-F_WP_Q3-2021_3	E420	21-Jul-2021	----	----	----		25-Jul-2021	180 days	4 days	✔	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> RG_DW-T_WP_Q3-2021_3	E420	21-Jul-2021	----	----	----		25-Jul-2021	180 days	4 days	✔	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended



Page : 10 of 16  
Work Order : CG2102766  
Client : Teck Coal Limited  
Project : REGIONAL EFFECTS PROGRAM

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	249443	1	17	5.8	5.0	✓
Alkalinity Species by Titration	E290	251330	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	252485	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	249394	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	249395	1	15	6.6	5.0	✓
Conductivity in Water	E100	251329	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	253022	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252471	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252997	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249465	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	249398	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	249396	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	249397	1	15	6.6	5.0	✓
ORP by Electrode	E125	253837	1	13	7.6	5.0	✓
pH by Meter	E108	251328	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	249393	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	252419	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250704	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251414	2	33	6.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	250703	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253002	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250080	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	249944	1	9	11.1	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	249443	1	17	5.8	5.0	✓
Alkalinity Species by Titration	E290	251330	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	252485	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	249394	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	249395	1	15	6.6	5.0	✓
Conductivity in Water	E100	251329	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	253022	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252471	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252997	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249465	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	249398	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	249396	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	249397	1	15	6.6	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	253837	1	13	7.6	5.0	✓
pH by Meter	E108	251328	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	249393	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	252419	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250704	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251414	2	33	6.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	250703	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253002	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250080	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	252413	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	249944	1	9	11.1	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	249443	1	17	5.8	5.0	✓
Alkalinity Species by Titration	E290	251330	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	252485	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	249394	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	249395	1	15	6.6	5.0	✓
Conductivity in Water	E100	251329	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	253022	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252471	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252997	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249465	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	249398	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	249396	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	249397	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	249393	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	252419	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250704	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251414	2	33	6.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	250703	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253002	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250080	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	252413	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	249944	1	9	11.1	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	252485	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	249394	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	249395	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	253022	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252471	1	12	8.3	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252997	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249465	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	249398	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	249396	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	249397	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	249393	1	15	6.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250704	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251414	2	33	6.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	250703	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253002	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250080	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> , dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Calgary - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2102766**

**Page** : 1 of 21

**Client** : Teck Coal Limited  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_QAQC\_Q3-2021\_3  
**Sampler** : Evan Warner  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Jul-2021 08:50  
**Date Analysis Commenced** : 22-Jul-2021  
**Issue Date** : 04-Aug-2021 16:00

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta





## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 249443)</b>											
CG2102750-001	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	27.0	27.5	0.5	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 249944)</b>											
CG2102762-001	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 251328)</b>											
CG2102754-001	Anonymous	pH	----	E108	0.10	pH units	7.46	7.49	0.401%	4%	----
<b>Physical Tests (QC Lot: 251329)</b>											
CG2102757-001	Anonymous	conductivity	----	E100	2.0	µS/cm	701	700	0.143%	10%	----
<b>Physical Tests (QC Lot: 251330)</b>											
CG2102757-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	326	331	1.58%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	326	331	1.58%	20%	----
<b>Physical Tests (QC Lot: 252419)</b>											
CG2102762-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	242	234	3.57%	20%	----
<b>Physical Tests (QC Lot: 253837)</b>											
CG2102753-005	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	456	468	2.79%	15%	----
<b>Anions and Nutrients (QC Lot: 249393)</b>											
CG2102753-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	276	278	0.570%	20%	----
<b>Anions and Nutrients (QC Lot: 249394)</b>											
CG2102753-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249395)</b>											
CG2102753-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.42	0.29	0.13	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249396)</b>											
CG2102753-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	9.83	9.87	0.423%	20%	----
<b>Anions and Nutrients (QC Lot: 249397)</b>											
CG2102753-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0043	0.0045	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249398)</b>											
CG2102753-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.241	0.236	2.06%	20%	----
<b>Anions and Nutrients (QC Lot: 249465)</b>											
CG2102750-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250080)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 250080) - continued</b>											
CG2102753-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0065	0.0070	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 251414)</b>											
CG2102752-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 251415)</b>											
CG2102766-003	RG_DW-02-40_WP_Q3-20 21_3	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.300	0.217	0.083	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 252485)</b>											
CG2102752-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.153	0.145	5.84%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 252997)</b>											
CG2102762-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.31	1.10	0.21	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 253002)</b>											
CG2102762-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.34	1.21	0.13	Diff <2x LOR	----
<b>Total Metals (QC Lot: 250703)</b>											
CG2102752-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 250703) - continued</b>											
CG2102752-001	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 250704)</b>											
CG2102752-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 252471)</b>											
CG2102741-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0096	0.0092	0.0005	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00024	0.00025	0.000009	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	0.00012	0.000007	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00636	0.00667	4.73%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.035	0.036	0.0009	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000509	0.0000574	11.9%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	24.9	25.6	2.91%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00051	0.00053	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.409	0.413	0.970%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.010	0.010	0.00001	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000987	0.00100	1.58%	20%	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0271	0.0276	1.67%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	84.4	85.7	1.58%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0216	0.0216	0.208%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000826	0.000869	5.18%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0106	0.0108	1.78%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	9.84	9.87	0.348%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.0191	0.0195	2.00%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.24	2.29	2.62%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000010	<0.000010	0.0000001	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	140	139	0.310%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0678	0.0703	3.65%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 252471) - continued</b>											
CG2102741-003	Anonymous	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	132	140	5.75%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000030	0.000030	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00347	0.00349	0.693%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0515	0.0514	0.0878%	20%	----
<b>Dissolved Metals (QC Lot: 253021)</b>											
CG2102752-001	Anonymous	cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0143 µg/L	0.0000173	0.0000030	Diff <2x LOR	----
CG2102752-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 253021) - continued</b>											
CG2102752-001	Anonymous	titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 253022)</b>											
CG2102752-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 249443)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 249944)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 251329)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 251330)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 252413)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 252419)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 249393)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 249394)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 249395)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 249396)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 249397)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 249398)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 249465)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 250080)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 251414)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 251415)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 251415) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 252485)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 252997)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 253002)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 250703)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 250703) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 250704)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 252471)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 252471) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 253021)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 253022)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 249443)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	101	85.0	115	----
<b>Physical Tests (QCLot: 249944)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	95.8	85.0	115	----
<b>Physical Tests (QCLot: 251328)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 251329)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	95.0	90.0	110	----
<b>Physical Tests (QCLot: 251330)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	99.8	85.0	115	----
<b>Physical Tests (QCLot: 252413)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	97.3	85.0	115	----
<b>Physical Tests (QCLot: 252419)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	93.3	85.0	115	----
<b>Physical Tests (QCLot: 253837)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	103	95.4	104	----
<b>Anions and Nutrients (QCLot: 249393)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 249394)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.0	85.0	115	----
<b>Anions and Nutrients (QCLot: 249395)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 249396)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 249397)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.0	90.0	110	----
<b>Anions and Nutrients (QCLot: 249398)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	94.5	90.0	110	----
<b>Anions and Nutrients (QCLot: 249465)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 250080)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 251414)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Anions and Nutrients (QCLot: 251414) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	122	75.0	125	----
<b>Anions and Nutrients (QCLot: 251415)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	123	75.0	125	----
<b>Anions and Nutrients (QCLot: 252485)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.6	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 252997)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	100	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 253002)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Total Metals (QCLot: 250703)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.5	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.3	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.1	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	101	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	99.8	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	97.9	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 250703) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.0	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.3	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	96.8	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	100	80.0	120	----
<b>Total Metals (QCLot: 250704)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 252471)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.5	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	95.9	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	95.7	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	95.8	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.8	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.9	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.7	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.2	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	105	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.5	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 252471) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.5	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	95.1	80.0	120	----
<b>Dissolved Metals (QCLot: 253021)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	107	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	100	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	108	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 253022)</b>									

Page : 17 of 21  
 Work Order : CG2102766  
 Client : Teck Coal Limited  
 Project : REGIONAL EFFECTS PROGRAM



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 253022) - continued</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 249393)</b>										
CG2102753-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	114 mg/L	100 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 249394)</b>										
CG2102753-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.514 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 249395)</b>										
CG2102753-004	Anonymous	chloride	16887-00-6	E235.Cl-L	112 mg/L	100 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 249396)</b>										
CG2102753-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.71 mg/L	2.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 249397)</b>										
CG2102753-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.536 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 249398)</b>										
CG2102753-004	Anonymous	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 249465)</b>										
CG2102750-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0509 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 250080)</b>										
CG2102753-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0598 mg/L	0.0676 mg/L	88.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 251414)</b>										
CG2102752-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.56 mg/L	2.5 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 251415)</b>										
CG2102767-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.87 mg/L	2.5 mg/L	74.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 252485)</b>										
CG2102753-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.113 mg/L	0.1 mg/L	113	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 252997)</b>										
CG2102762-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.0 mg/L	23.9 mg/L	104	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 253002)</b>										
CG2102762-001	Anonymous	carbon, total organic [TOC]	----	E355-L	26.0 mg/L	23.9 mg/L	109	70.0	130	----
<b>Total Metals (QCLot: 250703)</b>										
CG2102752-002	Anonymous	aluminum, total	7429-90-5	E420	0.192 mg/L	0.2 mg/L	96.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 250703) - continued</b>										
CG2102752-002	Anonymous	arsenic, total	7440-38-2	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00966 mg/L	0.01 mg/L	96.6	70.0	130	----
		boron, total	7440-42-8	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		iron, total	7439-89-6	E420	1.97 mg/L	2 mg/L	98.5	70.0	130	----
		lead, total	7439-92-1	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0392 mg/L	0.04 mg/L	98.1	70.0	130	----
		potassium, total	7440-09-7	E420	4.08 mg/L	4 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, total	7440-21-3	E420	9.61 mg/L	10 mg/L	96.1	70.0	130	----
		silver, total	7440-22-4	E420	0.00395 mg/L	0.004 mg/L	98.7	70.0	130	----
		sodium, total	17341-25-2	E420	2.03 mg/L	2 mg/L	101	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	20.8 mg/L	20 mg/L	104	70.0	130	----
		thallium, total	7440-28-0	E420	0.00381 mg/L	0.004 mg/L	95.3	70.0	130	----
		tin, total	7440-31-5	E420	0.0196 mg/L	0.02 mg/L	98.3	70.0	130	----
		titanium, total	7440-32-6	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, total	7440-61-1	E420	0.00382 mg/L	0.004 mg/L	95.6	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.394 mg/L	0.4 mg/L	98.5	70.0	130	----
<b>Total Metals (QCLot: 250704)</b>										
CG2102752-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	----
<b>Dissolved Metals (QCLot: 252471)</b>										
CG2102749-011	Anonymous	aluminum, dissolved	7429-90-5	E421	1.99 mg/L	2 mg/L	99.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.195 mg/L	0.2 mg/L	97.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.196 mg/L	0.2 mg/L	98.0	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 252471) - continued</b>										
CG2102749-011	Anonymous	beryllium, dissolved	7440-41-7	E421	0.395 mg/L	0.4 mg/L	98.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.110 mg/L	0.1 mg/L	110	70.0	130	----
		boron, dissolved	7440-42-8	E421	1.07 mg/L	1 mg/L	107	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		calcium, dissolved	7440-70-2	E421	39.8 mg/L	40 mg/L	99.6	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.205 mg/L	0.2 mg/L	103	70.0	130	----
		iron, dissolved	7439-89-6	E421	19.7 mg/L	20 mg/L	98.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.208 mg/L	0.2 mg/L	104	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.956 mg/L	1 mg/L	95.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	9.88 mg/L	10 mg/L	98.8	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.215 mg/L	0.2 mg/L	108	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.403 mg/L	0.4 mg/L	101	70.0	130	----
		potassium, dissolved	7440-09-7	E421	39.6 mg/L	40 mg/L	99.1	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.402 mg/L	0.4 mg/L	100	70.0	130	----
		silicon, dissolved	7440-21-3	E421	97.3 mg/L	100 mg/L	97.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		sodium, dissolved	17341-25-2	E421	20.3 mg/L	20 mg/L	101	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.214 mg/L	0.2 mg/L	107	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	205 mg/L	200 mg/L	103	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.401 mg/L	0.4 mg/L	100	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	1.01 mg/L	1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.90 mg/L	4 mg/L	97.5	70.0	130	----
<b>Dissolved Metals (QCLot: 253021)</b>										
CG2102752-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.203 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00902 mg/L	0.01 mg/L	90.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00405 mg/L	0.004 mg/L	101	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 253021) - continued</b>										
CG2102752-002	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0196 mg/L	0.02 mg/L	98.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.97 mg/L	2 mg/L	98.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.88 mg/L	4 mg/L	96.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0432 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.27 mg/L	10 mg/L	92.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.99 mg/L	2 mg/L	99.6	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.8 mg/L	20 mg/L	104	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.410 mg/L	0.4 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 253022)</b>										
CG2102752-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----

COC ID:

COC-QAQC\_Q3-2021\_3

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job# Regional Effects Program

Lab Name ALS Calgary

Report Format / Distribution

Excel PDF EDD

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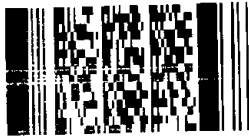
Phone Number 403-407-1800

PO number

VPO00762695

Environmental Division  
Calgary

Work Order Reference  
CG2102766



Telephone: +1 403 407 1800

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered by Field Lab Field Lab None

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FIL	ANALYSIS REQUESTED										
									F	N	F	N	F	N	N				
RG_DW-T_WP_Q3-2021_3	RG_DW-T	WP	N	21-Jul-21		G	3	H2SO4	H2SO4	HCL	HCL	HNO3	HNO3						
RG_DW-F_WP_Q3-2021_3	RG_DW-F	WP	N	21-Jul-21	1100	G	5	ALS_Package-DOC	ALS_Package-TRN/TOC	IG-D-CYAF-VA	IG-T-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA					
RG_DW-02-40_WP_Q3-2021_3	RG_DW-02-40	WP	N	21-Jul-21	1050	G	5												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS:

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

*Monica Bartha*  
7/22/2021

SERVICE REQUEST (rush - subject to availability)

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

*Monica Bartha*

Mobile #

250-425-4784

Sampler's Signature

*Monica Bartha*

Date/Time

July 21, 2021

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2102769**  
**Client** : **Teck Coal Limited**  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_02-20\_Q3-2021  
**Sampler** : Evan Warner  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Jul-2021 08:50  
**Date Analysis Commenced** : 22-Jul-2021  
**Issue Date** : 30-Jul-2021 12:19

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-02-20_	----	----	----	----
(Matrix: Water)						WP_Q3-2021_N				
					Client sampling date / time	21-Jul-2021 10:50	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2102769-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	176	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	176	---	---	---	---	---
conductivity	----	E100	2.0	µS/cm	498	---	---	---	---	---
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	262	---	---	---	---	---
oxidation-reduction potential [ORP]	----	E125	0.10	mV	482	---	---	---	---	---
pH	----	E108	0.10	pH units	8.12	---	---	---	---	---
solids, total dissolved [TDS]	----	E162	10	mg/L	347	---	---	---	---	---
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	---	---	---	---	---
turbidity	----	E121	0.10	NTU	0.18	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	214	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0052	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.58	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.149	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.309 <sup>TKN</sup>	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	3.51	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	91.6	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.87	---	---	---	---	---
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.42	---	---	---	---	---
<b>Ion Balance</b>										





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-02-20_ WP_Q3-2021_N P	----	----	----	----
Client sampling date / time					21-Jul-2021 10:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102769-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.76	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	5.37	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.2	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.50	----	----	----	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0976	----	----	----	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0091	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	67.9	----	----	----	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00021	----	----	----	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00144	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.022	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0080	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	21.5	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00093	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00110	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	0.664	----	----	----	----	
selenium, total	7782-49-2	E420	0.050	µg/L	14.6	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.47	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	2.92	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.262	----	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	31.6	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-02-20_ WP_Q3-2021_N P	----	----	----	----
Client sampling date / time					21-Jul-2021 10:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102769-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, total	7440-61-1	E420	0.00010	mg/L	0.00109	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0033	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.100	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0062	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	70.5	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00020	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00132	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0080	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	20.8	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00065	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00110	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.672	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	16.6	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.37	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.78	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-02-20_ WP_Q3-2021_N P	----	----	----	----
Client sampling date / time					21-Jul-2021 10:50	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102769-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.266	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	30.7	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00106	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0035	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102769</b>	Page	: 1 of 10
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 22-Jul-2021 08:50
PO	: VPO00762695	Issue Date	: 30-Jul-2021 12:19
C-O-C number	: COC_02-20_Q3-2021		
Sampler	: Evan Warner		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-20_WP_Q3-2021_NP	E298	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q3-2021_NP	E235.Br-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q3-2021_NP	E235.Cl-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q3-2021_NP	E378-U	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q3-2021_NP	E235.F	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q3-2021_NP	E235.NO3-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_Q3-2021_NP	E235.NO2-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> RG_DW-02-20_WP_Q3-2021_NP	E235.SO4	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-20_WP_Q3-2021_NP	E318	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-20_WP_Q3-2021_NP	E372-U	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-02-20_WP_Q3-2021_NP	E421.Cr-L	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-02-20_WP_Q3-2021_NP	E421	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-02-20_WP_Q3-2021_NP	E358-L	21-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-20_WP_Q3-2021_NP	E355-L	21-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-02-20_WP_Q3-2021_NP	E283	21-Jul-2021	----	----	----		22-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> RG_DW-02-20_WP_Q3-2021_NP	E290	21-Jul-2021	----	----	----		25-Jul-2021	14 days	4 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_DW-02-20_WP_Q3-2021_NP	E100	21-Jul-2021	----	----	----		25-Jul-2021	28 days	4 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-02-20_WP_Q3-2021_NP	E125	21-Jul-2021	----	----	----		28-Jul-2021	0.34 hrs	176 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-02-20_WP_Q3-2021_NP	E108	21-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	93 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-02-20_WP_Q3-2021_NP	E162	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE RG_DW-02-20_WP_Q3-2021_NP	E160-L	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE RG_DW-02-20_WP_Q3-2021_NP	E121	21-Jul-2021	----	----	----		23-Jul-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) RG_DW-02-20_WP_Q3-2021_NP	E420.Cr-L	21-Jul-2021	----	----	----		25-Jul-2021	180 days	4 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
HDPE total (nitric acid) RG_DW-02-20_WP_Q3-2021_NP	E420	21-Jul-2021	----	----	----		25-Jul-2021	180 days	4 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	249443	1	17	5.8	5.0	✓
Alkalinity Species by Titration	E290	251330	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	252639	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	249394	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	249395	1	15	6.6	5.0	✓
Conductivity in Water	E100	251329	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	253022	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	253021	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252997	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249465	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	249398	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	249396	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	249397	1	15	6.6	5.0	✓
ORP by Electrode	E125	253837	1	13	7.6	5.0	✓
pH by Meter	E108	251331	1	2	50.0	5.0	✓
Sulfate in Water by IC	E235.SO4	249393	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	252419	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250704	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251415	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	250703	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253002	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250081	1	5	20.0	5.0	✓
Turbidity by Nephelometry	E121	249944	1	9	11.1	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	249443	1	17	5.8	5.0	✓
Alkalinity Species by Titration	E290	251330	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	252639	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	249394	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	249395	1	15	6.6	5.0	✓
Conductivity in Water	E100	251329	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	253022	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	253021	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252997	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249465	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	249398	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	249396	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	249397	1	15	6.6	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	253837	1	13	7.6	5.0	✓
pH by Meter	E108	251331	1	2	50.0	5.0	✓
Sulfate in Water by IC	E235.SO4	249393	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	252419	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250704	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251415	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	250703	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253002	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250081	1	5	20.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	252413	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	249944	1	9	11.1	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	249443	1	17	5.8	5.0	✓
Alkalinity Species by Titration	E290	251330	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	252639	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	249394	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	249395	1	15	6.6	5.0	✓
Conductivity in Water	E100	251329	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	253022	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	253021	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252997	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249465	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	249398	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	249396	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	249397	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	249393	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	252419	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250704	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251415	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	250703	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253002	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250081	1	5	20.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	252413	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	249944	1	9	11.1	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	252639	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	249394	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	249395	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	253022	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	253021	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252997	1	13	7.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249465	1	19	5.2	5.0	✔
Fluoride in Water by IC	E235.F	249398	1	15	6.6	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	249396	1	15	6.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	249397	1	15	6.6	5.0	✔
Sulfate in Water by IC	E235.SO4	249393	1	15	6.6	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250704	1	12	8.3	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251415	1	13	7.6	5.0	✔
Total Metals in Water by CRC ICPMS	E420	250703	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253002	1	10	10.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250081	1	5	20.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2102769**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_02-20\_Q3-2021  
**Sampler** : Evan Warner  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Jul-2021 08:50  
**Date Analysis Commenced** : 22-Jul-2021  
**Issue Date** : 30-Jul-2021 12:19

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 249443)</b>											
CG2102750-001	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	27.0	27.5	0.5	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 249944)</b>											
CG2102762-001	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 251329)</b>											
CG2102757-001	Anonymous	conductivity	----	E100	2.0	µS/cm	701	700	0.143%	10%	----
<b>Physical Tests (QC Lot: 251330)</b>											
CG2102757-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	326	331	1.58%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	326	331	1.58%	20%	----
<b>Physical Tests (QC Lot: 251331)</b>											
CG2102768-001	Anonymous	pH	----	E108	0.10	pH units	8.02	8.05	0.373%	4%	----
<b>Physical Tests (QC Lot: 252419)</b>											
CG2102762-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	242	234	3.57%	20%	----
<b>Physical Tests (QC Lot: 253837)</b>											
CG2102753-005	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	456	468	2.79%	15%	----
<b>Anions and Nutrients (QC Lot: 249393)</b>											
CG2102753-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	276	278	0.570%	20%	----
<b>Anions and Nutrients (QC Lot: 249394)</b>											
CG2102753-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249395)</b>											
CG2102753-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.42	0.29	0.13	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249396)</b>											
CG2102753-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	9.83	9.87	0.423%	20%	----
<b>Anions and Nutrients (QC Lot: 249397)</b>											
CG2102753-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0043	0.0045	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249398)</b>											
CG2102753-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.241	0.236	2.06%	20%	----
<b>Anions and Nutrients (QC Lot: 249465)</b>											
CG2102750-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250081)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 250081) - continued</b>											
CG2102769-001	RG_DW-02-20_WP_Q3-20 21_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 251415)</b>											
CG2102766-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.300	0.217	0.083	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 252639)</b>											
CG2102768-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 252997)</b>											
CG2102762-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.31	1.10	0.21	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 253002)</b>											
CG2102762-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.34	1.21	0.13	Diff <2x LOR	----
<b>Total Metals (QC Lot: 250703)</b>											
CG2102752-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	<0.0050 µg/L	<0.000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 250703) - continued</b>											
CG2102752-001	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 250704)</b>											
CG2102752-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 253021)</b>											
CG2102752-001	Anonymous	cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0143 µg/L	0.0000173	0.0000030	Diff <2x LOR	----
CG2102752-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 253021) - continued</b>											
CG2102752-001	Anonymous	tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 253022)</b>											
CG2102752-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 249443)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 249944)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 251329)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 251330)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 252413)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 252419)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 249393)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 249394)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 249395)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 249396)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 249397)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 249398)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 249465)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 250081)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 251415)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 252639)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 252639) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 252997)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 253002)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 250703)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 250703) - continued</b>						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Total Metals (QCLot: 250704)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 253021)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 253022)</b>						

Page : 10 of 17  
Work Order : CG2102769  
Client : Teck Coal Limited  
Project : REGIONAL EFFECTS PROGRAM



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 253022) - continued</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 249443)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 249944)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	95.8	85.0	115	---
<b>Physical Tests (QCLot: 251329)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	95.0	90.0	110	---
<b>Physical Tests (QCLot: 251330)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	99.8	85.0	115	---
<b>Physical Tests (QCLot: 251331)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 252413)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	97.3	85.0	115	---
<b>Physical Tests (QCLot: 252419)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	93.3	85.0	115	---
<b>Physical Tests (QCLot: 253837)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Anions and Nutrients (QCLot: 249393)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 249394)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.0	85.0	115	---
<b>Anions and Nutrients (QCLot: 249395)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 249396)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 249397)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 249398)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	94.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 249465)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	101	80.0	120	---
<b>Anions and Nutrients (QCLot: 250081)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 251415)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 251415) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	123	75.0	125	----
<b>Anions and Nutrients (QCLot: 252639)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.2	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 252997)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	100	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 253002)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Total Metals (QCLot: 250703)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.5	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.3	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.1	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	101	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	99.8	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	97.9	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.0	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 250703) - continued</b>									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.3	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	96.8	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	100	80.0	120	----
<b>Total Metals (QCLot: 250704)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 253021)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	107	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	100	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	108	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.8	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 253021) - continued</b>									
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 253022)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 249393)</b>										
CG2102753-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	114 mg/L	100 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 249394)</b>										
CG2102753-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.514 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 249395)</b>										
CG2102753-004	Anonymous	chloride	16887-00-6	E235.Cl-L	112 mg/L	100 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 249396)</b>										
CG2102753-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.71 mg/L	2.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 249397)</b>										
CG2102753-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.536 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 249398)</b>										
CG2102753-004	Anonymous	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 249465)</b>										
CG2102750-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0509 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 250081)</b>										
SK2102493-001	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 251415)</b>										
CG2102767-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.87 mg/L	2.5 mg/L	74.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 252639)</b>										
CG2102769-001	RG_DW-02-20_WP_Q3-2021_NP	ammonia, total (as N)	7664-41-7	E298	0.0986 mg/L	0.1 mg/L	98.6	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 252997)</b>										
CG2102762-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.0 mg/L	23.9 mg/L	104	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 253002)</b>										
CG2102762-001	Anonymous	carbon, total organic [TOC]	----	E355-L	26.0 mg/L	23.9 mg/L	109	70.0	130	----
<b>Total Metals (QCLot: 250703)</b>										
CG2102752-002	Anonymous	aluminum, total	7429-90-5	E420	0.192 mg/L	0.2 mg/L	96.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 250703) - continued</b>										
CG2102752-002	Anonymous	barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00966 mg/L	0.01 mg/L	96.6	70.0	130	----
		boron, total	7440-42-8	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		iron, total	7439-89-6	E420	1.97 mg/L	2 mg/L	98.5	70.0	130	----
		lead, total	7439-92-1	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0392 mg/L	0.04 mg/L	98.1	70.0	130	----
		potassium, total	7440-09-7	E420	4.08 mg/L	4 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, total	7440-21-3	E420	9.61 mg/L	10 mg/L	96.1	70.0	130	----
		silver, total	7440-22-4	E420	0.00395 mg/L	0.004 mg/L	98.7	70.0	130	----
		sodium, total	17341-25-2	E420	2.03 mg/L	2 mg/L	101	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	20.8 mg/L	20 mg/L	104	70.0	130	----
		thallium, total	7440-28-0	E420	0.00381 mg/L	0.004 mg/L	95.3	70.0	130	----
		tin, total	7440-31-5	E420	0.0196 mg/L	0.02 mg/L	98.3	70.0	130	----
		titanium, total	7440-32-6	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, total	7440-61-1	E420	0.00382 mg/L	0.004 mg/L	95.6	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.394 mg/L	0.4 mg/L	98.5	70.0	130	----
<b>Total Metals (QCLot: 250704)</b>										
CG2102752-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	----
<b>Dissolved Metals (QCLot: 253021)</b>										
CG2102752-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.203 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 253021) - continued</b>										
CG2102752-002	Anonymous	bismuth, dissolved	7440-69-9	E421	0.00902 mg/L	0.01 mg/L	90.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0196 mg/L	0.02 mg/L	98.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.97 mg/L	2 mg/L	98.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.88 mg/L	4 mg/L	96.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0432 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.27 mg/L	10 mg/L	92.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.99 mg/L	2 mg/L	99.6	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.8 mg/L	20 mg/L	104	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.410 mg/L	0.4 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 253022)</b>										
CG2102752-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----

# Teck

COC ID: **COC\_02-20\_03-2021**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	monica.bartha@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teck.lab.results@sharepoint.teck.com	X	X	
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
49				Phone Number	403-407-1800			PO number	VPO00762695			

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2102769**



Telephone: +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED							[Filtered: F=Field; L=Lab; FL=Field & Lab; N=None]				
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PRESERV	F	N	F	N	F	N	N				
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-YA	HG-T-CVAF-YA	TECKCOAL-MET-D-YA	TECKCOAL-MET-T-YA	TECKCOAL-ROUTINE-YA				
RG_DW-02-20_WP_03-2021_NP	RG_DW-02-20	WP	N	21-Jul-21	1050	G	5		1	1			1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	7/22/21

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	<i>[Signature]</i> Monica Bartha	Sampler's Signature	Mobile #	250-425-4784
			Date/Time	July 21, 2021



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102732**  
**Client** : **Teck Coal Limited**  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_03-04\_Q3-2021  
**Sampler** : EVAN WARNER  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Jul-2021 08:50  
**Date Analysis Commenced** : 21-Jul-2021  
**Issue Date** : 30-Jul-2021 12:21

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-03-04_	----	----	----	----
(Matrix: Water)						WP_Q3-2021_N				
					Client sampling date / time	20-Jul-2021 08:29	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2102732-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	---	---	---	---	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	153	---	---	---	---	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	1.8	---	---	---	---	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	155	---	---	---	---	
conductivity	----	E100	2.0	µS/cm	429	---	---	---	---	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	205	---	---	---	---	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	468	---	---	---	---	
pH	----	E108	0.10	pH units	8.33	---	---	---	---	
solids, total dissolved [TDS]	----	E162	10	mg/L	251	---	---	---	---	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	---	---	---	---	
turbidity	----	E121	0.10	NTU	<0.10	---	---	---	---	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	187	---	---	---	---	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	1.1	---	---	---	---	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	11.5	---	---	---	---	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.158	---	---	---	---	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.055	---	---	---	---	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.500	---	---	---	---	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0023	---	---	---	---	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	---	---	---	---	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	54.2	---	---	---	---	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.60	---	---	---	---	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.65	---	---	---	---	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-03-04_	----	----	----	----
(Matrix: Water)					WP_Q3-2021_N					
					P					
					Client sampling date / time	20-Jul-2021 08:29	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102732-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.59	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	4.44	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.7	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	1.66	----	----	----	----	----
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00010	----	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00011	----	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.112	----	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0112	----	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	56.0	----	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00015	----	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00070	----	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	----	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0078	----	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	19.0	----	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00114	----	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	0.835	----	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	3.91	----	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	2.15	----	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	7.90	----	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.127	----	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	18.2	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-03-04_ WP_Q3-2021_N P	----	----	----	----
Client sampling date / time					20-Jul-2021 08:29	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102732-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000775	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.110	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0107	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	53.8	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00015	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00049	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0075	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	17.2	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00117	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.772	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	4.18	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.14	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.45	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-03-04_ WP_Q3-2021_N P	----	----	----	----
Client sampling date / time					20-Jul-2021 08:29	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102732-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.128	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	18.3	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000797	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0024	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102732</b>	Page	: 1 of 10
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 21-Jul-2021 08:50
PO	: VPO00762695	Issue Date	: 30-Jul-2021 12:22
C-O-C number	: COC_03-04_Q3-2021		
Sampler	: EVAN WARNER		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_Q3-2021_NP	E298	20-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-04_WP_Q3-2021_NP	E235.Br-L	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-04_WP_Q3-2021_NP	E235.Cl-L	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> RG_DW-03-04_WP_Q3-2021_NP	E378-U	20-Jul-2021	----	----	----		22-Jul-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> RG_DW-03-04_WP_Q3-2021_NP	E235.F	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-04_WP_Q3-2021_NP	E235.NO3-L	20-Jul-2021	----	----	----		21-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-04_WP_Q3-2021_NP	E235.NO2-L	20-Jul-2021	----	----	----		21-Jul-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> RG_DW-03-04_WP_Q3-2021_NP	E235.SO4	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_Q3-2021_NP	E318	20-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_Q3-2021_NP	E372-U	20-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	3 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-04_WP_Q3-2021_NP	E421.Cr-L	20-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-04_WP_Q3-2021_NP	E421	20-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-03-04_WP_Q3-2021_NP	E358-L	20-Jul-2021	26-Jul-2021	----	----		27-Jul-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_Q3-2021_NP	E355-L	20-Jul-2021	26-Jul-2021	----	----		27-Jul-2021	28 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-03-04_WP_Q3-2021_NP	E283	20-Jul-2021	----	----	----		21-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> RG_DW-03-04_WP_Q3-2021_NP	E290	20-Jul-2021	----	----	----		23-Jul-2021	14 days	3 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_DW-03-04_WP_Q3-2021_NP	E100	20-Jul-2021	----	----	----		23-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-03-04_WP_Q3-2021_NP	E125	20-Jul-2021	----	----	----		27-Jul-2021	0.34 hrs	179 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-03-04_WP_Q3-2021_NP	E108	20-Jul-2021	----	----	----		23-Jul-2021	0.25 hrs	82 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-03-04_WP_Q3-2021_NP	E162	20-Jul-2021	----	----	----		26-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] RG_DW-03-04_WP_Q3-2021_NP	E160-L	20-Jul-2021	----	----	----		26-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE RG_DW-03-04_WP_Q3-2021_NP	E121	20-Jul-2021	----	----	----		22-Jul-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) RG_DW-03-04_WP_Q3-2021_NP	E420.Cr-L	20-Jul-2021	----	----	----		24-Jul-2021	180 days	4 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
HDPE total (nitric acid) RG_DW-03-04_WP_Q3-2021_NP	E420	20-Jul-2021	----	----	----		24-Jul-2021	180 days	4 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	248603	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	250600	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	251396	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	248492	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	248493	1	17	5.8	5.0	✓
Conductivity in Water	E100	250599	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252338	1	1	100.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252337	1	4	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251880	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249336	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	248496	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	248494	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	248495	1	17	5.8	5.0	✓
ORP by Electrode	E125	253116	1	13	7.6	5.0	✓
pH by Meter	E108	250598	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	248491	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	251634	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250701	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	249120	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	250702	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251881	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249085	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	249531	1	19	5.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	248603	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	250600	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	251396	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	248492	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	248493	1	17	5.8	5.0	✓
Conductivity in Water	E100	250599	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252338	1	1	100.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252337	1	4	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251880	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249336	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	248496	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	248494	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	248495	1	17	5.8	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	253116	1	13	7.6	5.0	✔
pH by Meter	E108	250598	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	248491	1	17	5.8	5.0	✔
TDS by Gravimetry	E162	251634	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250701	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	249120	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	250702	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251881	1	9	11.1	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249085	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	251628	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	249531	1	19	5.2	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	248603	1	18	5.5	5.0	✔
Alkalinity Species by Titration	E290	250600	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	251396	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	248492	1	17	5.8	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	248493	1	17	5.8	5.0	✔
Conductivity in Water	E100	250599	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252338	1	1	100.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	252337	1	4	25.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251880	1	15	6.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249336	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	248496	1	17	5.8	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	248494	1	17	5.8	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	248495	1	17	5.8	5.0	✔
Sulfate in Water by IC	E235.SO4	248491	1	17	5.8	5.0	✔
TDS by Gravimetry	E162	251634	1	20	5.0	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250701	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	249120	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	250702	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251881	1	9	11.1	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249085	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	251628	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	249531	1	19	5.2	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	251396	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	248492	1	17	5.8	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	248493	1	17	5.8	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252338	0	1	0.0	5.0	✖
Dissolved Metals in Water by CRC ICPMS	E421	252337	1	4	25.0	5.0	✔



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251880	1	15	6.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249336	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	248496	1	17	5.8	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	248494	1	17	5.8	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	248495	1	17	5.8	5.0	✔
Sulfate in Water by IC	E235.SO4	248491	1	17	5.8	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250701	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	249120	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	250702	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251881	1	9	11.1	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249085	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



## QUALITY CONTROL REPORT

**Work Order** : **CG2102732**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
           Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_03-04\_Q3-2021  
**Sampler** : EVAN WARNER  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
           Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Jul-2021 08:50  
**Date Analysis Commenced** : 21-Jul-2021  
**Issue Date** : 30-Jul-2021 12:21

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



Page : 2 of 17  
Work Order : CG2102732  
Client : Teck Coal Limited  
Project : REGIONAL EFFECTS PROGRAM

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 248603)</b>											
CG2102719-008	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 249531)</b>											
CG2102719-007	Anonymous	turbidity	----	E121	0.10	NTU	0.14	0.15	0.008	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 250598)</b>											
CG2102728-004	Anonymous	pH	----	E108	0.10	pH units	8.15	8.19	0.490%	4%	----
<b>Physical Tests (QC Lot: 250599)</b>											
CG2102728-005	Anonymous	conductivity	----	E100	2.0	µS/cm	1380	1380	0.289%	10%	----
<b>Physical Tests (QC Lot: 250600)</b>											
CG2102728-005	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	245	240	2.31%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	245	240	2.31%	20%	----
<b>Physical Tests (QC Lot: 251634)</b>											
CG2102716-003	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	3910	3840	1.73%	20%	----
<b>Physical Tests (QC Lot: 253116)</b>											
CG2102715-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	445	441	0.993%	15%	----
<b>Anions and Nutrients (QC Lot: 248491)</b>											
CG2102725-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	844	840	0.364%	20%	----
<b>Anions and Nutrients (QC Lot: 248492)</b>											
CG2102725-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	0.264	0.283	0.019	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248493)</b>											
CG2102725-003	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	8.23	8.13	1.20%	20%	----
<b>Anions and Nutrients (QC Lot: 248494)</b>											
CG2102725-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.970	1.03	6.40%	20%	----
<b>Anions and Nutrients (QC Lot: 248495)</b>											
CG2102725-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248496)</b>											
CG2102725-003	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.337	0.308	0.029	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249085)</b>											
CG2102728-005	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249120)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 249120) - continued</b>											
CG2102719-006	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.070	0.069	0.001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249336)</b>											
CG2102719-007	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0015	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 251396)</b>											
CG2102719-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.199	0.192	0.0074	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 251880)</b>											
CG2102728-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.57	0.52	0.05	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 251881)</b>											
CG2102728-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.68	0.68	0.0005	Diff <2x LOR	----
<b>Total Metals (QC Lot: 250701)</b>											
CG2102731-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00028	0.00031	0.00002	Diff <2x LOR	----
<b>Total Metals (QC Lot: 250702)</b>											
CG2102731-001	Anonymous	manganese, total	7439-96-5	E420	0.00010	mg/L	0.00046	0.00044	0.00001	Diff <2x LOR	----
CG2102731-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.162	0.167	2.97%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.011	0.011	0.0001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0133 µg/L	0.0000129	0.0000004	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	74.3	73.1	1.60%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00163	0.00163	0.000003	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.023	0.027	0.004	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000162	0.000164	0.000002	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0059	0.0058	0.00008	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	16.9	17.1	1.43%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000674	0.000682	1.32%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.834	0.841	0.732%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	5.26 µg/L	0.00508	3.40%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.48	2.55	2.64%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	5.61	5.60	0.228%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 250702) - continued</b>											
CG2102731-001	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	0.196	0.200	1.93%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	13.8	14.4	4.30%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000674	0.000690	2.37%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0056	0.0058	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 252337)</b>											
CG2102732-001	RG_DW-03-04_WP_Q3-20 21_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	<0.00010	0.000003	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00012	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.110	0.112	1.64%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0107 µg/L	0.0000099	0.0000008	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	53.8	52.1	3.22%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00049	0.00046	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0075	0.0072	0.0002	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	17.2	17.2	0.318%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00117	0.00115	1.85%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.772	0.784	1.47%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	4.18 µg/L	0.00414	0.936%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.14	2.22	3.70%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.45	7.50	0.643%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.128	0.127	0.766%	20%	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	18.3	19.3	5.22%	20%	----		
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----		



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 252337) - continued</b>											
CG2102732-001	RG_DW-03-04_WP_Q3-20 21_NP	tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000797	0.000778	2.43%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0024	0.0025	0.00007	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 252338)</b>											
CG2102732-001	RG_DW-03-04_WP_Q3-20 21_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00015	0.00017	0.00001	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 248603)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 249531)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 250599)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 250600)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 251628)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 251634)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 248491)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 248492)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 248493)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 248494)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 248495)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 248496)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 249085)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 249120)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 249336)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 251396)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 251396) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 251880)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 251881)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 250701)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 250702)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 250702) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 252337)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 252338)</b>						



Page : 10 of 17  
Work Order : CG2102732  
Client : Teck Coal Limited  
Project : REGIONAL EFFECTS PROGRAM



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 252338) - continued</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 248603)</b>									
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	50 mg/L	102	85.0	115	----
<b>Physical Tests (QCLot: 249531)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	96.9	85.0	115	----
<b>Physical Tests (QCLot: 250598)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 250599)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	97.7	90.0	110	----
<b>Physical Tests (QCLot: 250600)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	500 mg/L	96.1	85.0	115	----
<b>Physical Tests (QCLot: 251628)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	93.0	85.0	115	----
<b>Physical Tests (QCLot: 251634)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.4	85.0	115	----
<b>Physical Tests (QCLot: 253116)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
<b>Anions and Nutrients (QCLot: 248491)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 248492)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	107	85.0	115	----
<b>Anions and Nutrients (QCLot: 248493)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 248494)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 248495)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 248496)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 249085)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 249120)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	97.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 249336)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 249336) - continued</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	103	80.0	120	----
<b>Anions and Nutrients (QCLot: 251396)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	106	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 251880)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 251881)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 250701)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 250702)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	106	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	99.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.4	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	90.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.7	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.3	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	94.4	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.8	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	98.6	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.6	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 250702) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.9	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	96.1	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
<b>Dissolved Metals (QCLot: 252337)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.6	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.9	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.2	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	86.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.2	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	105	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.9	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	93.6	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	94.4	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	107	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 252337) - continued</b>									
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	93.5	80.0	120	----
<b>Dissolved Metals (QCLot: 252338)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 248491)</b>										
CG2102725-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 248492)</b>										
CG2102725-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.501 mg/L	0.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 248493)</b>										
CG2102725-004	Anonymous	chloride	16887-00-6	E235.Cl-L	98.2 mg/L	100 mg/L	98.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 248494)</b>										
CG2102725-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.61 mg/L	2.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 248495)</b>										
CG2102725-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.494 mg/L	0.5 mg/L	98.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 248496)</b>										
CG2102725-004	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 249085)</b>										
CG2102729-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0610 mg/L	0.0676 mg/L	90.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 249120)</b>										
CG2102719-007	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.78 mg/L	2.5 mg/L	111	70.0	130	----
<b>Anions and Nutrients (QCLot: 249336)</b>										
CG2102719-008	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0561 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 251396)</b>										
CG2102719-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 251880)</b>										
CG2102728-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.6 mg/L	23.9 mg/L	103	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 251881)</b>										
CG2102728-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.8 mg/L	23.9 mg/L	104	70.0	130	----
<b>Total Metals (QCLot: 250701)</b>										
CG2102732-001	RG_DW-03-04_WP_Q3-2021_NP	chromium, total	7440-47-3	E420.Cr-L	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 250702)</b>										
CG2102732-001	RG_DW-03-04_WP_Q3-2021_NP	aluminum, total	7429-90-5	E420	0.205 mg/L	0.2 mg/L	103	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 250702) - continued</b>										
CG2102732-001	RG_DW-03-04_WP_Q3-2021_NP	antimony, total	7440-36-0	E420	0.0215 mg/L	0.02 mg/L	107	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0445 mg/L	0.04 mg/L	111	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00896 mg/L	0.01 mg/L	89.6	70.0	130	----
		boron, total	7440-42-8	E420	0.114 mg/L	0.1 mg/L	114	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		copper, total	7440-50-8	E420	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		iron, total	7439-89-6	E420	1.88 mg/L	2 mg/L	93.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, total	7440-02-0	E420	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		potassium, total	7440-09-7	E420	4.12 mg/L	4 mg/L	103	70.0	130	----
		selenium, total	7782-49-2	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		silicon, total	7440-21-3	E420	8.92 mg/L	10 mg/L	89.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00393 mg/L	0.004 mg/L	98.3	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
sulfur, total	7704-34-9	E420	20.2 mg/L	20 mg/L	101	70.0	130	----		
thallium, total	7440-28-0	E420	0.00372 mg/L	0.004 mg/L	93.0	70.0	130	----		
tin, total	7440-31-5	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----		
titanium, total	7440-32-6	E420	0.0422 mg/L	0.04 mg/L	106	70.0	130	----		
uranium, total	7440-61-1	E420	0.00387 mg/L	0.004 mg/L	96.6	70.0	130	----		
vanadium, total	7440-62-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----		
zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	96.1	70.0	130	----		
<b>Dissolved Metals (QCLot: 252337)</b>										
WR2100821-023	Anonymous	aluminum, dissolved	7429-90-5	E421	0.197 mg/L	0.2 mg/L	98.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 252337) - continued</b>										
WR2100821-023	Anonymous	bismuth, dissolved	7440-69-9	E421	0.00923 mg/L	0.01 mg/L	92.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.092 mg/L	0.1 mg/L	91.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	3.84 mg/L	4 mg/L	96.0	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0199 mg/L	0.02 mg/L	99.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.93 mg/L	2 mg/L	96.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0969 mg/L	0.1 mg/L	96.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	0.935 mg/L	1 mg/L	93.5	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.90 mg/L	4 mg/L	97.6	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.12 mg/L	10 mg/L	91.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00410 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.94 mg/L	2 mg/L	96.9	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.6 mg/L	20 mg/L	97.8	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00383 mg/L	0.004 mg/L	95.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00390 mg/L	0.004 mg/L	97.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0981 mg/L	0.1 mg/L	98.1	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.382 mg/L	0.4 mg/L	95.6	70.0	130	----



COC ID: **COC\_03-04\_03-2021** *Elk*

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	monica.bartha@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teck.lab.results@sharepoint.te	X	X	
Postal Code	V0B 2G0		Country	Canada	Postal Code	T1Y 7B5		Country	Canada			
	550-405-8440			Phone Number	403-407-1800			PO number	VPO00762695			

Environmental Division  
Calgary  
Work Order Reference  
**CG2102732**



Telephone: +1 403 407 1800

**SAMPLE DETAILS** ANALYSIS REQUESTED Filtered: F: Field / L: Lab / FL: Field & Lab / N: None

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Ycs/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FIL	PRESERV.	ANALYSIS REQUESTED										
										F	N	F	N	F	N	N				
RG_DW-03-04_WP_Q2-2021_NP	RG_DW-03-04	WP	N	20-Jul-21	0829	G	5	ALS Package-DOC	H2SO4	H2SO4	HCL	HCL	HNO3	HNO3						
								ALS Package-TKN/TOC												
								HC-D-CVAF-VA												
								HC-T-CVAF-VA												
								TECKCOAL-MET-D-VA												
								TECKCOAL-MET-T-VA												
								TECKCOAL-ROUTINE-VA												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>Monica Bartha</i>	7/21/21

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X	<i>Monica Bartha</i>	250-425-4784
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		

*Monica Bartha*  
Date/Time: July 21, 2021



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102733**  
**Client** : **Teck Coal Limited**  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_03-10\_Q3-2021  
**Sampler** : Monica Bartha  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Jul-2021 08:50  
**Date Analysis Commenced** : 21-Jul-2021  
**Issue Date** : 30-Jul-2021 11:42

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-03-10_	----	----	----	----
(Matrix: Water)						WP_Q3-2021_N				
					Client sampling date / time	20-Jul-2021 09:23	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2102733-001	-----	-----	-----	-----	-----
						Result	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	224	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	224	---	---	---	---	---
conductivity	----	E100	2.0	µS/cm	466	---	---	---	---	---
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	228	---	---	---	---	---
oxidation-reduction potential [ORP]	----	E125	0.10	mV	470	---	---	---	---	---
pH	----	E108	0.10	pH units	8.29	---	---	---	---	---
solids, total dissolved [TDS]	----	E162	10	mg/L	272	---	---	---	---	---
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	---	---	---	---	---
turbidity	----	E121	0.10	NTU	0.17	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	273	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0267	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	9.72	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.201	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.456	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0014	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	20.6	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	---	---	---	---	---
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	---	---	---	---	---
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-03-10_	----	----	----	----
(Matrix: Water)					WP_Q3-2021_N					
					P					
					Client sampling date / time	20-Jul-2021 09:23	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102733-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.22	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	4.81	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.1	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	4.09	----	----	----	----	----
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	----	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.146	----	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.011	----	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	----	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	69.3	----	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00066	----	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00345	----	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	----	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000087	----	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0076	----	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	21.3	----	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00148	----	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	0.838	----	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	1.02	----	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	3.61	----	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	5.24	----	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.186	----	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	7.99	----	----	----	----	----



**Analytical Results**

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-03-10_ WP_Q3-2021_N P	----	----	----	----
Client sampling date / time					20-Jul-2021 09:23	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102733-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, total	7440-61-1	E420	0.00010	mg/L	0.00138	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0144	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.154	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	58.6	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00066	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00360	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000079	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0062	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	19.9	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00132	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.828	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	1.14	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.67	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.28	----	----	----	----	



**Analytical Results**

					Client sample ID	RG_DW-03-10_	----	----	----	----
					WP_Q3-2021_N					
					P					
					Client sampling date / time	20-Jul-2021 09:23	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102733-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.168	----	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	8.05	----	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00122	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0145	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102733</b>	Page	: 1 of 10
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 21-Jul-2021 08:50
PO	: VPO00762695	Issue Date	: 30-Jul-2021 11:42
C-O-C number	: COC_03-10_Q3-2021		
Sampler	: Monica Bartha		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_Q3-2021_NP	E298	20-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-10_WP_Q3-2021_NP	E235.Br-L	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-10_WP_Q3-2021_NP	E235.Cl-L	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> RG_DW-03-10_WP_Q3-2021_NP	E378-U	20-Jul-2021	----	----	----		22-Jul-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> RG_DW-03-10_WP_Q3-2021_NP	E235.F	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-10_WP_Q3-2021_NP	E235.NO3-L	20-Jul-2021	----	----	----		21-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-03-10_WP_Q3-2021_NP	E235.NO2-L	20-Jul-2021	----	----	----		21-Jul-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Container / Client Sample ID(s)				Rec	Actual				Rec		Actual
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> RG_DW-03-10_WP_Q3-2021_NP	E235.SO4	20-Jul-2021	----	----	----		21-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_Q3-2021_NP	E318	20-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_Q3-2021_NP	E372-U	20-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	3 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-10_WP_Q3-2021_NP	E421.Cr-L	20-Jul-2021	26-Jul-2021	----	----		27-Jul-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-10_WP_Q3-2021_NP	E421	20-Jul-2021	26-Jul-2021	----	----		27-Jul-2021	180 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-03-10_WP_Q3-2021_NP	E358-L	20-Jul-2021	26-Jul-2021	----	----		27-Jul-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_Q3-2021_NP	E355-L	20-Jul-2021	26-Jul-2021	----	----		27-Jul-2021	28 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-03-10_WP_Q3-2021_NP	E283	20-Jul-2021	----	----	----		21-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> RG_DW-03-10_WP_Q3-2021_NP	E290	20-Jul-2021	----	----	----		23-Jul-2021	14 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE RG_DW-03-10_WP_Q3-2021_NP	E100	20-Jul-2021	----	----	----		23-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-03-10_WP_Q3-2021_NP	E125	20-Jul-2021	----	----	----		27-Jul-2021	0.34 hrs	178 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-03-10_WP_Q3-2021_NP	E108	20-Jul-2021	----	----	----		23-Jul-2021	0.25 hrs	81 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-03-10_WP_Q3-2021_NP	E162	20-Jul-2021	----	----	----		26-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] RG_DW-03-10_WP_Q3-2021_NP	E160-L	20-Jul-2021	----	----	----		26-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE RG_DW-03-10_WP_Q3-2021_NP	E121	20-Jul-2021	----	----	----		22-Jul-2021	3 days	2 days	✓	
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>											
HDPE total (nitric acid) RG_DW-03-10_WP_Q3-2021_NP	E420.Cr-L	20-Jul-2021	----	----	----		24-Jul-2021	180 days	4 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
HDPE total (nitric acid) RG_DW-03-10_WP_Q3-2021_NP	E420	20-Jul-2021	----	----	----		24-Jul-2021	180 days	4 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	248603	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	250600	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	251396	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	248492	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	248493	1	17	5.8	5.0	✓
Conductivity in Water	E100	250599	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252272	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252271	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251880	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249336	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	248496	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	248494	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	248495	1	17	5.8	5.0	✓
ORP by Electrode	E125	253116	1	13	7.6	5.0	✓
pH by Meter	E108	250598	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	248491	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	251634	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250701	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	249120	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	250702	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251881	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249085	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	249531	1	19	5.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	248603	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	250600	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	251396	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	248492	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	248493	1	17	5.8	5.0	✓
Conductivity in Water	E100	250599	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252272	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252271	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251880	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249336	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	248496	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	248494	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	248495	1	17	5.8	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	253116	1	13	7.6	5.0	✓
pH by Meter	E108	250598	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	248491	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	251634	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250701	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	249120	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	250702	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251881	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249085	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	251628	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	249531	1	19	5.2	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	248603	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	250600	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	251396	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	248492	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	248493	1	17	5.8	5.0	✓
Conductivity in Water	E100	250599	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252272	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252271	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251880	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249336	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	248496	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	248494	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	248495	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	248491	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	251634	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250701	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	249120	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	250702	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251881	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249085	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	251628	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	249531	1	19	5.2	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	251396	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	248492	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	248493	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252272	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252271	1	19	5.2	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251880	1	15	6.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249336	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	248496	1	17	5.8	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	248494	1	17	5.8	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	248495	1	17	5.8	5.0	✔
Sulfate in Water by IC	E235.SO4	248491	1	17	5.8	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	250701	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	249120	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	250702	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251881	1	9	11.1	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249085	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: CG2102733</b>	<b>Page</b>	<b>: 1 of 17</b>
<b>Client</b>	: Teck Coal Limited	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Cam Jaeger	<b>Account Manager</b>	: Lyudmyla Shvets
<b>Address</b>	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	<b>Address</b>	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
<b>Telephone</b>	: ----	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: REGIONAL EFFECTS PROGRAM	<b>Date Samples Received</b>	: 21-Jul-2021 08:50
<b>PO</b>	: VPO00762695	<b>Date Analysis Commenced</b>	: 21-Jul-2021
<b>C-O-C number</b>	: COC_03-10_Q3-2021	<b>Issue Date</b>	: 30-Jul-2021 11:42
<b>Sampler</b>	: Monica Bartha		
<b>Site</b>	: ----		
<b>Quote number</b>	: Teck Coal Master Quote		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 248603)</b>											
CG2102719-008	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 249531)</b>											
CG2102719-007	Anonymous	turbidity	----	E121	0.10	NTU	0.14	0.15	0.008	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 250598)</b>											
CG2102728-004	Anonymous	pH	----	E108	0.10	pH units	8.15	8.19	0.490%	4%	----
<b>Physical Tests (QC Lot: 250599)</b>											
CG2102728-005	Anonymous	conductivity	----	E100	2.0	µS/cm	1380	1380	0.289%	10%	----
<b>Physical Tests (QC Lot: 250600)</b>											
CG2102728-005	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	245	240	2.31%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	245	240	2.31%	20%	----
<b>Physical Tests (QC Lot: 251634)</b>											
CG2102716-003	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	3910	3840	1.73%	20%	----
<b>Physical Tests (QC Lot: 253116)</b>											
CG2102715-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	445	441	0.993%	15%	----
<b>Anions and Nutrients (QC Lot: 248491)</b>											
CG2102725-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	844	840	0.364%	20%	----
<b>Anions and Nutrients (QC Lot: 248492)</b>											
CG2102725-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	0.264	0.283	0.019	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248493)</b>											
CG2102725-003	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	8.23	8.13	1.20%	20%	----
<b>Anions and Nutrients (QC Lot: 248494)</b>											
CG2102725-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.970	1.03	6.40%	20%	----
<b>Anions and Nutrients (QC Lot: 248495)</b>											
CG2102725-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248496)</b>											
CG2102725-003	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.337	0.308	0.029	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249085)</b>											
CG2102728-005	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249120)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 249120) - continued</b>											
CG2102719-006	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.070	0.069	0.001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249336)</b>											
CG2102719-007	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0015	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 251396)</b>											
CG2102719-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.199	0.192	0.0074	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 251880)</b>											
CG2102728-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.57	0.52	0.05	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 251881)</b>											
CG2102728-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.68	0.68	0.0005	Diff <2x LOR	----
<b>Total Metals (QC Lot: 250701)</b>											
CG2102731-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00028	0.00031	0.00002	Diff <2x LOR	----
<b>Total Metals (QC Lot: 250702)</b>											
CG2102731-001	Anonymous	manganese, total	7439-96-5	E420	0.00010	mg/L	0.00046	0.00044	0.00001	Diff <2x LOR	----
CG2102731-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.162	0.167	2.97%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.011	0.011	0.0001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0133 µg/L	0.0000129	0.0000004	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	74.3	73.1	1.60%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00163	0.00163	0.000003	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.023	0.027	0.004	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000162	0.000164	0.000002	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0059	0.0058	0.00008	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	16.9	17.1	1.43%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000674	0.000682	1.32%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.834	0.841	0.732%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	5.26 µg/L	0.00508	3.40%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.48	2.55	2.64%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	5.61	5.60	0.228%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 250702) - continued</b>											
CG2102731-001	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	0.196	0.200	1.93%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	13.8	14.4	4.30%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000674	0.000690	2.37%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0056	0.0058	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 252271)</b>											
YL2100811-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0082	0.0076	0.0006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00027	0.00026	0.000009	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00033	0.00032	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0223	0.0225	0.817%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.441	0.443	0.482%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0000200	mg/L	<0.0000200	<0.0000200	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	45.2	46.0	1.77%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00034	0.00037	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00257	0.00255	0.732%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.014	0.015	0.0009	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0039	0.0039	0.000005	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	25.5	25.3	0.799%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00678	0.00670	1.09%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0470	0.0457	2.77%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0142	0.0141	0.868%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	8.42	8.47	0.544%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000316	0.000285	0.000031	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.05	1.08	3.01%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000064	0.000067	0.000003	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	15.4	15.2	1.24%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.364	0.364	0.185%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	53.7	56.1	4.41%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 252271) - continued</b>											
YL2100811-001	Anonymous	tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00344	0.00334	3.14%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00064	0.00062	0.00002	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0022	0.0022	0.000002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 252272)</b>											
YL2100811-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00025	0.00022	0.00003	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 248603)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 249531)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 250599)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 250600)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 251628)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 251634)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 248491)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 248492)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 248493)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 248494)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 248495)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 248496)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 249085)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 249120)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 249336)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 251396)</b>						





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 251396) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 251880)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 251881)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 250701)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 250702)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 250702) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 252271)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 252272)</b>						

Page : 10 of 17  
Work Order : CG2102733  
Client : Teck Coal Limited  
Project : REGIONAL EFFECTS PROGRAM



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 252272) - continued</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 248603)</b>									
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	50 mg/L	102	85.0	115	----
<b>Physical Tests (QCLot: 249531)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	96.9	85.0	115	----
<b>Physical Tests (QCLot: 250598)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 250599)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	97.7	90.0	110	----
<b>Physical Tests (QCLot: 250600)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	500 mg/L	96.1	85.0	115	----
<b>Physical Tests (QCLot: 251628)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	93.0	85.0	115	----
<b>Physical Tests (QCLot: 251634)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.4	85.0	115	----
<b>Physical Tests (QCLot: 253116)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
<b>Anions and Nutrients (QCLot: 248491)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 248492)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	107	85.0	115	----
<b>Anions and Nutrients (QCLot: 248493)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 248494)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 248495)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 248496)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 249085)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 249120)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	97.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 249336)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 249336) - continued</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	103	80.0	120	----
<b>Anions and Nutrients (QCLot: 251396)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	106	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 251880)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 251881)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 250701)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Total Metals (QCLot: 250702)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	106	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.3	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	99.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.4	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	90.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.7	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.3	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	94.4	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.8	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	98.6	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.6	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 250702) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.9	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	96.1	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
<b>Dissolved Metals (QCLot: 252271)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.1	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	94.1	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	88.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.6	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.0	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.7	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	91.0	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	102	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.5	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.0	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.7	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.9	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 252271) - continued</b>									
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.8	80.0	120	----
<b>Dissolved Metals (QCLot: 252272)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 248491)</b>										
CG2102725-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 248492)</b>										
CG2102725-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.501 mg/L	0.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 248493)</b>										
CG2102725-004	Anonymous	chloride	16887-00-6	E235.Cl-L	98.2 mg/L	100 mg/L	98.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 248494)</b>										
CG2102725-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.61 mg/L	2.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 248495)</b>										
CG2102725-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.494 mg/L	0.5 mg/L	98.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 248496)</b>										
CG2102725-004	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 249085)</b>										
CG2102729-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0610 mg/L	0.0676 mg/L	90.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 249120)</b>										
CG2102719-007	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.78 mg/L	2.5 mg/L	111	70.0	130	----
<b>Anions and Nutrients (QCLot: 249336)</b>										
CG2102719-008	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0561 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 251396)</b>										
CG2102719-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 251880)</b>										
CG2102728-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.6 mg/L	23.9 mg/L	103	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 251881)</b>										
CG2102728-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.8 mg/L	23.9 mg/L	104	70.0	130	----
<b>Total Metals (QCLot: 250701)</b>										
CG2102732-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 250702)</b>										
CG2102732-001	Anonymous	aluminum, total	7429-90-5	E420	0.205 mg/L	0.2 mg/L	103	70.0	130	----
		antimony, total	7440-36-0	E420	0.0215 mg/L	0.02 mg/L	107	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 250702) - continued</b>										
CG2102732-001	Anonymous	arsenic, total	7440-38-2	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0445 mg/L	0.04 mg/L	111	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00896 mg/L	0.01 mg/L	89.6	70.0	130	----
		boron, total	7440-42-8	E420	0.114 mg/L	0.1 mg/L	114	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		copper, total	7440-50-8	E420	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		iron, total	7439-89-6	E420	1.88 mg/L	2 mg/L	93.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, total	7440-02-0	E420	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		potassium, total	7440-09-7	E420	4.12 mg/L	4 mg/L	103	70.0	130	----
		selenium, total	7782-49-2	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		silicon, total	7440-21-3	E420	8.92 mg/L	10 mg/L	89.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00393 mg/L	0.004 mg/L	98.3	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	20.2 mg/L	20 mg/L	101	70.0	130	----
		thallium, total	7440-28-0	E420	0.00372 mg/L	0.004 mg/L	93.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		titanium, total	7440-32-6	E420	0.0422 mg/L	0.04 mg/L	106	70.0	130	----
		uranium, total	7440-61-1	E420	0.00387 mg/L	0.004 mg/L	96.6	70.0	130	----
		vanadium, total	7440-62-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	96.1	70.0	130	----
<b>Dissolved Metals (QCLot: 252271)</b>										
YL2100811-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.196 mg/L	0.2 mg/L	98.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0188 mg/L	0.02 mg/L	94.3	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00868 mg/L	0.01 mg/L	86.8	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 252271) - continued</b>										
YL2100811-002	Anonymous	boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0964 mg/L	0.1 mg/L	96.4	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0184 mg/L	0.02 mg/L	92.2	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0428 mg/L	0.04 mg/L	107	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.23 mg/L	10 mg/L	92.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00381 mg/L	0.004 mg/L	95.3	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00366 mg/L	0.004 mg/L	91.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00378 mg/L	0.004 mg/L	94.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0970 mg/L	0.1 mg/L	97.0	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.387 mg/L	0.4 mg/L	96.8	70.0	130	----
<b>Dissolved Metals (QCLot: 252272)</b>										
YL2100811-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----

COC ID:

COC\_03-10\_Q2-2021

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	monica.bartha@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teck.lab.results@sharepoint.teck.com	X	X	
Postal Code	VOB 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	VPO00762695			

SAMPLE DETAILS

ANALYSIS REQUESTED

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Ycs/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED												
								F	N	F	N	F	N	N						
RG_DW-03-10_WP_Q2-2021_NP	RG_DW-03-10	WP	Z	20-11-21	09:23	G	5	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CYAF-VA	HG-T-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA						

Environmental Division  
Calgary  
Work Order Reference  
**CG2102733**



Telephone : +1 403 407 1800

INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>MB</i>	7/21/21

SERVICE REQUEST (rush - subject to availability)

Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	<del>Monica Bartha</del>	Mobile #	250-425-4784
				Sampler's Signature		Date/Time	July 20, 2021

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2102371**  
**Client** : **Teck Coal Limited**  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : ----  
**Sampler** : JB/CB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 06-Jul-2021 09:45  
**Date Analysis Commenced** : 06-Jul-2021  
**Issue Date** : 20-Jul-2021 13:18

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					EV_BCGW_WG_2021_Q3_NP	EV_MW_MC2A_WG_2021_Q3_NP	EV_MW_MC2B_WG_2021_Q3_NP	EV_MW_MC1A_WG_2021_Q3_NP	EV_MW_MC1B_WG_2021_Q3_NP
Client sampling date / time					04-Jul-2021 15:20	04-Jul-2021 13:20	04-Jul-2021 14:10	04-Jul-2021 11:00	04-Jul-2021 11:50
Analyte	CAS Number	Method	LOR	Unit	CG2102371-001	CG2102371-002	CG2102371-003	CG2102371-004	CG2102371-005
					Result	Result	Result	Result	Result
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	3.1	2.5	2.5	7.5
conductivity	----	E100	2.0	µS/cm	649	865	1080	819	1160
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	355	406	600	386	598
oxidation-reduction potential [ORP]	----	E125	0.10	mV	442	444	450	428	419
pH	----	E108	0.10	pH units	8.30	8.17	8.14	8.16	8.04
solids, total dissolved [TDS]	----	E162	10	mg/L	441	496	816	517	798
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.6	2.1	<1.0	2.8	26.7
turbidity	----	E121	0.10	NTU	0.47	15.9	0.16	12.9	167
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	182	378	249	360	376
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	182	378	249	360	376
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	222	462	303	440	459
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.838	<0.0050	1.45	0.255
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.073	<0.050	0.290	0.570	1.14
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.84	84.8	32.9	82.6	131
fluoride	16984-48-8	E235.F	0.020	mg/L	0.145	0.249	0.137	0.358	0.204
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.303	0.951	0.192	1.66	0.423
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.19	<0.0050	6.71	0.0165	<0.0250 <sup>DLDS</sup>
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0050 <sup>DLDS</sup>
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0.0038	0.0070	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0107	0.0030	0.0100	0.0140
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	0.0037	0.0037	0.0081 <sup>DLM</sup>	0.0080 <sup>DLM</sup>
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	176	<0.30	345	1.48	122
nitrogen, total	7727-37-9	EC368	0.050	mg/L	2.49	0.951	6.90	1.68	0.423
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0.73	1.78	2.56



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_BCGW_WG_2021_Q3_NP	EV_MW_MC2A_WG_2021_Q3_NP	EV_MW_MC2B_WG_2021_Q3_NP	EV_MW_MC1A_WG_2021_Q3_NP	EV_MW_MC1B_WG_2021_Q3_NP
Client sampling date / time					04-Jul-2021 15:20	04-Jul-2021 13:20	04-Jul-2021 14:10	04-Jul-2021 11:00	04-Jul-2021 11:50	
Analyte	CAS Number	Method	LOR	Unit	CG2102371-001	CG2102371-002	CG2102371-003	CG2102371-004	CG2102371-005	
					Result	Result	Result	Result	Result	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0.67	1.67	2.36	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	7.60	9.96	13.6	9.58	13.8	
cation sum	----	EC101	0.10	meq/L	7.32	10.1	12.6	8.84	13.8	
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.3	101	92.6	92.3	100	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.88	0.698	3.82	4.02	<0.010	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0013	0.0025	<0.0010	0.0030	0.0012	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00011	<0.00020 <sup>DLA</sup>	0.00012	<0.00020 <sup>DLA</sup>	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00087	0.00013	0.00053	0.00509	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0396	5.36	0.0513	9.49	0.632	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.040 <sup>DLA</sup>	<0.020	<0.040 <sup>DLA</sup>	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.013	0.067	0.026	0.066	0.055	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0348	<0.0100 <sup>DLA</sup>	0.0958	<0.0100 <sup>DLA</sup>	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	84.2	106	141	100	157	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00015	<0.00020 <sup>DLA</sup>	0.00023	<0.00020 <sup>DLA</sup>	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.20 <sup>DLA</sup>	<0.10	<0.20 <sup>DLA</sup>	0.18	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00097	<0.00040 <sup>DLA</sup>	<0.00020	<0.00040 <sup>DLA</sup>	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	1.38	<0.010	1.04	13.4	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000053	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0209	0.244	0.0563	0.118	0.147	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	35.1	34.3	60.2	33.1	50.0	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.0528	<0.00010	0.103	0.662	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00108	0.000117	0.000683	0.000174	0.00201	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	0.00069	<0.00100 <sup>DLA</sup>	0.00068	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.16	3.80	2.30	4.65	3.65	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	20.4	<0.100 <sup>DLA</sup>	54.2	<0.100 <sup>DLA</sup>	0.052	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.53	4.06	3.39	3.46	5.57	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_BCGW_WG_2021_Q3_NP	EV_MW_MC2A_WG_2021_Q3_NP	EV_MW_MC2B_WG_2021_Q3_NP	EV_MW_MC1A_WG_2021_Q3_NP	EV_MW_MC1B_WG_2021_Q3_NP
Client sampling date / time					04-Jul-2021 15:20	04-Jul-2021 13:20	04-Jul-2021 14:10	04-Jul-2021 11:00	04-Jul-2021 11:50	
Analyte	CAS Number	Method	LOR	Unit	CG2102371-001	CG2102371-002	CG2102371-003	CG2102371-004	CG2102371-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.68	40.9	12.2	20.0	29.2	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.172	1.53	0.328	1.80	0.854	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	62.8	<1.00 <sup>DLA</sup>	118	<1.00 <sup>DLA</sup>	41.4	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00141	<0.000020 <sup>DLA</sup>	0.00160	0.000191	0.000610	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0024	0.0042	0.0014	0.0053	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102371</b>	Page	: 1 of 21
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Kennedy Allen	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 06-Jul-2021 09:45
PO	: VPO00741597	Issue Date	: 20-Jul-2021 13:19
C-O-C number	: ----		
Sampler	: JB/CB		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BCGW_WG_2021_Q3_NP	E298	04-Jul-2021	07-Jul-2021	----	----		07-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q3_NP	E298	04-Jul-2021	07-Jul-2021	----	----		07-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q3_NP	E298	04-Jul-2021	07-Jul-2021	----	----		07-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q3_NP	E298	04-Jul-2021	07-Jul-2021	----	----		07-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q3_NP	E298	04-Jul-2021	07-Jul-2021	----	----		07-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_BCGW_WG_2021_Q3_NP	E235.Br-L	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q3_NP	E235.Br-L	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE EV_MW_MC1B_WG_2021_Q3_NP	E235.Br-L	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2A_WG_2021_Q3_NP	E235.Br-L	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2B_WG_2021_Q3_NP	E235.Br-L	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_BCGW_WG_2021_Q3_NP	E235.Cl-L	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_MC1A_WG_2021_Q3_NP	E235.Cl-L	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_MC1B_WG_2021_Q3_NP	E235.Cl-L	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2A_WG_2021_Q3_NP	E235.Cl-L	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2B_WG_2021_Q3_NP	E235.Cl-L	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_BCGW_WG_2021_Q3_NP	E378-U	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC1A_WG_2021_Q3_NP	E378-U	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC1B_WG_2021_Q3_NP	E378-U	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC2A_WG_2021_Q3_NP	E378-U	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC2B_WG_2021_Q3_NP	E378-U	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_BCGW_WG_2021_Q3_NP	E235.F	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC1A_WG_2021_Q3_NP	E235.F	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC1B_WG_2021_Q3_NP	E235.F	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC2A_WG_2021_Q3_NP	E235.F	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC2B_WG_2021_Q3_NP	E235.F	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_BCGW_WG_2021_Q3_NP	E235.NO3-L	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_MC1A_WG_2021_Q3_NP	E235.NO3-L	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_MC1B_WG_2021_Q3_NP	E235.NO3-L	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2A_WG_2021_Q3_NP	E235.NO3-L	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2B_WG_2021_Q3_NP	E235.NO3-L	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_BCGW_WG_2021_Q3_NP	E235.NO2-L	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_MC1A_WG_2021_Q3_NP	E235.NO2-L	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_MC1B_WG_2021_Q3_NP	E235.NO2-L	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2A_WG_2021_Q3_NP	E235.NO2-L	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC2B_WG_2021_Q3_NP	E235.NO2-L	04-Jul-2021	----	----	----		06-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_BCGW_WG_2021_Q3_NP	E235.SO4	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q3_NP	E235.SO4	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q3_NP	E235.SO4	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC2A_WG_2021_Q3_NP	E235.SO4	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC2B_WG_2021_Q3_NP	E235.SO4	04-Jul-2021	----	----	----		06-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_BCGW_WG_2021_Q3_NP	E375-T	04-Jul-2021	14-Jul-2021	----	----		14-Jul-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q3_NP	E375-T	04-Jul-2021	14-Jul-2021	----	----		14-Jul-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q3_NP	E375-T	04-Jul-2021	14-Jul-2021	----	----		14-Jul-2021	28 days	10 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q3_NP	E375-T	04-Jul-2021	14-Jul-2021	----	----		14-Jul-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q3_NP	E375-T	04-Jul-2021	14-Jul-2021	----	----		14-Jul-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BCGW_WG_2021_Q3_NP	E318	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q3_NP	E318	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q3_NP	E318	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q3_NP	E318	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q3_NP	E318	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BCGW_WG_2021_Q3_NP	E372-U	04-Jul-2021	12-Jul-2021	----	----		12-Jul-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q3_NP	E372-U	04-Jul-2021	12-Jul-2021	----	----		12-Jul-2021	28 days	8 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q3_NP	E372-U	04-Jul-2021	12-Jul-2021	----	----		12-Jul-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q3_NP	E372-U	04-Jul-2021	12-Jul-2021	----	----		12-Jul-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q3_NP	E372-U	04-Jul-2021	12-Jul-2021	----	----		12-Jul-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_BCGW_WG_2021_Q3_NP	E421.Cr-L	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC1A_WG_2021_Q3_NP	E421.Cr-L	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC1B_WG_2021_Q3_NP	E421.Cr-L	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC2A_WG_2021_Q3_NP	E421.Cr-L	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC2B_WG_2021_Q3_NP	E421.Cr-L	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_BCGW_WG_2021_Q3_NP	E509	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	28 days	4 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC1A_WG_2021_Q3_NP	E509	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC1B_WG_2021_Q3_NP	E509	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC2A_WG_2021_Q3_NP	E509	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC2B_WG_2021_Q3_NP	E509	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_BCGW_WG_2021_Q3_NP	E421	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC1A_WG_2021_Q3_NP	E421	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC1B_WG_2021_Q3_NP	E421	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC2A_WG_2021_Q3_NP	E421	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC2B_WG_2021_Q3_NP	E421	04-Jul-2021	08-Jul-2021	----	----		08-Jul-2021	180 days	4 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_BCGW_WG_2021_Q3_NP	E358-L	04-Jul-2021	10-Jul-2021	----	----		10-Jul-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q3_NP	E358-L	04-Jul-2021	10-Jul-2021	----	----		10-Jul-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q3_NP	E358-L	04-Jul-2021	10-Jul-2021	----	----		10-Jul-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q3_NP	E358-L	04-Jul-2021	10-Jul-2021	----	----		10-Jul-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q3_NP	E358-L	04-Jul-2021	10-Jul-2021	----	----		10-Jul-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BCGW_WG_2021_Q3_NP	E355-L	04-Jul-2021	10-Jul-2021	----	----		10-Jul-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q3_NP	E355-L	04-Jul-2021	10-Jul-2021	----	----		10-Jul-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q3_NP	E355-L	04-Jul-2021	10-Jul-2021	----	----		10-Jul-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q3_NP	E355-L	04-Jul-2021	10-Jul-2021	----	----		10-Jul-2021	28 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q3_NP	E355-L	04-Jul-2021	10-Jul-2021	----	----		10-Jul-2021	28 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_BCGW_WG_2021_Q3_NP	E283	04-Jul-2021	----	----	----		08-Jul-2021	14 days	4 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q3_NP	E283	04-Jul-2021	----	----	----		08-Jul-2021	14 days	4 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q3_NP	E283	04-Jul-2021	----	----	----		08-Jul-2021	14 days	4 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC2A_WG_2021_Q3_NP	E283	04-Jul-2021	----	----	----		08-Jul-2021	14 days	4 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC2B_WG_2021_Q3_NP	E283	04-Jul-2021	----	----	----		08-Jul-2021	14 days	4 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_BCGW_WG_2021_Q3_NP	E290	04-Jul-2021	----	----	----		08-Jul-2021	14 days	4 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q3_NP	E290	04-Jul-2021	----	----	----		08-Jul-2021	14 days	4 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q3_NP	E290	04-Jul-2021	----	----	----		08-Jul-2021	14 days	4 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_MC2A_WG_2021_Q3_NP	E290	04-Jul-2021	----	----	----		08-Jul-2021	14 days	4 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_MC2B_WG_2021_Q3_NP	E290	04-Jul-2021	----	----	----		08-Jul-2021	14 days	4 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_BCGW_WG_2021_Q3_NP	E100	04-Jul-2021	----	----	----		08-Jul-2021	28 days	4 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_MC1A_WG_2021_Q3_NP	E100	04-Jul-2021	----	----	----		08-Jul-2021	28 days	4 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_MC1B_WG_2021_Q3_NP	E100	04-Jul-2021	----	----	----		08-Jul-2021	28 days	4 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_MC2A_WG_2021_Q3_NP	E100	04-Jul-2021	----	----	----		08-Jul-2021	28 days	4 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_MC2B_WG_2021_Q3_NP	E100	04-Jul-2021	----	----	----		08-Jul-2021	28 days	4 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_BCGW_WG_2021_Q3_NP	E125	04-Jul-2021	----	----	----		13-Jul-2021	0.34 hrs	214 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_MC2B_WG_2021_Q3_NP	E125	04-Jul-2021	----	----	----		13-Jul-2021	0.34 hrs	215 hrs	* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MC2A_WG_2021_Q3_NP	E125	04-Jul-2021	----	----	----		13-Jul-2021	0.34 hrs	216 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MC1B_WG_2021_Q3_NP	E125	04-Jul-2021	----	----	----		13-Jul-2021	0.34 hrs	217 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MC1A_WG_2021_Q3_NP	E125	04-Jul-2021	----	----	----		13-Jul-2021	0.34 hrs	218 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_BCGW_WG_2021_Q3_NP	E108	04-Jul-2021	----	----	----		08-Jul-2021	0.25 hrs	100 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MC2B_WG_2021_Q3_NP	E108	04-Jul-2021	----	----	----		08-Jul-2021	0.25 hrs	101 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MC2A_WG_2021_Q3_NP	E108	04-Jul-2021	----	----	----		08-Jul-2021	0.25 hrs	102 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MC1B_WG_2021_Q3_NP	E108	04-Jul-2021	----	----	----		08-Jul-2021	0.25 hrs	103 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MC1A_WG_2021_Q3_NP	E108	04-Jul-2021	----	----	----		08-Jul-2021	0.25 hrs	104 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_BCGW_WG_2021_Q3_NP	E162	04-Jul-2021	----	----	----		08-Jul-2021	7 days	4 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC1A_WG_2021_Q3_NP	E162	04-Jul-2021	----	----	----		08-Jul-2021	7 days	4 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC1B_WG_2021_Q3_NP	E162	04-Jul-2021	----	----	----		08-Jul-2021	7 days	4 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC2A_WG_2021_Q3_NP	E162	04-Jul-2021	----	----	----		08-Jul-2021	7 days	4 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC2B_WG_2021_Q3_NP	E162	04-Jul-2021	----	----	----		08-Jul-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_BCGW_WG_2021_Q3_NP	E160-L	04-Jul-2021	----	----	----		08-Jul-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_MC1A_WG_2021_Q3_NP	E160-L	04-Jul-2021	----	----	----		08-Jul-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_MC1B_WG_2021_Q3_NP	E160-L	04-Jul-2021	----	----	----		08-Jul-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_MC2A_WG_2021_Q3_NP	E160-L	04-Jul-2021	----	----	----		08-Jul-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_MC2B_WG_2021_Q3_NP	E160-L	04-Jul-2021	----	----	----		08-Jul-2021	7 days	4 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_BCGW_WG_2021_Q3_NP	E121	04-Jul-2021	----	----	----		07-Jul-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_MW_MC1A_WG_2021_Q3_NP	E121	04-Jul-2021	----	----	----		07-Jul-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_MW_MC1B_WG_2021_Q3_NP	E121	04-Jul-2021	----	----	----		07-Jul-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_MW_MC2A_WG_2021_Q3_NP	E121	04-Jul-2021	----	----	----		07-Jul-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_MW_MC2B_WG_2021_Q3_NP	E121	04-Jul-2021	----	----	----		07-Jul-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	239388	1	11	9.0	5.0	✓
Alkalinity Species by Titration	E290	239367	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	238137	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	237199	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	237200	1	19	5.2	5.0	✓
Conductivity in Water	E100	239368	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	239104	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	239281	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	239103	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	240674	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	237185	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	237197	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	237201	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	237202	1	19	5.2	5.0	✓
ORP by Electrode	E125	241567	1	20	5.0	5.0	✓
pH by Meter	E108	239369	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	237198	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	238568	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	240217	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	237808	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	240675	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	239875	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	237530	1	12	8.3	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	239388	1	11	9.0	5.0	✓
Alkalinity Species by Titration	E290	239367	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	238137	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	237199	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	237200	1	19	5.2	5.0	✓
Conductivity in Water	E100	239368	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	239104	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	239281	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	239103	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	240674	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	237185	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	237197	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	237201	1	19	5.2	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	237202	1	19	5.2	5.0	✓
ORP by Electrode	E125	241567	1	20	5.0	5.0	✓
pH by Meter	E108	239369	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	237198	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	238568	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	240217	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	237808	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	240675	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	239875	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	238556	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	237530	1	12	8.3	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	239388	1	11	9.0	5.0	✓
Alkalinity Species by Titration	E290	239367	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	238137	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	237199	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	237200	1	19	5.2	5.0	✓
Conductivity in Water	E100	239368	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	239104	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	239281	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	239103	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	240674	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	237185	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	237197	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	237201	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	237202	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	237198	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	238568	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	240217	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	237808	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	240675	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	239875	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	238556	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	237530	1	12	8.3	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	238137	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	237199	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	237200	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	239104	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	239281	1	17	5.8	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	239103	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	240674	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	237185	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	237197	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	237201	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	237202	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	237198	1	19	5.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	240217	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	237808	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	240675	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	239875	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102371**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : ----  
**Sampler** : JB/CB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 06-Jul-2021 09:45  
**Date Analysis Commenced** : 06-Jul-2021  
**Issue Date** : 20-Jul-2021 13:18

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
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Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2102371  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 237530)</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	turbidity	----	E121	0.10	NTU	0.47	0.48	0.009	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 238568)</b>											
CG2102344-023	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2600	2650	1.67%	20%	----
<b>Physical Tests (QC Lot: 238569)</b>											
CG2102371-002	EV_MW_MC2A_WG_2021_Q3_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	496	491	1.11%	20%	----
<b>Physical Tests (QC Lot: 239367)</b>											
CG2102368-006	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	99.3	96.2	3.17%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	2.8	3.2	0.4	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	102	99.4	2.68%	20%	----
<b>Physical Tests (QC Lot: 239368)</b>											
CG2102368-013	Anonymous	conductivity	----	E100	2.0	µS/cm	213	214	0.468%	10%	----
<b>Physical Tests (QC Lot: 239369)</b>											
CG2102368-013	Anonymous	pH	----	E108	0.10	pH units	8.06	8.21	1.84%	4%	----
<b>Physical Tests (QC Lot: 239388)</b>											
CG2102368-015	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 241567)</b>											
CG2102368-015	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	467	466	0.150%	15%	----
<b>Anions and Nutrients (QC Lot: 237185)</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 237197)</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.145	0.143	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 237198)</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	176	176	0.147%	20%	----
<b>Anions and Nutrients (QC Lot: 237199)</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.073	0.085	0.011	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 237200)</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.84	4.78	1.37%	20%	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 237201)</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	nitrate (as N)	14797-55-8	E235.N03-L	0.0050	mg/L	2.19	2.19	0.174%	20%	----
<b>Anions and Nutrients (QC Lot: 237202)</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	nitrite (as N)	14797-65-0	E235.N02-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 237808)</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.303	0.219	0.084	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 238137)</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 239875)</b>											
CG2102368-015	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0029	0.0040	0.0010	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 240217)</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 240674)</b>											
CG2102363-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.82	0.86	0.04	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 240675)</b>											
CG2102363-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.75	0.77	0.02	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 239103)</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0013	0.0014	0.00006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00011	0.00012	0.000008	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00014	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0396	0.0398	0.710%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.013	0.014	0.0006	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0348 µg/L	0.0000325	0.0000023	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	84.2	87.2	3.54%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00097	0.00100	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000053	0.000060	0.000007	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0209	0.0212	1.40%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	35.1	35.1	0.114%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00108	0.00114	5.54%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 239103) - continued</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.16	1.17	0.801%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	20.4 µg/L	0.0211	3.04%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.53	2.61	2.87%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.68	4.65	0.818%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.172	0.175	1.59%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	62.8	63.7	1.43%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00141	0.00145	3.01%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0024	0.0028	0.0003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 239104)</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00015	0.00014	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 239281)</b>											
CG2102371-001	EV_BCGW_WG_2021_Q3_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 237530)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 238556)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 238557)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 238568)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 238569)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 239367)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 239368)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 239388)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 237185)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 237197)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 237198)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 237199)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 237200)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 237201)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 237202)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 237808)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 237808) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 238137)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 239875)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 240217)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 240674)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 240675)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 239103)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 239103) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 239104)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 239281)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 237530)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	----
<b>Physical Tests (QCLot: 238556)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	95.2	85.0	115	----
<b>Physical Tests (QCLot: 238557)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	98.5	85.0	115	----
<b>Physical Tests (QCLot: 238568)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	103	85.0	115	----
<b>Physical Tests (QCLot: 238569)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	102	85.0	115	----
<b>Physical Tests (QCLot: 239367)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	100	85.0	115	----
<b>Physical Tests (QCLot: 239368)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	----
<b>Physical Tests (QCLot: 239369)</b>									
pH	---	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 239388)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	106	85.0	115	----
<b>Physical Tests (QCLot: 241567)</b>									
oxidation-reduction potential [ORP]	---	E125	----	mV	220 mV	99.0	95.4	104	----
<b>Anions and Nutrients (QCLot: 237185)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	97.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 237197)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 237198)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 237199)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	----
<b>Anions and Nutrients (QCLot: 237200)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 237201)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 237202)</b>									





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		
						Low	High		
<b>Anions and Nutrients (QCLot: 237202) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 237808)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	96.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 238137)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	95.9	85.0	115	----
<b>Anions and Nutrients (QCLot: 239875)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	96.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 240217)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	99.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 240674)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 240675)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Dissolved Metals (QCLot: 239103)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.0	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.1	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.9	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.2	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.6	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.2	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 239103) - continued</b>									
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.0	80.0	120	----
<b>Dissolved Metals (QCLot: 239104)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	85.2	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 237185)</b>										
CG2102371-002	EV_MW_MC2A_WG_2021_Q3_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0549 mg/L	0.05 mg/L	110	70.0	130	----
<b>Anions and Nutrients (QCLot: 237197)</b>										
CG2102374-009	Anonymous	fluoride	16984-48-8	E235.F	0.986 mg/L	1 mg/L	98.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 237198)</b>										
CG2102374-009	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 237199)</b>										
CG2102374-009	Anonymous	bromide	24959-67-9	E235.Br-L	0.518 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 237200)</b>										
CG2102374-009	Anonymous	chloride	16887-00-6	E235.Cl-L	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 237201)</b>										
CG2102374-009	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.65 mg/L	2.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 237202)</b>										
CG2102374-009	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.535 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 237808)</b>										
CG2102371-002	EV_MW_MC2A_WG_2021_Q3_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.30 mg/L	2.5 mg/L	92.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 238137)</b>										
CG2102402-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 239875)</b>										
CG2102368-016	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0576 mg/L	0.0676 mg/L	85.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 240217)</b>										
CG2102371-002	EV_MW_MC2A_WG_2021_Q3_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0582 mg/L	0.0676 mg/L	86.1	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 240674)</b>										
CG2102363-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.0 mg/L	23.9 mg/L	96.1	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 240675)</b>										
CG2102363-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.6 mg/L	23.9 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 239103)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 239103) - continued</b>										
CG2102371-002	EV_MW_MC2A_WG_2021_Q3_NP	aluminum, dissolved	7429-90-5	E421	0.389 mg/L	0.4 mg/L	97.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0796 mg/L	0.08 mg/L	99.4	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.198 mg/L	0.2 mg/L	98.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00816 mg/L	0.008 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0378 mg/L	0.04 mg/L	94.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.78 mg/L	4 mg/L	94.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0753 mg/L	0.08 mg/L	94.1	70.0	130	----
		potassium, dissolved	7440-09-7	E421	7.60 mg/L	8 mg/L	95.0	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0805 mg/L	0.08 mg/L	101	70.0	130	----
		silicon, dissolved	7440-21-3	E421	17.9 mg/L	20 mg/L	89.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00654 mg/L	0.008 mg/L	81.7	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	42.5 mg/L	40 mg/L	106	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00774 mg/L	0.008 mg/L	96.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0794 mg/L	0.08 mg/L	99.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00809 mg/L	0.008 mg/L	101	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.199 mg/L	0.2 mg/L	99.3	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.780 mg/L	0.8 mg/L	97.6	70.0	130	----
<b>Dissolved Metals (QCLot: 239104)</b>										
CG2102371-002	EV_MW_MC2A_WG_2021_Q3_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0784 mg/L	0.08 mg/L	98.1	70.0	130	----
<b>Dissolved Metals (QCLot: 239281)</b>										
CG2102371-002	EV_MW_MC2A_WG_2021_Q3_NP	mercury, dissolved	7439-97-6	E509	0.0000918 mg/L	0.0001 mg/L	91.8	70.0	130	----



COC ID: **20210704Q3GW**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emslie@teck.com		X	X	X
Project Manager	Kennedy Allen			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com		X	X	X
Email	kennedy.allan@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com		X	X	X
								Email 5:	teckcoal@equisonline.com				X
City	Sparwood	Province	BC	City	Calgary	Province	AB						
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
	289			Phone Number	403-407-1800		PO number	VPO00741597					

Environmental Division

Calgary  
Work Order Reference  
**CG2102371**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-V/A (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW/6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW/6020)	D-ULTRA MERCURY (SW/6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_BCgw_WG_2021_Q3_NP	EV_BCgw	WG	N	07/04/21	15:20	G	5	1		1	1	1	1						1	
EV_MW_MC2A_WG_2021_Q3_NP	EV_MW_MC2A	WG	N	07/04/21	13:20	G	5	1		1	1	1	1						1	
EV_MW_MC2B_WG_2021_Q3_NP	EV_MW_MC2B	WG	N	07/04/21	14:10	G	5	1		1	1	1	1						1	
EV_MW_MC1A_WG_2021_Q3_NP	EV_MW_MC1A	WG	N	07/04/21	11:00	G	5	1		1	1	1	1						1	
EV_MW_MC1B_WG_2021_Q3_NP	EV_MW_MC1B	WG	N	07/04/21	11:50	G	5	1		1	1	1	1						1	
<b>Total</b>							<b>25</b>													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	J. Batstone, C. Bracken	July 4, 2021	<i>[Signature]</i>	7/6/21
<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) <input checked="" type="checkbox"/>	<b>Sampler's Name</b>	J. Batstone, C. Bracken	<b>Mobile #</b>	
Priority (2-3 business days) - 50% surcharge	<b>Sampler's Signature</b>	<i>[Signature]</i>	<b>Date/Time</b>	July 4, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

*[Handwritten initials]*



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102500**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210709Q3GW  
**Sampler** : CE/SH  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 10-Jul-2021 08:25  
**Date Analysis Commenced** : 10-Jul-2021  
**Issue Date** : 21-Jul-2021 13:33

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					EV_MW_MC3_ WG_2021_Q3_ NP	EV_MW_MC4_ WG_2021_Q3_ NP	----	----	----
Client sampling date / time					09-Jul-2021 14:43	09-Jul-2021 16:20	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102500-001	CG2102500-002	-----	-----	-----
					Result	Result	----	----	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	9.4	17.1	----	----	----
conductivity	----	E100	2.0	µS/cm	777	803	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	374	469	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	458	433	----	----	----
pH	----	E108	0.10	pH units	8.34	8.26	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	540	588	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.3	<1.0	----	----	----
turbidity	----	E121	0.10	NTU	0.19	4.27	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	232	313	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	6.8	<2.0	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	225	313	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	274	382	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	4.1	<2.0	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	----	----	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0202	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.175	0.168	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	28.6	31.3	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.162	0.160	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.434	0.203	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.50	0.0109	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0092	<0.0010	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0038	0.0027	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	153	118	----	----	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	1.94	0.214	----	----	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.57	2.29	----	----	----





## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					EV_MW_MC3_WG_2021_Q3_NP	EV_MW_MC4_WG_2021_Q3_NP	----	----	----
Client sampling date / time					09-Jul-2021 14:43	09-Jul-2021 16:20	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102500-001	CG2102500-002	-----	-----	-----
					Result	Result	---	---	---
<b>Organic / Inorganic Carbon</b>									
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.42	1.89	----	----	----
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	8.74	9.60	----	----	----
cation sum	----	EC101	0.10	meq/L	8.51	9.79	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	97.4	102	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	1.33	0.980	----	----	----
<b>Dissolved Metals</b>									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0016	0.0016	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00011	<0.00010	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00013	0.00046	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0975	0.115	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.023	0.040	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0565	<0.0050	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	96.3	124	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.51	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00106	0.00059	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.370	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0295	0.0207	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	32.4	38.7	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00364	0.0699	----	----	----
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00176	0.00360	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00335	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.51	2.42	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	13.0	<0.050	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.77	5.05	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	0.000212	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC3_ WG_2021_Q3_ NP	EV_MW_MC4_ WG_2021_Q3_ NP	----	----	----
Client sampling date / time					09-Jul-2021 14:43	09-Jul-2021 16:20	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102500-001	CG2102500-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	23.1	7.76	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.231	0.582	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	46.2	35.6	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000026	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00112	0.00113	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0015	0.0056	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2102500</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : <b>Jennifer Dane</b> <b>Address</b> : <b>RR#1 HIGHWAY #3</b> <b>Sparwood BC Canada V1C 4C3</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>ELKVIEW OPERATIONS</b> <b>PO</b> : <b>VPO00741597</b> <b>C-O-C number</b> : <b>20210709Q3GW</b> <b>Sampler</b> : <b>CE/SH</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>Teck Coal Master Quote</b> <b>No. of samples received</b> : <b>2</b> <b>No. of samples analysed</b> : <b>2</b>	<b>Page</b> : <b>1 of 13</b>  <b>Laboratory</b> : <b>Calgary - Environmental</b> <b>Account Manager</b> : <b>Lyudmyla Shvets</b> <b>Address</b> : <b>2559 29th Street NE</b> <b>Calgary, Alberta Canada T1Y 7B5</b>  <b>Telephone</b> : <b>+1 403 407 1800</b> <b>Date Samples Received</b> : <b>10-Jul-2021 08:25</b> <b>Issue Date</b> : <b>21-Jul-2021 13:33</b>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### ***Outliers: Reference Material (RM) Samples***

- No Reference Material (RM) Sample outliers occur.

#### ***Outliers : Analysis Holding Time Compliance (Breaches)***

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q3_NP	E298	09-Jul-2021	12-Jul-2021	----	----		12-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q3_NP	E298	09-Jul-2021	12-Jul-2021	----	----		12-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC3_WG_2021_Q3_NP	E235.Br-L	09-Jul-2021	----	----	----		11-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC4_WG_2021_Q3_NP	E235.Br-L	09-Jul-2021	----	----	----		11-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC3_WG_2021_Q3_NP	E235.Cl-L	09-Jul-2021	----	----	----		11-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC4_WG_2021_Q3_NP	E235.Cl-L	09-Jul-2021	----	----	----		11-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> EV_MW_MC3_WG_2021_Q3_NP	E378-U	09-Jul-2021	----	----	----		12-Jul-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_MC4_WG_2021_Q3_NP	E378-U	09-Jul-2021	----	----	----		12-Jul-2021	3 days	3 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_MC3_WG_2021_Q3_NP	E235.F	09-Jul-2021	----	----	----		11-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_MC4_WG_2021_Q3_NP	E235.F	09-Jul-2021	----	----	----		11-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_MC3_WG_2021_Q3_NP	E235.NO3-L	09-Jul-2021	----	----	----		11-Jul-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_MC4_WG_2021_Q3_NP	E235.NO3-L	09-Jul-2021	----	----	----		11-Jul-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_MC3_WG_2021_Q3_NP	E235.NO2-L	09-Jul-2021	----	----	----		11-Jul-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_MC4_WG_2021_Q3_NP	E235.NO2-L	09-Jul-2021	----	----	----		11-Jul-2021	3 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE EV_MW_MC3_WG_2021_Q3_NP	E235.SO4	09-Jul-2021	----	----	----		11-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE EV_MW_MC4_WG_2021_Q3_NP	E235.SO4	09-Jul-2021	----	----	----		11-Jul-2021	28 days	2 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q3_NP	E375-T	09-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q3_NP	E375-T	09-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q3_NP	E318	09-Jul-2021	13-Jul-2021	----	----		13-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q3_NP	E318	09-Jul-2021	13-Jul-2021	----	----		13-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q3_NP	E372-U	09-Jul-2021	18-Jul-2021	----	----		18-Jul-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q3_NP	E372-U	09-Jul-2021	18-Jul-2021	----	----		18-Jul-2021	28 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC3_WG_2021_Q3_NP	E421.Cr-L	09-Jul-2021	13-Jul-2021	----	----		14-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC4_WG_2021_Q3_NP	E421.Cr-L	09-Jul-2021	13-Jul-2021	----	----		14-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC3_WG_2021_Q3_NP	E509	09-Jul-2021	15-Jul-2021	----	----		15-Jul-2021	28 days	6 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC4_WG_2021_Q3_NP	E509	09-Jul-2021	15-Jul-2021	----	----		15-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC3_WG_2021_Q3_NP	E421	09-Jul-2021	13-Jul-2021	----	----		14-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC4_WG_2021_Q3_NP	E421	09-Jul-2021	13-Jul-2021	----	----		14-Jul-2021	180 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q3_NP	E358-L	09-Jul-2021	13-Jul-2021	----	----		13-Jul-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q3_NP	E358-L	09-Jul-2021	13-Jul-2021	----	----		13-Jul-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q3_NP	E355-L	09-Jul-2021	13-Jul-2021	----	----		13-Jul-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q3_NP	E355-L	09-Jul-2021	13-Jul-2021	----	----		13-Jul-2021	28 days	4 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC3_WG_2021_Q3_NP	E283	09-Jul-2021	----	----	----		13-Jul-2021	14 days	4 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC4_WG_2021_Q3_NP	E283	09-Jul-2021	----	----	----		13-Jul-2021	14 days	4 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_MC3_WG_2021_Q3_NP	E290	09-Jul-2021	----	----	----		14-Jul-2021	14 days	5 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_MC4_WG_2021_Q3_NP	E290	09-Jul-2021	----	----	----		14-Jul-2021	14 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_MC3_WG_2021_Q3_NP	E100	09-Jul-2021	----	----	----		14-Jul-2021	28 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_MC4_WG_2021_Q3_NP	E100	09-Jul-2021	----	----	----		14-Jul-2021	28 days	5 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_MC4_WG_2021_Q3_NP	E125	09-Jul-2021	----	----	----		19-Jul-2021	0.34 hrs	239 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_MC3_WG_2021_Q3_NP	E125	09-Jul-2021	----	----	----		19-Jul-2021	0.34 hrs	240 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_MC4_WG_2021_Q3_NP	E108	09-Jul-2021	----	----	----		14-Jul-2021	0.25 hrs	113 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_MC3_WG_2021_Q3_NP	E108	09-Jul-2021	----	----	----		14-Jul-2021	0.25 hrs	115 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_MC3_WG_2021_Q3_NP	E162	09-Jul-2021	----	----	----		15-Jul-2021	7 days	6 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> EV_MW_MC4_WG_2021_Q3_NP	E162	09-Jul-2021	----	----	----		15-Jul-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_MC3_WG_2021_Q3_NP	E160-L	09-Jul-2021	----	----	----		15-Jul-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_MC4_WG_2021_Q3_NP	E160-L	09-Jul-2021	----	----	----		15-Jul-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_MC3_WG_2021_Q3_NP	E121	09-Jul-2021	----	----	----		12-Jul-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_MC4_WG_2021_Q3_NP	E121	09-Jul-2021	----	----	----		12-Jul-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	241989	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	243050	1	5	20.0	5.0	✓
Ammonia by Fluorescence	E298	241200	1	12	8.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	240833	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	240834	1	17	5.8	5.0	✓
Conductivity in Water	E100	243049	1	5	20.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	242787	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	243908	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	242788	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	242638	1	5	20.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	241181	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	240837	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	240835	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	240836	1	17	5.8	5.0	✓
ORP by Electrode	E125	246056	1	20	5.0	5.0	✓
pH by Meter	E108	243048	1	7	14.2	5.0	✓
Sulfate in Water by IC	E235.SO4	240832	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	243880	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	246415	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	241546	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	242639	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	245183	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	241307	1	18	5.5	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	241989	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	243050	1	5	20.0	5.0	✓
Ammonia by Fluorescence	E298	241200	1	12	8.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	240833	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	240834	1	17	5.8	5.0	✓
Conductivity in Water	E100	243049	1	5	20.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	242787	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	243908	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	242788	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	242638	1	5	20.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	241181	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	240837	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	240835	1	17	5.8	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	240836	1	17	5.8	5.0	✓
ORP by Electrode	E125	246056	1	20	5.0	5.0	✓
pH by Meter	E108	243048	1	7	14.2	5.0	✓
Sulfate in Water by IC	E235.SO4	240832	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	243880	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	246415	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	241546	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	242639	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	245183	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	243874	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	241307	1	18	5.5	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	241989	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	243050	1	5	20.0	5.0	✓
Ammonia by Fluorescence	E298	241200	1	12	8.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	240833	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	240834	1	17	5.8	5.0	✓
Conductivity in Water	E100	243049	1	5	20.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	242787	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	243908	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	242788	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	242638	1	5	20.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	241181	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	240837	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	240835	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	240836	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	240832	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	243880	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	246415	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	241546	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	242639	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	245183	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	243874	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	241307	1	18	5.5	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	241200	1	12	8.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	240833	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	240834	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	242787	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	243908	1	9	11.1	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	242788	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	242638	1	5	20.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	241181	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	240837	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	240835	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	240836	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	240832	1	17	5.8	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	246415	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	241546	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	242639	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	245183	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102500**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210709Q3GW  
**Sampler** : CE/SH  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 10-Jul-2021 08:25  
**Date Analysis Commenced** : 10-Jul-2021  
**Issue Date** : 21-Jul-2021 13:33

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



Page : 2 of 14  
Work Order : CG2102500  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 241307)</b>											
CG2102496-001	Anonymous	turbidity	----	E121	0.10	NTU	0.72	0.79	0.07	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 241989)</b>											
CG2102500-001	EV_MW_MC3_WG_2021_Q3_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	9.4	7.9	1.5	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 243048)</b>											
CG2102500-001	EV_MW_MC3_WG_2021_Q3_NP	pH	----	E108	0.10	pH units	8.34	8.35	0.120%	4%	----
<b>Physical Tests (QC Lot: 243049)</b>											
CG2102500-001	EV_MW_MC3_WG_2021_Q3_NP	conductivity	----	E100	2.0	µS/cm	777	756	2.74%	10%	----
<b>Physical Tests (QC Lot: 243050)</b>											
CG2102500-001	EV_MW_MC3_WG_2021_Q3_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	225	219	2.75%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	6.8	8.0	1.2	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	232	227	2.14%	20%	----
<b>Physical Tests (QC Lot: 243880)</b>											
CG2102496-026	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2380	2520	5.76%	20%	----
<b>Physical Tests (QC Lot: 246056)</b>											
CG2102500-001	EV_MW_MC3_WG_2021_Q3_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	458	463	1.04%	15%	----
<b>Anions and Nutrients (QC Lot: 240832)</b>											
CG2102498-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	6.00	mg/L	1390	1380	0.503%	20%	----
<b>Anions and Nutrients (QC Lot: 240833)</b>											
CG2102498-001	Anonymous	bromide	24959-67-9	E235.Br-L	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 240834)</b>											
CG2102498-001	Anonymous	chloride	16887-00-6	E235.Cl-L	2.00	mg/L	13.4	14.4	1.02	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 240835)</b>											
CG2102498-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.100	mg/L	282	279	1.11%	20%	----
<b>Anions and Nutrients (QC Lot: 240836)</b>											
CG2102498-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0200	mg/L	0.0213	0.0201	0.0012	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 240837)</b>											
CG2102498-001	Anonymous	fluoride	16984-48-8	E235.F	0.400	mg/L	<0.400	<0.400	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 241181)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 241181) - continued</b>											
CG2102500-001	EV_MW_MC3_WG_2021_Q3_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0015	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 241200)</b>											
CG2102498-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.125	mg/L	5.74	5.88	2.41%	20%	----
<b>Anions and Nutrients (QC Lot: 241546)</b>											
CG2102498-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 245183)</b>											
CG2102500-001	EV_MW_MC3_WG_2021_Q3_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0038	0.0029	0.0009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 246415)</b>											
CG2102500-001	EV_MW_MC3_WG_2021_Q3_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 242638)</b>											
CG2102500-001	EV_MW_MC3_WG_2021_Q3_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.57	1.97	0.40	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 242639)</b>											
CG2102500-001	EV_MW_MC3_WG_2021_Q3_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.42	1.51	0.09	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 242787)</b>											
CG2102498-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 242788)</b>											
CG2102498-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00300	0.00300	0.0168%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0233	0.0232	0.489%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.114	0.117	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.749 µg/L	0.000741	1.14%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	418	418	0.000276%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	51.2 µg/L	0.0508	0.713%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00049	0.00048	0.000009	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.982	0.972	1.02%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	175	171	2.29%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.351	0.343	2.17%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00518	0.00515	0.638%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 242788) - continued</b>											
CG2102498-002	Anonymous	nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.372	0.364	2.27%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	16.6	16.3	1.55%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	6.78 µg/L	0.00695	2.52%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.84	2.79	1.83%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	28.6	27.8	2.59%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.917	0.900	1.88%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	282	284	0.384%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000251	0.000247	1.66%	20%	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0285	0.0284	0.407%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0626	0.0588	6.29%	20%	----
<b>Dissolved Metals (QC Lot: 243908)</b>											
CG2102498-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 241307)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 241989)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 243049)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 243050)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 243874)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 243880)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 240832)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 240833)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 240834)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 240835)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 240836)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 240837)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 241181)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 241200)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 241546)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 245183)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 245183) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 246415)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 242638)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 242639)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 242787)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 242788)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 242788) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 243908)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 241307)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	99.0	85.0	115	----
<b>Physical Tests (QCLot: 241989)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	108	85.0	115	----
<b>Physical Tests (QCLot: 243048)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 243049)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	107	90.0	110	----
<b>Physical Tests (QCLot: 243050)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	94.8	85.0	115	----
<b>Physical Tests (QCLot: 243874)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	89.4	85.0	115	----
<b>Physical Tests (QCLot: 243880)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.5	85.0	115	----
<b>Physical Tests (QCLot: 246056)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----
<b>Anions and Nutrients (QCLot: 240832)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 240833)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 240834)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 240835)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 240836)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 240837)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.0	90.0	110	----
<b>Anions and Nutrients (QCLot: 241181)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 241200)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 241546)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 241546) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	89.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 245183)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 246415)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	99.5	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 242638)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	107	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 242639)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	109	80.0	120	----
<b>Dissolved Metals (QCLot: 242787)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 242788)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.9	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.9	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	99.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.9	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.7	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.8	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.3	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.5	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 242788) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.8	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	107	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 240832)</b>										
CG2102499-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	115 mg/L	100 mg/L	115	75.0	125	----
<b>Anions and Nutrients (QCLot: 240833)</b>										
CG2102499-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.575 mg/L	0.5 mg/L	115	75.0	125	----
<b>Anions and Nutrients (QCLot: 240834)</b>										
CG2102499-004	Anonymous	chloride	16887-00-6	E235.Cl-L	114 mg/L	100 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 240835)</b>										
CG2102499-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.67 mg/L	2.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 240836)</b>										
CG2102499-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.574 mg/L	0.5 mg/L	115	75.0	125	----
<b>Anions and Nutrients (QCLot: 240837)</b>										
CG2102499-004	Anonymous	fluoride	16984-48-8	E235.F	1.09 mg/L	1 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 241181)</b>										
CG2102500-002	EV_MW_MC4_WG_2021_Q3_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0593 mg/L	0.05 mg/L	118	70.0	130	----
<b>Anions and Nutrients (QCLot: 241200)</b>										
CG2102499-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.112 mg/L	0.1 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 241546)</b>										
CG2102498-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.88 mg/L	2.5 mg/L	75.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 245183)</b>										
CG2102500-002	EV_MW_MC4_WG_2021_Q3_NP	phosphorus, total	7723-14-0	E372-U	0.0610 mg/L	0.0676 mg/L	90.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 246415)</b>										
CG2102500-002	EV_MW_MC4_WG_2021_Q3_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0488 mg/L	0.0676 mg/L	72.2	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 242638)</b>										
CG2102500-001	EV_MW_MC3_WG_2021_Q3_NP	carbon, dissolved organic [DOC]	----	E358-L	23.6 mg/L	23.9 mg/L	98.9	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 242639)</b>										
CG2102500-001	EV_MW_MC3_WG_2021_Q3_NP	carbon, total organic [TOC]	----	E355-L	24.0 mg/L	23.9 mg/L	100	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 242787)</b>										
CG2102498-003	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0776 mg/L	0.08 mg/L	97.0	70.0	130	----
<b>Dissolved Metals (QCLot: 242788)</b>										
CG2102498-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.384 mg/L	0.4 mg/L	95.9	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0398 mg/L	0.04 mg/L	99.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0363 mg/L	0.04 mg/L	90.8	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0751 mg/L	0.08 mg/L	93.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0168 mg/L	0.02 mg/L	84.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.195 mg/L	0.2 mg/L	97.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00730 mg/L	0.008 mg/L	91.2	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0356 mg/L	0.04 mg/L	88.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.74 mg/L	4 mg/L	93.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0358 mg/L	0.04 mg/L	89.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0818 mg/L	0.08 mg/L	102	70.0	130	----
		silicon, dissolved	7440-21-3	E421	17.9 mg/L	20 mg/L	89.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00767 mg/L	0.008 mg/L	95.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00725 mg/L	0.008 mg/L	90.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0796 mg/L	0.08 mg/L	99.5	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.205 mg/L	0.2 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.737 mg/L	0.8 mg/L	92.1	70.0	130	----
<b>Dissolved Metals (QCLot: 243908)</b>										
CG2102498-004	Anonymous	mercury, dissolved	7439-97-6	E509	0.000105 mg/L	0.0001 mg/L	105	70.0	130	----



COC ID: **20210709Q3GW**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emslie@teck.com	X	X	X	
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X	
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X	X	X	
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:	teckcoal@equisonline.com			X	
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 6:	jennifer.dane@teck.com	X	X	X	
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597				

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CVI	
EV_MW_MC3_WG_2021_Q3_NP	EV_MW_MC3	WG	N	07/09/21	14:43	G	5	1	1	1	1	1	1	1					1	
EV_MW_MC4_WG_2021_Q3_NP	EV_MW_MC4	WG	N	07/09/21	16:20	G	5	1	1	1	1	1	1	1					1	
<b>Total</b>							<b>10</b>													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Emslie/S. Hansen	July 9, 2021	<i>[Signature]</i>	19/07 2:25
<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	C. Emslie/S. Hansen	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	July 9, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

Environmental Division  
Calgary  
Work Order Reference  
**CG2102500**



Telephone : +1 403 407 1800

90





## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2102540**  
**Client** : **Teck Coal Limited**  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210712Q3GW  
**Sampler** : JB/CB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 13-Jul-2021 08:50  
**Date Analysis Commenced** : 13-Jul-2021  
**Issue Date** : 25-Jul-2021 15:15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					EV_MW_BC1A_ WG_2021_Q3_ NP	EV_MW_BC1B_ WG_2021_Q3_ NP	EV_MW_GT1A_ WG_2021_Q3_ NP	EV_MW_GT1B_ WG_2021_Q3_ NP	----
Client sampling date / time					12-Jul-2021 14:58	12-Jul-2021 13:55	12-Jul-2021 11:46	12-Jul-2021 12:44	----
Analyte	CAS Number	Method	LOR	Unit	CG2102540-001	CG2102540-002	CG2102540-003	CG2102540-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	16.1	16.4	3.0	7.8	----
conductivity	----	E100	2.0	µS/cm	1960	2060	480	1530	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1270	1330	259	941	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	450	451	430	434	----
pH	----	E108	0.10	pH units	8.11	8.07	8.33	8.22	----
solids, total dissolved [TDS]	----	E162	10	mg/L	1720	1980	356	1390	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.3	1.3	<1.0	<1.0	----
turbidity	----	E121	0.10	NTU	0.61	0.69	0.85	0.41	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	269	258	167	203	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	4.8	<2.0	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	269	258	162	203	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	328	315	198	248	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	2.9	<2.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0.0911	0.0571	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250	<0.250	<0.050	<0.250	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	41.1	46.8	2.04	14.6	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.217	0.246	0.158	0.181	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	30.2	31.6	<0.0050	22.2	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0160	<0.0050 <sup>DLDs</sup>	<0.0010	0.0083	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0201	0.0228	0.0028	0.0085	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0205 <sup>DLM</sup>	0.0221 <sup>DLM</sup>	0.0079 <sup>DLM</sup>	0.0105 <sup>DLM</sup>	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0239 <sup>DLM</sup>	0.0223 <sup>DLM</sup>	0.0074 <sup>DLM</sup>	0.0096 <sup>DLM</sup>	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	920	973	98.6	722	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	30.2	31.6	<0.050	22.2	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.90	1.22	1.10	1.58	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_BC1A_WG_2021_Q3_NP	EV_MW_BC1B_WG_2021_Q3_NP	EV_MW_GT1A_WG_2021_Q3_NP	EV_MW_GT1B_WG_2021_Q3_NP	----
Client sampling date / time					12-Jul-2021 14:58	12-Jul-2021 13:55	12-Jul-2021 11:46	12-Jul-2021 12:44	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102540-001	CG2102540-002	CG2102540-003	CG2102540-004	-----	
					Result	Result	Result	Result	----	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.70	0.68	0.76	1.18	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	27.8	29.0	5.46	21.1	----	
cation sum	----	EC101	0.10	meq/L	26.0	27.2	5.34	19.2	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.5	93.8	97.8	91.0	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.34	3.20	1.11	4.71	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0028	<0.0020 <sup>DLA</sup>	0.0016	0.0013	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00077	0.00160	<0.00010	0.00115	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00022	0.00022	0.00020	0.00024	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0556	0.0340	0.0645	0.0814	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.055	0.065	0.012	0.040	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.219	0.321	<0.0050	0.140	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	244	242	68.9	179	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.29	<0.20 <sup>DLA</sup>	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	<0.00040 <sup>DLA</sup>	<0.00020	0.00048	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	0.128	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.170	0.181	0.0097	0.119	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	161	176	21.1	120	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00532	0.00032	0.0776	<0.00010	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00581	0.00854	0.00123	0.00583	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00211	0.00504	<0.00050	0.0137	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	6.17	7.31	0.776	4.62	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	226	236	0.051	173	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.48	3.23	2.71	2.80	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_BC1A_ WG_2021_Q3_ NP	EV_MW_BC1B_ WG_2021_Q3_ NP	EV_MW_GT1A_ WG_2021_Q3_ NP	EV_MW_GT1B_ WG_2021_Q3_ NP	----
Client sampling date / time					12-Jul-2021 14:58	12-Jul-2021 13:55	12-Jul-2021 11:46	12-Jul-2021 12:44	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102540-001	CG2102540-002	CG2102540-003	CG2102540-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	11.0	11.6	2.94	7.02	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.10	1.16	0.123	0.668	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	329	350	34.4	232	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000022	0.000026	<0.000010	0.000022	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00826	0.00953	0.000353	0.00612	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0049	0.0071	<0.0010	0.0042	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102540</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Kennedy Allen	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 13-Jul-2021 08:50
PO	: VPO00741597	Issue Date	: 25-Jul-2021 15:16
C-O-C number	: 20210712Q3GW		
Sampler	: JB/CB		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q3_NP	E298	12-Jul-2021	14-Jul-2021	----	----		14-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q3_NP	E298	12-Jul-2021	14-Jul-2021	----	----		14-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q3_NP	E298	12-Jul-2021	14-Jul-2021	----	----		14-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q3_NP	E298	12-Jul-2021	14-Jul-2021	----	----		14-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q3_NP	E235.Br-L	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q3_NP	E235.Br-L	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q3_NP	E235.Br-L	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE EV_MW_GT1B_WG_2021_Q3_NP	E235.Br-L	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_BC1A_WG_2021_Q3_NP	E235.Cl-L	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_BC1B_WG_2021_Q3_NP	E235.Cl-L	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_GT1A_WG_2021_Q3_NP	E235.Cl-L	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_GT1B_WG_2021_Q3_NP	E235.Cl-L	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_BC1A_WG_2021_Q3_NP	E378-U	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_BC1B_WG_2021_Q3_NP	E378-U	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_GT1A_WG_2021_Q3_NP	E378-U	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_GT1B_WG_2021_Q3_NP	E378-U	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_BC1A_WG_2021_Q3_NP	E235.F	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_BC1B_WG_2021_Q3_NP	E235.F	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_GT1A_WG_2021_Q3_NP	E235.F	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_GT1B_WG_2021_Q3_NP	E235.F	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_BC1A_WG_2021_Q3_NP	E235.NO3-L	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_BC1B_WG_2021_Q3_NP	E235.NO3-L	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_GT1A_WG_2021_Q3_NP	E235.NO3-L	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_GT1B_WG_2021_Q3_NP	E235.NO3-L	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_BC1A_WG_2021_Q3_NP	E235.NO2-L	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q3_NP	E235.NO2-L	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q3_NP	E235.NO2-L	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GT1B_WG_2021_Q3_NP	E235.NO2-L	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q3_NP	E235.SO4	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q3_NP	E235.SO4	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q3_NP	E235.SO4	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_GT1B_WG_2021_Q3_NP	E235.SO4	12-Jul-2021	----	----	----		13-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q3_NP	E375-T	12-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q3_NP	E375-T	12-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q3_NP	E375-T	12-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q3_NP	E375-T	12-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q3_NP	E318	12-Jul-2021	14-Jul-2021	----	----		14-Jul-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q3_NP	E318	12-Jul-2021	14-Jul-2021	----	----		14-Jul-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q3_NP	E318	12-Jul-2021	14-Jul-2021	----	----		14-Jul-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q3_NP	E318	12-Jul-2021	14-Jul-2021	----	----		14-Jul-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q3_NP	E372-U	12-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q3_NP	E372-U	12-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q3_NP	E372-U	12-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q3_NP	E372-U	12-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC1A_WG_2021_Q3_NP	E421.Cr-L	12-Jul-2021	16-Jul-2021	----	----		16-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC1B_WG_2021_Q3_NP	E421.Cr-L	12-Jul-2021	16-Jul-2021	----	----		16-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GT1A_WG_2021_Q3_NP	E421.Cr-L	12-Jul-2021	16-Jul-2021	----	----		16-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GT1B_WG_2021_Q3_NP	E421.Cr-L	12-Jul-2021	16-Jul-2021	----	----		16-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_BC1A_WG_2021_Q3_NP	E509	12-Jul-2021	17-Jul-2021	----	----		17-Jul-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_BC1B_WG_2021_Q3_NP	E509	12-Jul-2021	16-Jul-2021	----	----		16-Jul-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GT1A_WG_2021_Q3_NP	E509	12-Jul-2021	16-Jul-2021	----	----		16-Jul-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GT1B_WG_2021_Q3_NP	E509	12-Jul-2021	16-Jul-2021	----	----		16-Jul-2021	28 days	4 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		
				Rec	Actual			Rec	Actual	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC1A_WG_2021_Q3_NP	E421	12-Jul-2021	16-Jul-2021	----	----		16-Jul-2021	180 days	4 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC1B_WG_2021_Q3_NP	E421	12-Jul-2021	16-Jul-2021	----	----		16-Jul-2021	180 days	4 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MW_GT1A_WG_2021_Q3_NP	E421	12-Jul-2021	16-Jul-2021	----	----		16-Jul-2021	180 days	4 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MW_GT1B_WG_2021_Q3_NP	E421	12-Jul-2021	16-Jul-2021	----	----		16-Jul-2021	180 days	4 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q3_NP	E358-L	12-Jul-2021	17-Jul-2021	----	----		17-Jul-2021	28 days	5 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q3_NP	E358-L	12-Jul-2021	17-Jul-2021	----	----		17-Jul-2021	28 days	5 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q3_NP	E358-L	12-Jul-2021	17-Jul-2021	----	----		17-Jul-2021	28 days	5 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q3_NP	E358-L	12-Jul-2021	17-Jul-2021	----	----		17-Jul-2021	28 days	5 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q3_NP	E355-L	12-Jul-2021	17-Jul-2021	----	----		17-Jul-2021	28 days	5 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q3_NP	E355-L	12-Jul-2021	17-Jul-2021	----	----		17-Jul-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q3_NP	E355-L	12-Jul-2021	17-Jul-2021	----	----		17-Jul-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q3_NP	E355-L	12-Jul-2021	17-Jul-2021	----	----		17-Jul-2021	28 days	5 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q3_NP	E283	12-Jul-2021	----	----	----		14-Jul-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q3_NP	E283	12-Jul-2021	----	----	----		14-Jul-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q3_NP	E283	12-Jul-2021	----	----	----		14-Jul-2021	14 days	2 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_GT1B_WG_2021_Q3_NP	E283	12-Jul-2021	----	----	----		14-Jul-2021	14 days	2 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q3_NP	E290	12-Jul-2021	----	----	----		15-Jul-2021	14 days	3 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q3_NP	E290	12-Jul-2021	----	----	----		15-Jul-2021	14 days	3 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_GT1A_WG_2021_Q3_NP	E290	12-Jul-2021	----	----	----		15-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_GT1B_WG_2021_Q3_NP	E290	12-Jul-2021	----	----	----		15-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_BC1A_WG_2021_Q3_NP	E100	12-Jul-2021	----	----	----		15-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_BC1B_WG_2021_Q3_NP	E100	12-Jul-2021	----	----	----		15-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_GT1A_WG_2021_Q3_NP	E100	12-Jul-2021	----	----	----		15-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_GT1B_WG_2021_Q3_NP	E100	12-Jul-2021	----	----	----		15-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_BC1A_WG_2021_Q3_NP	E125	12-Jul-2021	----	----	----		20-Jul-2021	0.34 hrs	194 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_BC1B_WG_2021_Q3_NP	E125	12-Jul-2021	----	----	----		20-Jul-2021	0.34 hrs	195 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_GT1B_WG_2021_Q3_NP	E125	12-Jul-2021	----	----	----		20-Jul-2021	0.34 hrs	196 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_GT1A_WG_2021_Q3_NP	E125	12-Jul-2021	----	----	----		20-Jul-2021	0.34 hrs	197 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_BC1A_WG_2021_Q3_NP	E108	12-Jul-2021	----	----	----		15-Jul-2021	0.25 hrs	64 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_BC1B_WG_2021_Q3_NP	E108	12-Jul-2021	----	----	----		15-Jul-2021	0.25 hrs	65 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_GT1B_WG_2021_Q3_NP	E108	12-Jul-2021	----	----	----		15-Jul-2021	0.25 hrs	66 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_GT1A_WG_2021_Q3_NP	E108	12-Jul-2021	----	----	----		15-Jul-2021	0.25 hrs	67 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_BC1A_WG_2021_Q3_NP	E162	12-Jul-2021	----	----	----		19-Jul-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_BC1B_WG_2021_Q3_NP	E162	12-Jul-2021	----	----	----		19-Jul-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_GT1A_WG_2021_Q3_NP	E162	12-Jul-2021	----	----	----		19-Jul-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_GT1B_WG_2021_Q3_NP	E162	12-Jul-2021	----	----	----		19-Jul-2021	7 days	7 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_BC1A_WG_2021_Q3_NP	E160-L	12-Jul-2021	----	----	----		19-Jul-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_BC1B_WG_2021_Q3_NP	E160-L	12-Jul-2021	----	----	----		19-Jul-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_GT1A_WG_2021_Q3_NP	E160-L	12-Jul-2021	----	----	----		19-Jul-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_GT1B_WG_2021_Q3_NP	E160-L	12-Jul-2021	----	----	----		19-Jul-2021	7 days	7 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q3_NP	E121	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q3_NP	E121	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q3_NP	E121	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_GT1B_WG_2021_Q3_NP	E121	12-Jul-2021	----	----	----		13-Jul-2021	3 days	1 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	242910	2	40	5.0	5.0	✔
Alkalinity Species by Titration	E290	243942	1	7	14.2	5.0	✔
Ammonia by Fluorescence	E298	243110	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	242419	1	19	5.2	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	242420	1	19	5.2	5.0	✔
Conductivity in Water	E100	243943	1	7	14.2	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	245053	1	9	11.1	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	245588	2	39	5.1	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	245054	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	245963	1	18	5.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	242610	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	242417	1	19	5.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	242421	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	242422	1	19	5.2	5.0	✔
ORP by Electrode	E125	246982	1	20	5.0	5.0	✔
pH by Meter	E108	243944	1	8	12.5	5.0	✔
Sulfate in Water by IC	E235.SO4	242418	1	19	5.2	5.0	✔
TDS by Gravimetry	E162	246428	1	20	5.0	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	246415	1	6	16.6	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	243135	2	40	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	245966	1	6	16.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	246247	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	242516	1	19	5.2	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	242910	2	40	5.0	5.0	✔
Alkalinity Species by Titration	E290	243942	1	7	14.2	5.0	✔
Ammonia by Fluorescence	E298	243110	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	242419	1	19	5.2	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	242420	1	19	5.2	5.0	✔
Conductivity in Water	E100	243943	1	7	14.2	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	245053	1	9	11.1	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	245588	2	39	5.1	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	245054	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	245963	1	18	5.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	242610	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	242417	1	19	5.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	242421	1	19	5.2	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	242422	1	19	5.2	5.0	✓
ORP by Electrode	E125	246982	1	20	5.0	5.0	✓
pH by Meter	E108	243944	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	242418	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	246428	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	246415	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	243135	2	40	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	245966	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	246247	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	246423	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	242516	1	19	5.2	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	242910	2	40	5.0	5.0	✓
Alkalinity Species by Titration	E290	243942	1	7	14.2	5.0	✓
Ammonia by Fluorescence	E298	243110	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	242419	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	242420	1	19	5.2	5.0	✓
Conductivity in Water	E100	243943	1	7	14.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	245053	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	245588	2	39	5.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	245054	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	245963	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	242610	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	242417	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	242421	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	242422	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	242418	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	246428	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	246415	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	243135	2	40	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	245966	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	246247	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	246423	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	242516	1	19	5.2	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	243110	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	242419	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	242420	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	245053	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	245588	2	39	5.1	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	245054	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	245963	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	242610	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	242417	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	242421	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	242422	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	242418	1	19	5.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	246415	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	243135	2	40	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	245966	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	246247	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102540**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Kennedy Allen  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210712Q3GW  
**Sampler** : JB/CB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 13-Jul-2021 08:50  
**Date Analysis Commenced** : 13-Jul-2021  
**Issue Date** : 25-Jul-2021 15:15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
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Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2102540  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 242516)</b>											
CG2102539-004	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 242910)</b>											
CG2102538-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	12.1	11.4	0.7	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 242911)</b>											
CG2102540-003	EV_MW_GT1A_WG_2021_Q3_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	3.0	3.1	0.1	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 243942)</b>											
CG2102539-007	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	134	138	2.94%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	4.2	5.8	1.6	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	138	144	3.97%	20%	----
<b>Physical Tests (QC Lot: 243943)</b>											
CG2102539-007	Anonymous	conductivity	----	E100	2.0	µS/cm	356	355	0.281%	10%	----
<b>Physical Tests (QC Lot: 243944)</b>											
CG2102539-007	Anonymous	pH	----	E108	0.10	pH units	8.34	8.36	0.240%	4%	----
<b>Physical Tests (QC Lot: 246428)</b>											
CG2102538-004	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	811	848	4.52%	20%	----
<b>Physical Tests (QC Lot: 246982)</b>											
CG2102538-006	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	468	477	2.03%	15%	----
<b>Anions and Nutrients (QC Lot: 242417)</b>											
CG2102533-001	Anonymous	fluoride	16984-48-8	E235.F	0.400	mg/L	<0.400	<0.400	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 242418)</b>											
CG2102533-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	6.00	mg/L	849	835	1.69%	20%	----
<b>Anions and Nutrients (QC Lot: 242419)</b>											
CG2102533-001	Anonymous	bromide	24959-67-9	E235.Br-L	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 242420)</b>											
CG2102533-001	Anonymous	chloride	16887-00-6	E235.Cl-L	2.00	mg/L	6.10	5.37	0.72	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 242421)</b>											
CG2102533-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.100	mg/L	151	150	0.307%	20%	----
<b>Anions and Nutrients (QC Lot: 242422)</b>											
CG2102533-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 242610)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 242610) - continued</b>											
CG2102538-014	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 243110)</b>											
CG2102540-001	EV_MW_BC1A_WG_2021_Q3_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 243135)</b>											
CG2102538-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.083	0.033	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 243136)</b>											
CG2102540-003	EV_MW_GT1A_WG_2021_Q3_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.086	0.036	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 246247)</b>											
CG2102538-008	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 246415)</b>											
CG2102500-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 245963)</b>											
CG2102525-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 245966)</b>											
CG2102525-009	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.94	0.92	0.02	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 245053)</b>											
CG2102539-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00022	0.00015	0.00007	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 245054)</b>											
CG2102539-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0034	0.0028	0.0005	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00016	0.00016	0.000003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0541	0.0528	2.38%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0192 µg/L	0.0000138	0.0000054	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	69.5	69.7	0.299%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0067	0.0066	0.00007	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	36.5	35.9	1.44%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00840	0.00845	0.590%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 245054) - continued</b>											
CG2102539-002	Anonymous	molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000889	0.000904	1.65%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00074	0.00068	0.00005	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.876	0.875	0.0945%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	30.9 µg/L	0.0305	1.55%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.17	2.14	1.20%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.42	1.40	1.30%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.112	0.115	2.33%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	53.8	52.9	1.62%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00206	0.00203	1.28%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 245588)</b>											
CG2102513-034	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 245664)</b>											
CG2102539-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 242516)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 242910)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 242911)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 243942)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 243943)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 246423)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 246424)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 246428)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 242417)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 242418)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 242419)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 242420)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 242421)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 242422)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 242610)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 243110)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 243110) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 243135)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 243136)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 246247)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 246415)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 245963)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 245966)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 245053)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 245054)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 245054) - continued</b>						
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 245588)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 245664)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 242516)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
<b>Physical Tests (QCLot: 242910)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	106	85.0	115	----
<b>Physical Tests (QCLot: 242911)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	108	85.0	115	----
<b>Physical Tests (QCLot: 243942)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	94.8	85.0	115	----
<b>Physical Tests (QCLot: 243943)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	----
<b>Physical Tests (QCLot: 243944)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 246423)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	95.0	85.0	115	----
<b>Physical Tests (QCLot: 246424)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	89.5	85.0	115	----
<b>Physical Tests (QCLot: 246428)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	100	85.0	115	----
<b>Physical Tests (QCLot: 246982)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
<b>Anions and Nutrients (QCLot: 242417)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 242418)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 242419)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	----
<b>Anions and Nutrients (QCLot: 242420)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 242421)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 242422)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 242610)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		
						Low	High		
<b>Anions and Nutrients (QCLot: 242610) - continued</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	95.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 243110)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	107	85.0	115	----
<b>Anions and Nutrients (QCLot: 243135)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	84.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 243136)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	75.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 246247)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	100	80.0	120	----
<b>Anions and Nutrients (QCLot: 246415)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	99.5	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 245963)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	91.4	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 245966)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	81.6	80.0	120	----
<b>Dissolved Metals (QCLot: 245053)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	95.7	80.0	120	----
<b>Dissolved Metals (QCLot: 245054)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.2	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	94.9	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	96.6	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.5	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.6	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.7	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.4	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.1	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.5	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.2	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 245054) - continued</b>									
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.3	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.4	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.9	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.2	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.0	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.4	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.9	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.5	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	106	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100.0	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 242417)</b>										
CG2102533-005	Anonymous	fluoride	16984-48-8	E235.F	1.07 mg/L	1 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 242418)</b>										
CG2102533-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 242419)</b>										
CG2102533-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.527 mg/L	0.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 242420)</b>										
CG2102533-005	Anonymous	chloride	16887-00-6	E235.Cl-L	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 242421)</b>										
CG2102533-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 242422)</b>										
CG2102533-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.537 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 242610)</b>										
CG2102539-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0491 mg/L	0.05 mg/L	98.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 243110)</b>										
CG2102544-010	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.115 mg/L	0.1 mg/L	115	75.0	125	----
<b>Anions and Nutrients (QCLot: 243135)</b>										
CG2102538-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.55 mg/L	2.5 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 243136)</b>										
CG2102540-004	EV_MW_GT1B_WG_2021_Q3_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.20 mg/L	2.5 mg/L	88.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 246247)</b>										
CG2102538-009	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0614 mg/L	0.0676 mg/L	90.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 246415)</b>										
CG2102500-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0488 mg/L	0.0676 mg/L	72.2	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 245963)</b>										
CG2102525-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	19.6 mg/L	23.9 mg/L	82.0	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 245966)</b>										
CG2102525-009	Anonymous	carbon, total organic [TOC]	----	E355-L	22.2 mg/L	23.9 mg/L	92.7	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 245053)</b>										
CG2102539-003	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 245054)</b>										
CG2102539-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00940 mg/L	0.01 mg/L	94.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00417 mg/L	0.004 mg/L	104	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.05 mg/L	2 mg/L	103	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0987 mg/L	0.1 mg/L	98.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0216 mg/L	0.02 mg/L	108	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.06 mg/L	4 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0430 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.59 mg/L	10 mg/L	95.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00417 mg/L	0.004 mg/L	104	70.0	130	----
		sodium, dissolved	17341-25-2	E421	2.02 mg/L	2 mg/L	101	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00382 mg/L	0.004 mg/L	95.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00395 mg/L	0.004 mg/L	98.7	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.403 mg/L	0.4 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 245588)</b>										
CG2102513-035	Anonymous	mercury, dissolved	7439-97-6	E509	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 245664)</b>										

Page : 14 of 14  
 Work Order : CG2102540  
 Client : Teck Coal Limited  
 Project : ELKVIEW OPERATIONS



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 245664) - continued</b>										
CG2102539-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.000104 mg/L	0.0001 mg/L	104	70.0	130	----

COC ID: 20210712Q3GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO		LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary		Report Format / Distribution			Excel	PDF	EDD
Job Description	Q2 Ground Water Sampling	Lab Contact	Lyudmyla Shvets		Email 1:	chris.emsle@teck.com	X	X	X	
Project Manager	Kennedy Allen	Email	lyudmyla.shvets@alsglobal.com		Email 2:	colby.bracken@teck.com	X	X	X	
Email	kennedy.allan@teck.com	Address	2559 29 Street NE		Email 3:	kennedy.allan@teck.com	X	X	X	
Address	RR#1 HWY# 3				Email 4:	Teck Lab Results@sharepoint.teck.com	X	X	X	
					Email 5:	teckcoal@equisonline.com			X	
Province	BC	City	Calgary		Province	AB				
Country	Canada	Postal Code	T1Y 7B5		Country	Canada				
	-5289	Phone Number	403-407-1800		PO number	VPO00741597				

Environmental Division  
Calgary

Work Order Reference  
**CG2102540**



Telephone: 1 403 407 1800

*2590*

SAMPLE DETAILS							ANALYSIS REQUESTED										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE PRESERV	No	Yes	Yes	No	No	No	No	Yes	Yes
								ANALYSIS	Nitric	Sulphuric	Sulphuric		NO	Sodium Bisulphate	HCl	NaOH	
								TECKCOAL-ROUTINE-VA (E305.1) Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL									
								TECKCOAL-MET-D-VA (SW6020)									
								DOC (APHA 5310)									
								Dissolved Phosphorus									
								TKN/TOC (APHA 4500-NORG)									
								Total Nitrogen for BC (NO2 and NO3)									
								T-ULTRA MERCURY (SW6020)									
								D-ULTRA MERCURY (SW6020)									
								EPH (C10-C32)									
								D-Mercury									
								D-C-VI									
Total																	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
		J. Batstone, C. Bracken		July 12, 2021		<i>[Signature]</i>		<i>11/3 650</i>	
SERVICE REQUEST (rush - subject to availability)		Sampler's Name		J. Batstone, C. Bracken		Mobile #			
Regular (default) X		Sampler's Signature		<i>[Signature]</i>		Date/Time		July 12, 2021	
Priority (2-3 business days) - 50% surcharge									
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102596**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210714Q3GW  
**Sampler** : C. Emslie/ J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Page** : 1 of 8  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 15-Jul-2021 08:30  
**Date Analysis Commenced** : 15-Jul-2021  
**Issue Date** : 06-Aug-2021 16:15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_GCGW_WG _2021_Q3_NP	EV_MW_AQ1_ WG_2021_Q3_ NP	EV_LSGW_WG _2021_Q3_NP	EV_MW_BC10A _WG_2021_Q3 _NP_FD	EV_MW_BC10B _WG_2021_Q3 _NP_FB
Client sampling date / time					14-Jul-2021 11:25	14-Jul-2021 13:50	14-Jul-2021 09:31	14-Jul-2021 09:33	14-Jul-2021 09:36	
Analyte	CAS Number	Method	LOR	Unit	CG2102596-001	CG2102596-002	CG2102596-003	CG2102596-004	CG2102596-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	3.0	17.7	<2.0	14.7	<2.0	
conductivity	----	E100	2.0	µS/cm	448	859	958	962	<2.0	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	236	492	594	584	<0.50	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	315	439	366	276	440	
pH	----	E108	0.10	pH units	8.08	7.42	7.63	7.62	5.53	
solids, total dissolved [TDS]	----	E162	10	mg/L	280	553	582	582	<10	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.6	7.6	7.1	6.8	<1.0	
turbidity	----	E121	0.10	NTU	2.70	5.90	21.6	26.8	<0.10	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	163	352	526	541	<2.0	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	163	352	526	541	<2.0	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	199	429	642	660	<2.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0175	<0.0050	0.188	0.180	0.0149 <sup>RRV</sup>	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	0.113	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.72	41.5	7.59	7.75	<0.10	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.550	0.102	0.118	0.122	<0.020	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.185	0.243	0.329	0.408	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.397	<0.0250 <sup>DLDS</sup>	<0.0250 <sup>DLDS</sup>	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0010	<0.0010	<0.0050 <sup>DLDS</sup>	0.0068	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0122	<0.0010	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0245	0.0190	0.0190	<0.0020	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	0.0119	0.0113	0.0112	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	65.2	83.3	48.4	49.8	<0.30	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.186	0.640	0.329	0.415	<0.050	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.11	1.65	2.66	2.34	<0.50	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_GCGW_WG_2021_Q3_NP	EV_MW_AQ1_WG_2021_Q3_NP	EV_LSGW_WG_2021_Q3_NP	EV_MW_BC10A_WG_2021_Q3_NP_FD	EV_MW_BC10B_WG_2021_Q3_NP_FB
Client sampling date / time					14-Jul-2021 11:25	14-Jul-2021 13:50	14-Jul-2021 09:31	14-Jul-2021 09:33	14-Jul-2021 09:36	
Analyte	CAS Number	Method	LOR	Unit	CG2102596-001	CG2102596-002	CG2102596-003	CG2102596-004	CG2102596-005	
					Result	Result	Result	Result	Result	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.14	1.21	2.65	2.69	<0.50	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.78	9.97	11.7	12.1	<0.10	
cation sum	----	EC101	0.10	meq/L	4.94	10.1	12.5	12.3	<0.10	
ion balance (cations/anions ratio)	----	EC101	0.010	%	103	101	107	102	100 <sup>RRV</sup>	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.65	0.648	3.30	0.820	<0.010	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0027	0.0024	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00237	0.00012	0.00180	0.00185	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0691	0.201	0.227	0.223	<0.00010	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	0.025	0.048	0.049	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0402	<0.0050	<0.0050	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	64.2	117	117	114	<0.050	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.20	<0.10	1.42	1.36	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00132	<0.00020	0.00088	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.227	<0.010	2.44	2.30	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	0.000052	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0077	0.0205	0.0656	0.0658	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.5	48.6	73.2	72.8	<0.0050	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0899	0.00014	1.08	1.05	<0.00010	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00238	0.000324	0.00247	0.00246	<0.000050	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00061	0.00064	0.00423	0.00420	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.795	1.78	4.39	4.31	<0.050	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	4.77	0.090	0.113	<0.050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.33	4.10	4.95	4.90	<0.050	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_GCGW_WG_2021_Q3_NP	EV_MW_AQ1_WG_2021_Q3_NP	EV_LSGW_WG_2021_Q3_NP	EV_MW_BC10A_WG_2021_Q3_NP_FD	EV_MW_BC10B_WG_2021_Q3_NP_FB
Client sampling date / time					14-Jul-2021 11:25	14-Jul-2021 13:50	14-Jul-2021 09:31	14-Jul-2021 09:33	14-Jul-2021 09:36	
Analyte	CAS Number	Method	LOR	Unit	CG2102596-001	CG2102596-002	CG2102596-003	CG2102596-004	CG2102596-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.27	5.38	9.73	9.72	<0.050	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.271	0.383	0.515	0.496	<0.00020	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	24.5	30.7	19.4	19.4	<0.50	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000019	<0.000010	0.000040	0.000037	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00118	0.000477	0.00185	0.00181	<0.000010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0125	0.0014	0.0019	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_MW_BC10C	----	----	----	----
(Matrix: Water)						_WG_2021_Q3				
					Client sampling date / time	14-Jul-2021 09:39	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102596-006	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	<2.0	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	<0.50	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	496	----	----	----	----	----
pH	----	E108	0.10	pH units	5.31	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	----	----	----	----	----
turbidity	----	E121	0.10	NTU	<0.10	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0303 <sup>RRV</sup>	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	----	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	----	----	----	----	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	<0.050	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_MW_BC10C	----	----	----	----
(Matrix: Water)						_WG_2021_Q3				
					Client sampling date / time	14-Jul-2021 09:39	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102596-006	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	<0.10	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100 <sup>RRV</sup>	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_BC10C	---	---	---	---
						_WG_2021_Q3				
						_NP_TB				
					Client sampling date / time	14-Jul-2021 09:39	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2102596-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	---	---	---	---	---
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	---	---	---	---	---
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	---	---	---	---	---
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	---	---	---	---	---
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	---	---	---	---	---
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	---	---	---	---	---
dissolved mercury filtration location	----	EP509	-	-	Field	---	---	---	---	---
dissolved metals filtration location	----	EP421	-	-	Field	---	---	---	---	---

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102596</b>	Page	: 1 of 24
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 15-Jul-2021 08:30
PO	: VPO00741597	Issue Date	: 06-Aug-2021 16:16
C-O-C number	: 20210714Q3GW		
Sampler	: C. Emslie/ J. Batstone		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GCGW_WG_2021_Q3_NP	E298	14-Jul-2021	15-Jul-2021	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_LSGW_WG_2021_Q3_NP	E298	14-Jul-2021	15-Jul-2021	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ1_WG_2021_Q3_NP	E298	14-Jul-2021	15-Jul-2021	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q3_NP_FD	E298	14-Jul-2021	15-Jul-2021	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q3_NP_FB	E298	14-Jul-2021	15-Jul-2021	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q3_NP_TB	E298	14-Jul-2021	15-Jul-2021	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_GCGW_WG_2021_Q3_NP	E235.Br-L	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_LSGW_WG_2021_Q3_NP	E235.Br-L	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MW_AQ1_WG_2021_Q3_NP	E235.Br-L	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MW_BC10A_WG_2021_Q3_NP_FD	E235.Br-L	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MW_BC10B_WG_2021_Q3_NP_FB	E235.Br-L	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MW_BC10C_WG_2021_Q3_NP_TB	E235.Br-L	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_GCGW_WG_2021_Q3_NP	E235.Cl-L	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_LSGW_WG_2021_Q3_NP	E235.Cl-L	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_AQ1_WG_2021_Q3_NP	E235.Cl-L	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_BC10A_WG_2021_Q3_NP_FD	E235.Cl-L	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✔





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Container / Client Sample ID(s)				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_BC10B_WG_2021_Q3_NP_FB	E235.Cl-L	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_BC10C_WG_2021_Q3_NP_TB	E235.Cl-L	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_GCGW_WG_2021_Q3_NP	E378-U	14-Jul-2021	----	----	----		17-Jul-2021	3 days	3 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_LSGW_WG_2021_Q3_NP	E378-U	14-Jul-2021	----	----	----		17-Jul-2021	3 days	3 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_AQ1_WG_2021_Q3_NP	E378-U	14-Jul-2021	----	----	----		17-Jul-2021	3 days	3 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_BC10A_WG_2021_Q3_NP_FD	E378-U	14-Jul-2021	----	----	----		17-Jul-2021	3 days	3 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_BC10B_WG_2021_Q3_NP_FB	E378-U	14-Jul-2021	----	----	----		17-Jul-2021	3 days	3 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_BC10C_WG_2021_Q3_NP_TB	E378-U	14-Jul-2021	----	----	----		17-Jul-2021	3 days	3 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_GCGW_WG_2021_Q3_NP	E235.F	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_LSGW_WG_2021_Q3_NP	E235.F	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_AQ1_WG_2021_Q3_NP	E235.F	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_BC10A_WG_2021_Q3_NP_FD	E235.F	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_BC10B_WG_2021_Q3_NP_FB	E235.F	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_BC10C_WG_2021_Q3_NP_TB	E235.F	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_GCGW_WG_2021_Q3_NP	E235.NO3-L	14-Jul-2021	----	----	----		15-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_LSGW_WG_2021_Q3_NP	E235.NO3-L	14-Jul-2021	----	----	----		15-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_AQ1_WG_2021_Q3_NP	E235.NO3-L	14-Jul-2021	----	----	----		15-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_BC10A_WG_2021_Q3_NP_FD	E235.NO3-L	14-Jul-2021	----	----	----		15-Jul-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_BC10B_WG_2021_Q3_NP_FB	E235.NO3-L	14-Jul-2021	----	----	----		15-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_BC10C_WG_2021_Q3_NP_TB	E235.NO3-L	14-Jul-2021	----	----	----		15-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_GCGW_WG_2021_Q3_NP	E235.NO2-L	14-Jul-2021	----	----	----		15-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_LSGW_WG_2021_Q3_NP	E235.NO2-L	14-Jul-2021	----	----	----		15-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_AQ1_WG_2021_Q3_NP	E235.NO2-L	14-Jul-2021	----	----	----		15-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_BC10A_WG_2021_Q3_NP_FD	E235.NO2-L	14-Jul-2021	----	----	----		15-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_BC10B_WG_2021_Q3_NP_FB	E235.NO2-L	14-Jul-2021	----	----	----		15-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_BC10C_WG_2021_Q3_NP_TB	E235.NO2-L	14-Jul-2021	----	----	----		15-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_GCGW_WG_2021_Q3_NP	E235.SO4	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_LSGW_WG_2021_Q3_NP	E235.SO4	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_AQ1_WG_2021_Q3_NP	E235.SO4	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_BC10A_WG_2021_Q3_NP_FD	E235.SO4	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q3_NP_FB	E235.SO4	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_BC10C_WG_2021_Q3_NP_TB	E235.SO4	14-Jul-2021	----	----	----		15-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_GCGW_WG_2021_Q3_NP	E375-T	14-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_LSGW_WG_2021_Q3_NP	E375-T	14-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_AQ1_WG_2021_Q3_NP	E375-T	14-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q3_NP_FD	E375-T	14-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q3_NP_FB	E375-T	14-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q3_NP_TB	E375-T	14-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GCGW_WG_2021_Q3_NP	E318	14-Jul-2021	18-Jul-2021	----	----		18-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_LSGW_WG_2021_Q3_NP	E318	14-Jul-2021	18-Jul-2021	----	----		18-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ1_WG_2021_Q3_NP	E318	14-Jul-2021	18-Jul-2021	----	----		18-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q3_NP_FD	E318	14-Jul-2021	18-Jul-2021	----	----		18-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q3_NP_FB	E318	14-Jul-2021	18-Jul-2021	----	----		18-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q3_NP_TB	E318	14-Jul-2021	18-Jul-2021	----	----		18-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GCGW_WG_2021_Q3_NP	E372-U	14-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	7 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_LSGW_WG_2021_Q3_NP	E372-U	14-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ1_WG_2021_Q3_NP	E372-U	14-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q3_NP_FD	E372-U	14-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q3_NP_FB	E372-U	14-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q3_NP_TB	E372-U	14-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_GCGW_WG_2021_Q3_NP	E421.Cr-L	14-Jul-2021	16-Jul-2021	----	----		17-Jul-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_AQ1_WG_2021_Q3_NP	E421.Cr-L	14-Jul-2021	16-Jul-2021	----	----		17-Jul-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_LSGW_WG_2021_Q3_NP	E421.Cr-L	14-Jul-2021	16-Jul-2021	----	----		17-Jul-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10A_WG_2021_Q3_NP_FD	E421.Cr-L	14-Jul-2021	16-Jul-2021	----	----		17-Jul-2021	180 days	4 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10B_WG_2021_Q3_NP_FB	E421.Cr-L	14-Jul-2021	16-Jul-2021	----	----		17-Jul-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10C_WG_2021_Q3_NP_TB	E421.Cr-L	14-Jul-2021	16-Jul-2021	----	----		17-Jul-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_GCGW_WG_2021_Q3_NP	E509	14-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_LSGW_WG_2021_Q3_NP	E509	14-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_AQ1_WG_2021_Q3_NP	E509	14-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_BC10A_WG_2021_Q3_NP_FD	E509	14-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_BC10B_WG_2021_Q3_NP_FB	E509	14-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_BC10C_WG_2021_Q3_NP_TB	E509	14-Jul-2021	19-Jul-2021	----	----		19-Jul-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_GCGW_WG_2021_Q3_NP	E421	14-Jul-2021	16-Jul-2021	----	----		17-Jul-2021	180 days	3 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_AQ1_WG_2021_Q3_NP	E421	14-Jul-2021	16-Jul-2021	----	----		17-Jul-2021	180 days	3 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_LSGW_WG_2021_Q3_NP	E421	14-Jul-2021	16-Jul-2021	----	----		17-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10A_WG_2021_Q3_NP_FD	E421	14-Jul-2021	16-Jul-2021	----	----		17-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10B_WG_2021_Q3_NP_FB	E421	14-Jul-2021	16-Jul-2021	----	----		17-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10C_WG_2021_Q3_NP_TB	E421	14-Jul-2021	16-Jul-2021	----	----		17-Jul-2021	180 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_LSGW_WG_2021_Q3_NP	E358-L	14-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q3_NP_FD	E358-L	14-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q3_NP_FB	E358-L	14-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q3_NP_TB	E358-L	14-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	13 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_GCGW_WG_2021_Q3_NP	E358-L	14-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	14 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_AQ1_WG_2021_Q3_NP	E358-L	14-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	14 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_LSGW_WG_2021_Q3_NP	E355-L	14-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ1_WG_2021_Q3_NP	E355-L	14-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q3_NP_FD	E355-L	14-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q3_NP_FB	E355-L	14-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q3_NP_TB	E355-L	14-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GCGW_WG_2021_Q3_NP	E355-L	14-Jul-2021	27-Jul-2021	----	----		28-Jul-2021	28 days	14 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_GCGW_WG_2021_Q3_NP	E283	14-Jul-2021	----	----	----		15-Jul-2021	14 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_LSGW_WG_2021_Q3_NP	E283	14-Jul-2021	----	----	----		15-Jul-2021	14 days	1 days	✔
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_MW_AQ1_WG_2021_Q3_NP	E283	14-Jul-2021	----	----	----		15-Jul-2021	14 days	1 days	✔
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_MW_BC10A_WG_2021_Q3_NP_FD	E283	14-Jul-2021	----	----	----		15-Jul-2021	14 days	1 days	✔
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_MW_BC10B_WG_2021_Q3_NP_FB	E283	14-Jul-2021	----	----	----		15-Jul-2021	14 days	1 days	✔
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_MW_BC10C_WG_2021_Q3_NP_TB	E283	14-Jul-2021	----	----	----		15-Jul-2021	14 days	1 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_GCGW_WG_2021_Q3_NP	E290	14-Jul-2021	----	----	----		18-Jul-2021	14 days	4 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_LSGW_WG_2021_Q3_NP	E290	14-Jul-2021	----	----	----		18-Jul-2021	14 days	4 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_AQ1_WG_2021_Q3_NP	E290	14-Jul-2021	----	----	----		18-Jul-2021	14 days	4 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_BC10A_WG_2021_Q3_NP_FD	E290	14-Jul-2021	----	----	----		18-Jul-2021	14 days	4 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_BC10B_WG_2021_Q3_NP_FB	E290	14-Jul-2021	----	----	----		18-Jul-2021	14 days	4 days		✓
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_BC10C_WG_2021_Q3_NP_TB	E290	14-Jul-2021	----	----	----		18-Jul-2021	14 days	4 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_GCGW_WG_2021_Q3_NP	E100	14-Jul-2021	----	----	----		18-Jul-2021	28 days	4 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_LSGW_WG_2021_Q3_NP	E100	14-Jul-2021	----	----	----		18-Jul-2021	28 days	4 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_AQ1_WG_2021_Q3_NP	E100	14-Jul-2021	----	----	----		18-Jul-2021	28 days	4 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_BC10A_WG_2021_Q3_NP_FD	E100	14-Jul-2021	----	----	----		18-Jul-2021	28 days	4 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_BC10B_WG_2021_Q3_NP_FB	E100	14-Jul-2021	----	----	----		18-Jul-2021	28 days	4 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_BC10C_WG_2021_Q3_NP_TB	E100	14-Jul-2021	----	----	----		18-Jul-2021	28 days	4 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_AQ1_WG_2021_Q3_NP	E125	14-Jul-2021	----	----	----		23-Jul-2021	0.34 hrs	215 hrs		* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_GCGW_WG_2021_Q3_NP	E125	14-Jul-2021	----	----	----		23-Jul-2021	0.34 hrs	217 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_LSGW_WG_2021_Q3_NP	E125	14-Jul-2021	----	----	----		23-Jul-2021	0.34 hrs	219 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_BC10B_WG_2021_Q3_NP_FB	E125	14-Jul-2021	----	----	----		23-Jul-2021	0.34 hrs	219 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_BC10C_WG_2021_Q3_NP_TB	E125	14-Jul-2021	----	----	----		23-Jul-2021	0.34 hrs	219 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_BC10A_WG_2021_Q3_NP_FD	E125	14-Jul-2021	----	----	----		23-Jul-2021	0.34 hrs	220 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_LSGW_WG_2021_Q3_NP	E108	14-Jul-2021	----	----	----		18-Jul-2021	0.25 hrs	100 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_BC10A_WG_2021_Q3_NP_FD	E108	14-Jul-2021	----	----	----		18-Jul-2021	0.25 hrs	100 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_BC10B_WG_2021_Q3_NP_FB	E108	14-Jul-2021	----	----	----		18-Jul-2021	0.25 hrs	100 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_BC10C_WG_2021_Q3_NP_TB	E108	14-Jul-2021	----	----	----		18-Jul-2021	0.25 hrs	100 hrs	*	EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_AQ1_WG_2021_Q3_NP	E108	14-Jul-2021	----	----	----		18-Jul-2021	0.25 hrs	96 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_GCGW_WG_2021_Q3_NP	E108	14-Jul-2021	----	----	----		18-Jul-2021	0.25 hrs	99 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_GCGW_WG_2021_Q3_NP	E162	14-Jul-2021	----	----	----		21-Jul-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_LSGW_WG_2021_Q3_NP	E162	14-Jul-2021	----	----	----		21-Jul-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_AQ1_WG_2021_Q3_NP	E162	14-Jul-2021	----	----	----		21-Jul-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_BC10A_WG_2021_Q3_NP_FD	E162	14-Jul-2021	----	----	----		21-Jul-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_BC10B_WG_2021_Q3_NP_FB	E162	14-Jul-2021	----	----	----		21-Jul-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_BC10C_WG_2021_Q3_NP_TB	E162	14-Jul-2021	----	----	----		21-Jul-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_GCGW_WG_2021_Q3_NP	E160-L	14-Jul-2021	----	----	----		21-Jul-2021	7 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_LSGW_WG_2021_Q3_NP	E160-L	14-Jul-2021	----	----	----		21-Jul-2021	7 days	7 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_AQ1_WG_2021_Q3_NP	E160-L	14-Jul-2021	----	----	----		21-Jul-2021	7 days	7 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_BC10A_WG_2021_Q3_NP_FD	E160-L	14-Jul-2021	----	----	----		21-Jul-2021	7 days	7 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_BC10B_WG_2021_Q3_NP_FB	E160-L	14-Jul-2021	----	----	----		21-Jul-2021	7 days	7 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_BC10C_WG_2021_Q3_NP_TB	E160-L	14-Jul-2021	----	----	----		21-Jul-2021	7 days	7 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MW_AQ1_WG_2021_Q3_NP	E121	14-Jul-2021	----	----	----		16-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_GCGW_WG_2021_Q3_NP	E121	14-Jul-2021	----	----	----		17-Jul-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_LSGW_WG_2021_Q3_NP	E121	14-Jul-2021	----	----	----		17-Jul-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MW_BC10A_WG_2021_Q3_NP_FD	E121	14-Jul-2021	----	----	----		17-Jul-2021	3 days	3 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q3_NP_FB	E121	14-Jul-2021	----	----	----		17-Jul-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_BC10C_WG_2021_Q3_NP_TB	E121	14-Jul-2021	----	----	----		17-Jul-2021	3 days	3 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	244266	1	11	9.0	5.0	✓
Alkalinity Species by Titration	E290	246363	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	244339	2	39	5.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	244380	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	244381	1	20	5.0	5.0	✓
Conductivity in Water	E100	246362	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	245486	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	246967	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	245485	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252779	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	245722	2	40	5.0	5.0	✓
Fluoride in Water by IC	E235.F	244384	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	244382	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	244383	1	20	5.0	5.0	✓
ORP by Electrode	E125	249946	2	38	5.2	5.0	✓
pH by Meter	E108	246361	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	244379	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	247986	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	247356	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	244343	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	252781	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	247197	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	245294	2	34	5.8	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	244266	1	11	9.0	5.0	✓
Alkalinity Species by Titration	E290	246363	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	244339	2	39	5.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	244380	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	244381	1	20	5.0	5.0	✓
Conductivity in Water	E100	246362	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	245486	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	246967	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	245485	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252779	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	245722	2	40	5.0	5.0	✓
Fluoride in Water by IC	E235.F	244384	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	244382	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	244383	1	20	5.0	5.0	✓
ORP by Electrode	E125	249946	2	38	5.2	5.0	✓
pH by Meter	E108	246361	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	244379	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	247986	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	247356	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	244343	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	252781	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	247197	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	247982	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	245294	2	34	5.8	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	244266	1	11	9.0	5.0	✓
Alkalinity Species by Titration	E290	246363	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	244339	2	39	5.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	244380	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	244381	1	20	5.0	5.0	✓
Conductivity in Water	E100	246362	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	245486	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	246967	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	245485	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252779	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	245722	2	40	5.0	5.0	✓
Fluoride in Water by IC	E235.F	244384	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	244382	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	244383	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	244379	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	247986	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	247356	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	244343	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	252781	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	247197	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	247982	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	245294	2	34	5.8	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	244339	2	39	5.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	244380	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	244381	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	245486	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	246967	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	245485	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	252779	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	245722	2	40	5.0	5.0	✓
Fluoride in Water by IC	E235.F	244384	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	244382	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	244383	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	244379	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	247356	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	244343	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	252781	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	247197	2	40	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102596**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210714Q3GW  
**Sampler** : C. Emslie/ J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 15-Jul-2021 08:30  
**Date Analysis Commenced** : 15-Jul-2021  
**Issue Date** : 06-Aug-2021 16:16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
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Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2102596  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 244266)</b>											
CG2102592-003	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 245294)</b>											
CG2102594-001	Anonymous	turbidity	----	E121	0.10	NTU	0.70	0.77	0.07	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 245296)</b>											
CG2102589-036	Anonymous	turbidity	----	E121	0.10	NTU	11.2	11.6	3.50%	15%	----
<b>Physical Tests (QC Lot: 246361)</b>											
CG2102596-001	EV_GCGW_WG_2021_Q3_NP	pH	----	E108	0.10	pH units	8.08	8.11	0.370%	4%	----
<b>Physical Tests (QC Lot: 246362)</b>											
CG2102596-001	EV_GCGW_WG_2021_Q3_NP	conductivity	----	E100	2.0	µS/cm	448	437	2.48%	10%	----
<b>Physical Tests (QC Lot: 246363)</b>											
CG2102596-001	EV_GCGW_WG_2021_Q3_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	163	163	0.245%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	163	163	0.245%	20%	----
<b>Physical Tests (QC Lot: 247986)</b>											
CG2102589-036	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2920	2950	1.12%	20%	----
<b>Physical Tests (QC Lot: 249946)</b>											
CG2102558-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	425	434	2.19%	15%	----
<b>Physical Tests (QC Lot: 249947)</b>											
CG2102596-004	EV_MW_BC10A_WG_2021_Q3_NP_FD	oxidation-reduction potential [ORP]	----	E125	0.10	mV	276	266	3.68%	15%	----
<b>Anions and Nutrients (QC Lot: 244339)</b>											
CG2102589-025	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0135	0.0130	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 244340)</b>											
CG2102596-002	EV_MW_AQ1_WG_2021_Q3_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 244343)</b>											
CG2102588-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.155	0.175	0.020	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 244379)</b>											
CG2102596-001	EV_GCGW_WG_2021_Q3_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	65.2	65.5	0.467%	20%	----
<b>Anions and Nutrients (QC Lot: 244380)</b>											





Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 244380) - continued</b>											
CG2102596-001	EV_GCGW_WG_2021_Q3_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 244381)</b>											
CG2102596-001	EV_GCGW_WG_2021_Q3_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.72	4.72	0.0194%	20%	----
<b>Anions and Nutrients (QC Lot: 244382)</b>											
CG2102596-001	EV_GCGW_WG_2021_Q3_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 244383)</b>											
CG2102596-001	EV_GCGW_WG_2021_Q3_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 244384)</b>											
CG2102596-001	EV_GCGW_WG_2021_Q3_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.550	0.556	1.11%	20%	----
<b>Anions and Nutrients (QC Lot: 245722)</b>											
CG2102589-029	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	0.0010	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 245723)</b>											
CG2102596-004	EV_MW_BC10A_WG_2021_Q3_NP_FD	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 247197)</b>											
CG2102589-029	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0130	0.0150	0.0020	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 247198)</b>											
CG2102596-006	EV_MW_BC10C_WG_2021_Q3_NP_TB	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 247356)</b>											
CG2102596-001	EV_GCGW_WG_2021_Q3_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 252779)</b>											
CG2102592-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.69	0.64	0.05	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 252781)</b>											
CG2102592-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.68	0.68	0.006	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 245485)</b>											
CG2102558-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0016	0.0019	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00022	0.00022	0.000006	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.142	0.145	2.19%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.034	0.036	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0138 µg/L	0.0000120	0.0000017	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 245485) - continued</b>											
CG2102558-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.050	mg/L	68.3	70.7	3.50%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00053	0.00053	0.000002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.026	0.026	0.0001	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0089	0.0093	0.0003	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	16.5	16.5	0.164%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0343	0.0343	0.188%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00125	0.00130	3.94%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.02	1.02	0.367%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.234 µg/L	0.000222	0.000012	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.64	5.69	0.816%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.89	5.86	0.626%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.309	0.312	0.966%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.62	3.61	0.004	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000337	0.000340	0.887%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0011	0.0012	0.00009	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 245486)</b>											
CG2102558-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 246967)</b>											
CG2102566-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 244266)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 245294)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 245296)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 246362)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 246363)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 247982)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 247986)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 244339)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 244340)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 244343)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 244379)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 244380)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 244381)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 244382)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 244383)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 244384)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 244384) - continued</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 245722)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 245723)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 247197)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 247198)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 247356)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Organic / Inorganic Carbon (QCLot: 252779)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 252781)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 245485)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 245485) - continued</b>						
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 245486)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 246967)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 244266)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 245294)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.8	85.0	115	---
<b>Physical Tests (QCLot: 245296)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	97.4	85.0	115	---
<b>Physical Tests (QCLot: 246361)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 246362)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	---
<b>Physical Tests (QCLot: 246363)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	95.9	85.0	115	---
<b>Physical Tests (QCLot: 247982)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	87.6	85.0	115	---
<b>Physical Tests (QCLot: 247986)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 249946)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.8	95.4	104	---
<b>Physical Tests (QCLot: 249947)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 244339)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 244340)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.2	85.0	115	---
<b>Anions and Nutrients (QCLot: 244343)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	101	75.0	125	---
<b>Anions and Nutrients (QCLot: 244379)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 244380)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 244381)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.7	90.0	110	---
<b>Anions and Nutrients (QCLot: 244382)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 244382) - continued</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 244383)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 244384)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 245722)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	107	80.0	120	----
<b>Anions and Nutrients (QCLot: 245723)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	----
<b>Anions and Nutrients (QCLot: 247197)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	97.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 247198)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	100	80.0	120	----
<b>Anions and Nutrients (QCLot: 247356)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 252779)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	91.7	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 252781)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	98.2	80.0	120	----
<b>Dissolved Metals (QCLot: 245485)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.9	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.4	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.7	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	99.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.8	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.3	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.6	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 245485) - continued</b>									
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.0	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.7	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.9	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.9	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.5	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.0	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.7	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	90.6	80.0	120	----
<b>Dissolved Metals (QCLot: 245486)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----





## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 244339)</b>										
CG2102592-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.108 mg/L	0.1 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 244340)</b>										
CG2102596-003	EV_LSGW_WG_2021_Q3_NP	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 244343)</b>										
CG2102588-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.34 mg/L	2.5 mg/L	93.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 244379)</b>										
CG2102596-006	EV_MW_BC10C_WG_2021_Q3_NP_TB	sulfate (as SO4)	14808-79-8	E235.SO4	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 244380)</b>										
CG2102596-006	EV_MW_BC10C_WG_2021_Q3_NP_TB	bromide	24959-67-9	E235.Br-L	0.499 mg/L	0.5 mg/L	99.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 244381)</b>										
CG2102596-006	EV_MW_BC10C_WG_2021_Q3_NP_TB	chloride	16887-00-6	E235.Cl-L	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 244382)</b>										
CG2102596-006	EV_MW_BC10C_WG_2021_Q3_NP_TB	nitrate (as N)	14797-55-8	E235.NO3-L	2.74 mg/L	2.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 244383)</b>										
CG2102596-006	EV_MW_BC10C_WG_2021_Q3_NP_TB	nitrite (as N)	14797-65-0	E235.NO2-L	0.532 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 244384)</b>										
CG2102596-006	EV_MW_BC10C_WG_2021_Q3_NP_TB	fluoride	16984-48-8	E235.F	1.14 mg/L	1 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 245722)</b>										
CG2102589-030	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0502 mg/L	0.05 mg/L	100	70.0	130	----
<b>Anions and Nutrients (QCLot: 245723)</b>										
CG2102596-005	EV_MW_BC10B_WG_2021_Q3_NP_FB	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0519 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 247197)</b>										
CG2102589-030	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0530 mg/L	0.0676 mg/L	78.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 247198)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 247198) - continued</b>										
CG2102598-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0572 mg/L	0.0676 mg/L	84.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 247356)</b>										
CG2102596-002	EV_MW_AQ1_WG_2021_Q3_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0611 mg/L	0.0676 mg/L	90.4	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 252779)</b>										
CG2102592-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.7 mg/L	23.9 mg/L	99.4	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 252781)</b>										
CG2102592-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.6 mg/L	23.9 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 245485)</b>										
CG2102558-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.208 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00885 mg/L	0.01 mg/L	88.5	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00414 mg/L	0.004 mg/L	103	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.93 mg/L	2 mg/L	96.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0952 mg/L	0.1 mg/L	95.2	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.13 mg/L	4 mg/L	103	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.11 mg/L	10 mg/L	91.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00400 mg/L	0.004 mg/L	100.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	21.7 mg/L	20 mg/L	109	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00391 mg/L	0.004 mg/L	97.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0209 mg/L	0.02 mg/L	105	70.0	130	----



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 245485) - continued</b>										
CG2102558-002	Anonymous	titanium, dissolved	7440-32-6	E421	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00395 mg/L	0.004 mg/L	98.9	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.392 mg/L	0.4 mg/L	98.1	70.0	130	----
<b>Dissolved Metals (QCLot: 245486)</b>										
CG2102558-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 246967)</b>										
CG2102566-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000977 mg/L	0.0001 mg/L	97.7	70.0	130	----

COC ID: <b>20210714Q3GW</b>		TURNAROUND TIME:		RUSH:													
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>											
Facility Name / Job#: Elkview Operations		Lab Name: ALS Calgary		Report Format / Distribution		Excel	PDF	EDD									
Job Description: Q3 Ground Water Sampling		Lab Contact: Lyudmyla Shvets		Email 1: chris.emslie@teck.com		X	X	X									
Project Manager: Jennifer Dane		Email: lyudmyla.shvets@alsglobal.com		Email 2: calby.bracken@teck.com		X	X	X									
Email: jennifer.dane@teck.com		Address: 2559 29 Street NE		Email 3: kennedy.allen@teck.com		X	X	X									
Address: RR#1 HWY# 3				Email 4: Teck.Lab.Results@sharepoint.teck.com		X	X	X									
				Email 5: teckcoal@equisonline.com				X									
				Email 5: Jennifer.Dane@teck.com		X	X	X									
5289		Phone Number: 403-407-1800		PO number		VPO00741597											
<b>SAMPLE DETAILS</b>				<b>ANALYSIS REQUESTED</b>													
Province: BC		City: Calgary		Province: AB		Filtered: F: Field, L: Lab, FL: Field & Lab, N: None											
Country: Canada		Postal Code: T1Y 7B5		Country: Canada		No	Yes	Yes	No	No	No	No	Yes	Yes			
							Nitric	Sulphuric	Sulphuric		NO	Sodium Bisulphate	HCl	NaOH			
						TECKCOAL-ROUTINE-V A (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL, Hydroxide, OH-CL	TECKCOAL-MET-D-V A (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.										
EV_GCGW_WG_2021_Q3_NP	EV_GCGW	WG	N	07/14/21	11:25	G	5	1	1	1	1				1		
EV_MW_AQ1_WG_2021_Q3_NP	EV_MW_AQ1	WG	N	07/14/21	13:50	G	5	1	1	1	1				1		
EV_LSGW_WG_2021_Q3_NP	EV_LSGW	WG	N	07/14/21	9:31	G	5	1	1	1	1				1		
EV_MW_BC10A_WG_2021_Q3_NP_FD	EV_MW_BC10A	WG	N	07/14/21	9:33	G	5	1	1	1	1				1		
EV_MW_BC10B_WG_2021_Q3_NP_FB	EV_MW_BC10B	WG	N	07/14/21	9:36	G	5	1	1	1	1				1		
EV_MW_BC10C_WG_2021_Q3_NP_TB	EV_MW_BC10C	WG	N	07/14/21	9:39	G	5	1	1	1	1				1		
						Total		30									
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS			RELINQUISHED BY/AFFILIATION			DATE/TIME		ACCEPTED BY/AFFILIATION				DATE/TIME					
			C. Emslie/ J. Batstone			July 14, 2021		GT				July 15					
						8:30											
SERVICE REQUEST (rush - subject to availability)																	
Regular (default) X			Sampler's Name			C. Emslie/ J. Batstone		Mobile #									
Priority (2-3 business days) - 50% surcharge			Sampler's Signature					Date/Time				July 14, 2021					
Emergency (1 Business Day) - 100% surcharge																	
For Emergency <1 Day, ASAP or Weekend - Contact ALS																	

Environmental Division  
Calgary  
Work Order Reference  
**CG2102596**



Telephone : + 1 403 407 1800

50C

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2102619**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210715Q3GW  
**Sampler** : C. Emslie/ J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 16-Jul-2021 08:30  
**Date Analysis Commenced** : 16-Jul-2021  
**Issue Date** : 27-Jul-2021 16:39

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

---

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					EV_HW1_WG_2 021_Q3_NP	EV_WH50GW_ WG_2021_Q3_ NP	----	----	----
Client sampling date / time					15-Jul-2021 11:48	15-Jul-2021 16:34	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102619-001	CG2102619-002	-----	-----	-----
					Result	Result	----	----	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<10.0 <sup>DLM</sup>	<2.0	----	----	----
conductivity	----	E100	2.0	µS/cm	1060	376	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	632	200	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	428	432	----	----	----
pH	----	E108	0.10	pH units	8.10	8.26	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	789	237	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	----	----	----
turbidity	----	E121	0.10	NTU	0.46	1.28	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	231	138	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	231	138	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	282	169	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	----	----	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0132	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.390	<0.050	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	34.7	1.21	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLDS</sup>	0.060	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.344 <sup>TKNI</sup>	<0.050	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	6.92	0.365	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0010	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0041 <sup>RRV</sup>	0.0020	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020 <sup>RRV</sup>	0.0048	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020 <sup>RRV</sup>	0.0038	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	334	60.0	----	----	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	7.26	0.365	----	----	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.61	1.19	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_HW1_WG_2 021_Q3_NP	EV_WH50GW_ WG_2021_Q3_ NP	----	----	----
Client sampling date / time					15-Jul-2021 11:48	15-Jul-2021 16:34	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102619-001	CG2102619-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.59	1.10	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	13.0	4.07	----	----	----	
cation sum	----	EC101	0.10	meq/L	13.3	4.18	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	102	103	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.14	1.33	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0010	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00012	0.00013	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00013	0.00013	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0557	0.0885	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	0.012	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0824	0.0147	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	147	49.6	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00013	<0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0216	0.00040	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.018	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000150	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0576	0.0078	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	64.4	18.6	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00029	0.00190	----	----	----	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000705	0.00112	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00098	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.45	0.933	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	57.4	4.23	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.49	2.45	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_HW1_WG_2 021_Q3_NP	EV_WH50GW_ WG_2021_Q3_ NP	----	----	----
Client sampling date / time					15-Jul-2021 11:48	15-Jul-2021 16:34	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102619-001	CG2102619-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	13.5	3.37	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.336	0.130	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	116	20.6	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000018	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00166	0.000815	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0228	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102619**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210715Q3GW  
**Sampler** : C. Emslie/ J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 16-Jul-2021 08:30  
**Date Analysis Commenced** : 16-Jul-2021  
**Issue Date** : 27-Jul-2021 16:39

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2102619  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 245364)</b>											
CG2102612-021	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	110	110	0.364%	20%	----
<b>Physical Tests (QC Lot: 246052)</b>											
CG2102612-021	Anonymous	turbidity	----	E121	0.10	NTU	53.4	55.4	3.53%	15%	----
<b>Physical Tests (QC Lot: 246334)</b>											
CG2102618-001	Anonymous	conductivity	----	E100	2.0	µS/cm	629	602	4.39%	10%	----
<b>Physical Tests (QC Lot: 246335)</b>											
CG2102618-001	Anonymous	pH	----	E108	0.10	pH units	8.52	8.55	0.351%	4%	----
<b>Physical Tests (QC Lot: 246336)</b>											
CG2102618-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	180	179	0.335%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	14.4	15.2	5.40%	20%	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	194	194	0.103%	20%	----
<b>Physical Tests (QC Lot: 248920)</b>											
CG2102612-021	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2860	3060	7.06%	20%	----
<b>Physical Tests (QC Lot: 249656)</b>											
CG2102612-021	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	360	358	0.529%	15%	----
<b>Anions and Nutrients (QC Lot: 245741)</b>											
CG2102619-001	EV_HW1_WG_2021_Q3_NP	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	334	334	0.0968%	20%	----
<b>Anions and Nutrients (QC Lot: 245742)</b>											
CG2102619-001	EV_HW1_WG_2021_Q3_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	0.390	0.365	0.024	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 245743)</b>											
CG2102619-001	EV_HW1_WG_2021_Q3_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	34.7	34.4	1.00%	20%	----
<b>Anions and Nutrients (QC Lot: 245744)</b>											
CG2102619-001	EV_HW1_WG_2021_Q3_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	6.92	6.90	0.334%	20%	----
<b>Anions and Nutrients (QC Lot: 245745)</b>											
CG2102619-001	EV_HW1_WG_2021_Q3_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 245746)</b>											
CG2102619-001	EV_HW1_WG_2021_Q3_NP	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 245769)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 245769) - continued</b>											
CG2102612-021	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 245770)</b>											
CG2102619-002	EV_WH50GW_WG_2021_Q3_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0020	0.0022	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 246231)</b>											
CG2102617-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.250	mg/L	20.2	22.4	10.5%	20%	----
<b>Anions and Nutrients (QC Lot: 247356)</b>											
CG2102596-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248041)</b>											
CG2102612-021	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249550)</b>											
CG2102618-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0439	0.0436	0.0003	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 249709)</b>											
CG2102470-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.06	1.16	0.10	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 249710)</b>											
CG2102470-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.13	1.02	0.11	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 248325)</b>											
CG2102619-001	EV_HW1_WG_2021_Q3_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00013	0.00013	0.000003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 248326)</b>											
CG2102619-001	EV_HW1_WG_2021_Q3_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00012	0.00011	0.000005	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00013	0.00011	0.000002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0557	0.0543	2.51%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	0.024	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0824 µg/L	0.0000728	12.4%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	147	143	2.54%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0216	0.0212	1.81%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000150	0.000146	0.000004	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0576	0.0554	4.01%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	64.4	63.6	1.33%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00029	0.00033	0.00004	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 248326) - continued</b>											
CG2102619-001	EV_HW1_WG_2021_Q3_NP	molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000705	0.000681	3.40%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00098	0.00101	0.00003	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.45	2.41	1.65%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	57.4 µg/L	0.0577	0.640%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.49	3.36	3.88%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	13.5	13.4	0.867%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.336	0.334	0.402%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	116	113	2.63%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000018	0.000019	0.0000005	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00166	0.00160	3.75%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0228	0.0223	2.09%	20%	----
<b>Dissolved Metals (QC Lot: 249490)</b>											
CG2102619-001	EV_HW1_WG_2021_Q3_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 245364)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 246052)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 246334)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 246336)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 248905)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 248920)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 245741)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 245742)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 245743)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 245744)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 245745)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 245746)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 245769)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 245770)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 246231)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 247356)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 247356) - continued</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 248041)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 249550)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 249709)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 249710)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 248325)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 248326)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----





Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 248326) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 249490)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 245364)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	109	85.0	115	----
<b>Physical Tests (QCLot: 246052)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	96.5	85.0	115	----
<b>Physical Tests (QCLot: 246334)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	99.7	90.0	110	----
<b>Physical Tests (QCLot: 246335)</b>									
pH	----	E108	----	pH units	7 pH units	99.8	98.6	101	----
<b>Physical Tests (QCLot: 246336)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	94.4	85.0	115	----
<b>Physical Tests (QCLot: 248905)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	92.6	85.0	115	----
<b>Physical Tests (QCLot: 248920)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	101	85.0	115	----
<b>Physical Tests (QCLot: 249656)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	99.9	95.4	104	----
<b>Anions and Nutrients (QCLot: 245741)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 245742)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	----
<b>Anions and Nutrients (QCLot: 245743)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	108	90.0	110	----
<b>Anions and Nutrients (QCLot: 245744)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 245745)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 245746)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 245769)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 245770)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	110	80.0	120	----
<b>Anions and Nutrients (QCLot: 246231)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 246231) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 247356)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 248041)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	88.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 249550)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 249709)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	108	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 249710)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	117	80.0	120	----
<b>Dissolved Metals (QCLot: 248325)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 248326)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	96.8	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.2	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.1	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.7	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 248326) - continued</b>									
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	87.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.3	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 245741)</b>										
CG2102624-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 245742)</b>										
CG2102624-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.521 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 245743)</b>										
CG2102624-005	Anonymous	chloride	16887-00-6	E235.Cl-L	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 245744)</b>										
CG2102624-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.63 mg/L	2.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 245745)</b>										
CG2102624-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.526 mg/L	0.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 245746)</b>										
CG2102624-005	Anonymous	fluoride	16984-48-8	E235.F	1.11 mg/L	1 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 245769)</b>										
CG2102612-022	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0577 mg/L	0.05 mg/L	115	70.0	130	----
<b>Anions and Nutrients (QCLot: 245770)</b>										
CG2102623-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0470 mg/L	0.05 mg/L	94.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 246231)</b>										
CG2102619-001	EV_HW1_WG_2021_Q3_N P	Kjeldahl nitrogen, total [TKN]	----	E318	2.70 mg/L	2.5 mg/L	108	70.0	130	----
<b>Anions and Nutrients (QCLot: 247356)</b>										
CG2102596-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0611 mg/L	0.0676 mg/L	90.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 248041)</b>										
CG2102612-022	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0554 mg/L	0.0676 mg/L	81.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 249550)</b>										
CG2102618-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 249709)</b>										
CG2102470-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	28.9 mg/L	23.9 mg/L	121	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 249710)</b>										
CG2102470-001	Anonymous	carbon, total organic [TOC]	----	E355-L	28.2 mg/L	23.9 mg/L	118	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 248325)</b>										
CG2102619-002	EV_WH50GW_WG_2021_Q3_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
<b>Dissolved Metals (QCLot: 248326)</b>										
CG2102619-002	EV_WH50GW_WG_2021_Q3_NP	aluminum, dissolved	7429-90-5	E421	0.186 mg/L	0.2 mg/L	93.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0357 mg/L	0.04 mg/L	89.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00856 mg/L	0.01 mg/L	85.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.085 mg/L	0.1 mg/L	85.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00380 mg/L	0.004 mg/L	95.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.67 mg/L	2 mg/L	83.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0184 mg/L	0.02 mg/L	92.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0871 mg/L	0.1 mg/L	87.1	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0180 mg/L	0.02 mg/L	90.1	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.97 mg/L	4 mg/L	99.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		silicon, dissolved	7440-21-3	E421	7.85 mg/L	10 mg/L	78.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00371 mg/L	0.004 mg/L	92.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00369 mg/L	0.004 mg/L	92.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00370 mg/L	0.004 mg/L	92.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0977 mg/L	0.1 mg/L	97.7	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.366 mg/L	0.4 mg/L	91.6	70.0	130	----
<b>Dissolved Metals (QCLot: 249490)</b>										
CG2102619-002	EV_WH50GW_WG_2021_Q3_NP	mercury, dissolved	7439-97-6	E509	0.000104 mg/L	0.0001 mg/L	104	70.0	130	----



**COC ID:** 20210715Q3GW      **TURNAROUND TIME:**      **RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name ALS Calgary				Report Format / Distribution				
Job Description	Q3 Ground Water Sampling			Lab Contact Lyudmyla Shvets				Email 1:	chris.emsle@teck.com	X	X	X
Project Manager	Jennifer Dane			Email lyudmyla.shvets@alsglobal.com				Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address 2559 29 Street NE				Email 3:	kennedy.alen@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	teckcoal@equisonline.com	X	X	X
								Email 5:	Jennifer.Dane@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
				Phone Number	403-407-1800			PO number	VPO00741597			

Environmental Division  
Calgary  
Work Order Reference  
**CG2102619**



Telephone: +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys. loc code)	Field Matrix	Hazardous Material (Ycs/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, H1-Cl, Carbonate, CO3-Cl, Hydroxide, OH-Cl	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_HW1_WG_2021_Q3_NP	EV_HW1	WG	N	07/15/21	11:48	G	5	1		1	1		1						1	
EV_WH50GW_WG_2021_Q3_NP	EV_WII50GW	WG	N	07/15/21	16:34	G	5	1		1	1		1						1	
Total							10													

619

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>		<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>	
		C. Emslie/ J. Batstone		July 15, 2021		AK		7/16 0830	
<b>SERVICE REQUEST (rush - subject to availability)</b>		<b>Sampler's Name</b>		<b>Mobile #</b>		<b>Sampler's Signature</b>		<b>Date/Time</b>	
Regular (default) X		C. Emslie/ J. Batstone						July 15, 2021	
Priority (2-3 business days) - 50% surcharge									
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									

50





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102654**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210716Q3GW  
**Sampler** : C. Emslie/ S.Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 10  
**No. of samples analysed** : 9

**Page** : 1 of 8  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 17-Jul-2021 09:00  
**Date Analysis Commenced** : 18-Jul-2021  
**Issue Date** : 05-Aug-2021 10:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_AQ2_ WG_2021_Q3_ NP	EV_MW_MCGW A_GW_2021_Q 3_NP	EV_MW_MCGW B_GW_2021_Q 3_NP	EV_BRGW_GW _2021_Q3_NP	EV_MW_SP1A_ GW_2021_Q3_ NP
Client sampling date / time					16-Jul-2021 16:18	16-Jul-2021 15:42	17-Jul-2021 14:43	16-Jul-2021 12:10	16-Jul-2021 11:30	
Analyte	CAS Number	Method	LOR	Unit	CG2102654-001	CG2102654-002	CG2102654-003	CG2102654-004	CG2102654-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	20.9	12.5	12.3	10.4	<10.0 <sup>DLM</sup>	
conductivity	----	E100	2.0	µS/cm	1070	778	761	866	552	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	597	395	373	563	279	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	435	450	443	470	423	
pH	----	E108	0.10	pH units	7.78	8.04	7.99	8.05	8.18	
solids, total dissolved [TDS]	----	E162	10	mg/L	777	482	450	442	723	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	5.5	<1.0	3.3	<1.0	<1.0	
turbidity	----	E121	0.10	NTU	6.26	1.35	0.15	0.31	4.13	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	456	317	311	237	270	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	456	317	311	237	270	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	556	387	379	289	329	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0643	0.0150	0.0057	0.0115	0.652	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	0.094	<0.050	0.382	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	16.2	38.3	30.4	23.0	4.45	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLDS</sup>	0.080	0.076	<0.100 <sup>DLDS</sup>	0.132	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.191	0.151	0.180 <sup>TKNI</sup>	0.167 <sup>TKNI</sup>	0.926	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0250 <sup>DLDS</sup>	0.517	2.84	5.42	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	0.0042	0.0017	<0.0050 <sup>DLDS</sup>	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0020	0.0024	0.0026	0.0018	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0072	<0.0020	0.0027	<0.0020	0.0089	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0.0021	<0.0020	0.0094	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	154	45.4	49.1	294	33.3	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.191	0.672	3.02	5.59	0.926	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.39	1.02	1.10	1.22	0.88	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_AQ2_WG_2021_Q3_NP	EV_MW_MCGW_A_GW_2021_Q3_NP	EV_MW_MCGW_B_GW_2021_Q3_NP	EV_BRGW_GW_2021_Q3_NP	EV_MW_SP1A_GW_2021_Q3_NP
Client sampling date / time					16-Jul-2021 16:18	16-Jul-2021 15:42	17-Jul-2021 14:43	16-Jul-2021 12:10	16-Jul-2021 11:30	
Analyte	CAS Number	Method	LOR	Unit	CG2102654-001	CG2102654-002	CG2102654-003	CG2102654-004	CG2102654-005	
					Result	Result	Result	Result	Result	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.29	0.93	1.07	1.10	0.65	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	12.8	8.40	8.30	11.9	6.22	
cation sum	----	EC101	0.10	meq/L	12.9	8.66	8.25	11.7	6.15	
ion balance (cations/anions ratio)	----	EC101	0.010	%	101	103	99.4	98.3	98.9	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.389	1.52	0.302	0.847	0.566	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0050	0.0010	<0.0010	<0.0010	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00016	0.00012	<0.00010	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0201	0.403	0.229	0.0549	0.622	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.098	0.036	0.053	0.032	0.026	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0165	0.0926	0.0448	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	140	99.9	97.9	142	69.9	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00010	0.00023	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.10	0.17	0.10	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00028	0.00032	<0.00020	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.484	0.094	<0.010	0.011	0.469	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0547	0.0218	0.0154	0.0427	0.0825	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	60.1	35.4	31.3	50.6	25.4	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0744	0.0333	0.00014	0.00063	0.0605	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000190	0.00271	0.00328	0.000624	0.000357	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00078	0.00166	0.00172	0.00129	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.21	2.46	2.81	2.00	3.47	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	0.840	1.65	46.3	<0.050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.57	4.88	4.41	3.10	2.96	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_AQ2_WG_2021_Q3_NP	EV_MW_MCGW_A_GW_2021_Q3_NP	EV_MW_MCGW_B_GW_2021_Q3_NP	EV_BRGW_GW_2021_Q3_NP	EV_MW_SP1A_GW_2021_Q3_NP
Client sampling date / time					16-Jul-2021 16:18	16-Jul-2021 15:42	17-Jul-2021 14:43	16-Jul-2021 12:10	16-Jul-2021 11:30	
Analyte	CAS Number	Method	LOR	Unit	CG2102654-001	CG2102654-002	CG2102654-003	CG2102654-004	CG2102654-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	21.0	15.9	16.6	8.53	9.63	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.11	0.424	0.308	0.279	0.288	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	55.4	16.0	15.9	103	11.9	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000014	0.000020	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000125	0.000654	0.000730	0.00145	0.000099	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0022	0.0016	0.0025	0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SP1B_GW_2021_Q3_NP	EV_MW_SP1C_GW_2021_Q3_NP	EV_EC5GW_WG_2021_Q3_NP	EV_EC6GW_WG_2021_Q3_NP	----
Client sampling date / time					16-Jul-2021 10:15	16-Jul-2021 10:11	16-Jul-2021 10:12	16-Jul-2021 10:13	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102654-006	CG2102654-007	CG2102654-008	CG2102654-009	-----	
					Result	Result	Result	Result	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<10.0 <sup>DLM</sup>	<10.0 <sup>DLM</sup>	<10.0 <sup>DLM</sup>	<2.0	----	
conductivity	----	E100	2.0	µS/cm	392	413	393	<2.0	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	194	200	197	<0.50	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	455	449	435	434	----	
pH	----	E108	0.10	pH units	8.24	8.26	8.22	5.59	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	233	245	229	<10	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.4	<1.0	<1.0	----	
turbidity	----	E121	0.10	NTU	0.20	0.56	0.26	<0.10	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	150	165	147	<2.0	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	150	165	147	<2.0	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	183	202	179	<2.0	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0055	<0.0050	0.0064	0.0074 <sup>RRV</sup>	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	8.82	9.19	8.82	<0.10	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.049	0.051	0.051	<0.020	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.136	0.066	0.130	<0.050	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.199	0.158	0.212	<0.0050	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0029	0.0010	0.0028	<0.0010	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	42.8	40.1	42.8	<0.30	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.335	0.224	0.342	<0.050	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.72	0.90	0.90	<0.50	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.68	0.81	0.87	<0.50	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SP1B_ GW_2021_Q3_ NP	EV_MW_SP1C_ GW_2021_Q3_ NP	EV_EC5GW_W G_2021_Q3_NP	EV_EC6GW_W G_2021_Q3_NP	----
Client sampling date / time					16-Jul-2021 10:15	16-Jul-2021 10:11	16-Jul-2021 10:12	16-Jul-2021 10:13	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102654-006	CG2102654-007	CG2102654-008	CG2102654-009	-----	
					Result	Result	Result	Result	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.15	4.40	4.10	<0.10	----	
cation sum	----	EC101	0.10	meq/L	4.14	4.36	4.20	<0.10	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	99.8	99.1	102	100 <sup>RRV</sup>	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.121	0.457	1.20	<0.010	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0014	<0.0010	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.128	0.149	0.125	<0.00010	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0076	0.0279	0.0057	<0.0050	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	50.6	53.7	51.6	<0.050	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00014	0.00014	0.00014	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00079	<0.00020	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0052	0.0078	0.0055	<0.0010	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	16.4	16.0	16.5	<0.0050	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.00028	<0.00010	<0.00010	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000768	0.000797	0.000756	<0.000050	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.665	0.878	0.678	<0.050	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	2.20	1.86	2.39	<0.050	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.15	2.55	2.34	<0.050	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.75	7.81	5.86	<0.050	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.126	0.134	0.124	<0.00020	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SP1B_ GW_2021_Q3_ NP	EV_MW_SP1C_ GW_2021_Q3_ NP	EV_EC5GW_W G_2021_Q3_NP	EV_EC6GW_W G_2021_Q3_NP	----
Client sampling date / time					16-Jul-2021 10:15	16-Jul-2021 10:11	16-Jul-2021 10:12	16-Jul-2021 10:13	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102654-006	CG2102654-007	CG2102654-008	CG2102654-009	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	13.9	13.3	15.0	<0.50	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000659	0.000606	0.000658	<0.000010	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0013	<0.0010	<0.0010	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102654</b>	Page	: 1 of 32
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V1C 4C3	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 17-Jul-2021 09:00
PO	: VPO00741597	Issue Date	: 05-Aug-2021 10:55
C-O-C number	: 20210716Q3GW		
Sampler	: C. Emslie/ S.Hansen		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 10		
No. of samples analysed	: 9		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWB_GW_2021_Q3_NP	E298	17-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	6 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_BRGW_GW_2021_Q3_NP	E298	16-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_EC5GW_WG_2021_Q3_NP	E298	16-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_EC6GW_WG_2021_Q3_NP	E298	16-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ2_WG_2021_Q3_NP	E298	16-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWA_GW_2021_Q3_NP	E298	16-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_GW_2021_Q3_NP	E298	16-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	7 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_GW_2021_Q3_NP	E298	16-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_GW_2021_Q3_NP	E298	16-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MCGWB_GW_2021_Q3_NP	E235.Br-L	17-Jul-2021	----	----	----		18-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_BRGW_GW_2021_Q3_NP	E235.Br-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_EC5GW_WG_2021_Q3_NP	E235.Br-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_EC6GW_WG_2021_Q3_NP	E235.Br-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_AQ2_WG_2021_Q3_NP	E235.Br-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MCGWA_GW_2021_Q3_NP	E235.Br-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1A_GW_2021_Q3_NP	E235.Br-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1B_GW_2021_Q3_NP	E235.Br-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1C_GW_2021_Q3_NP	E235.Br-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_MCGWB_GW_2021_Q3_NP	E235.Cl-L	17-Jul-2021	----	----	----		18-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_BRGW_GW_2021_Q3_NP	E235.Cl-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_EC5GW_WG_2021_Q3_NP	E235.Cl-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_EC6GW_WG_2021_Q3_NP	E235.Cl-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_AQ2_WG_2021_Q3_NP	E235.Cl-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_MCGWA_GW_2021_Q3_NP	E235.Cl-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1A_GW_2021_Q3_NP	E235.Cl-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1B_GW_2021_Q3_NP	E235.Cl-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1C_GW_2021_Q3_NP	E235.Cl-L	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_MCGWB_GW_2021_Q3_NP	E378-U	17-Jul-2021	----	----	----		18-Jul-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_BRGW_GW_2021_Q3_NP	E378-U	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_EC5GW_WG_2021_Q3_NP	E378-U	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_EC6GW_WG_2021_Q3_NP	E378-U	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_AQ2_WG_2021_Q3_NP	E378-U	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_MCGWA_GW_2021_Q3_NP	E378-U	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_SP1A_GW_2021_Q3_NP	E378-U	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_SP1B_GW_2021_Q3_NP	E378-U	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_SP1C_GW_2021_Q3_NP	E378-U	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_MCGWB_GW_2021_Q3_NP	E235.F	17-Jul-2021	----	----	----		18-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_BRGW_GW_2021_Q3_NP	E235.F	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_EC5GW_WG_2021_Q3_NP	E235.F	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_EC6GW_WG_2021_Q3_NP	E235.F	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_AQ2_WG_2021_Q3_NP	E235.F	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_MCGWA_GW_2021_Q3_NP	E235.F	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_SP1A_GW_2021_Q3_NP	E235.F	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_MW_SP1B_GW_2021_Q3_NP	E235.F	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_MW_SP1C_GW_2021_Q3_NP	E235.F	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MCGWB_GW_2021_Q3_NP	E235.NO3-L	17-Jul-2021	----	----	----		18-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_BRGW_GW_2021_Q3_NP	E235.NO3-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_EC5GW_WG_2021_Q3_NP	E235.NO3-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_EC6GW_WG_2021_Q3_NP	E235.NO3-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_AQ2_WG_2021_Q3_NP	E235.NO3-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MCGWA_GW_2021_Q3_NP	E235.NO3-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1A_GW_2021_Q3_NP	E235.NO3-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	





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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1B_GW_2021_Q3_NP	E235.NO3-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1C_GW_2021_Q3_NP	E235.NO3-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MCGWB_GW_2021_Q3_NP	E235.NO2-L	17-Jul-2021	----	----	----		18-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_BRGW_GW_2021_Q3_NP	E235.NO2-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_EC5GW_WG_2021_Q3_NP	E235.NO2-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_EC6GW_WG_2021_Q3_NP	E235.NO2-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_AQ2_WG_2021_Q3_NP	E235.NO2-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MCGWA_GW_2021_Q3_NP	E235.NO2-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1A_GW_2021_Q3_NP	E235.NO2-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	





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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1B_GW_2021_Q3_NP	E235.NO2-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1C_GW_2021_Q3_NP	E235.NO2-L	16-Jul-2021	----	----	----		18-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_MCGWB_GW_2021_Q3_NP	E235.SO4	17-Jul-2021	----	----	----		18-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_BRGW_GW_2021_Q3_NP	E235.SO4	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_EC5GW_WG_2021_Q3_NP	E235.SO4	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_EC6GW_WG_2021_Q3_NP	E235.SO4	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_AQ2_WG_2021_Q3_NP	E235.SO4	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_MCGWA_GW_2021_Q3_NP	E235.SO4	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_SP1A_GW_2021_Q3_NP	E235.SO4	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✓	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_SP1B_GW_2021_Q3_NP	E235.SO4	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_SP1C_GW_2021_Q3_NP	E235.SO4	16-Jul-2021	----	----	----		18-Jul-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MCGWB_GW_2021_Q3_NP	E375-T	17-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_BRGW_GW_2021_Q3_NP	E375-T	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_EC5GW_WG_2021_Q3_NP	E375-T	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_EC6GW_WG_2021_Q3_NP	E375-T	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_AQ2_WG_2021_Q3_NP	E375-T	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MCGWA_GW_2021_Q3_NP	E375-T	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1A_GW_2021_Q3_NP	E375-T	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1B_GW_2021_Q3_NP	E375-T	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1C_GW_2021_Q3_NP	E375-T	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWB_GW_2021_Q3_NP	E318	17-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BRGW_GW_2021_Q3_NP	E318	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC5GW_WG_2021_Q3_NP	E318	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC6GW_WG_2021_Q3_NP	E318	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ2_WG_2021_Q3_NP	E318	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWA_GW_2021_Q3_NP	E318	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_GW_2021_Q3_NP	E318	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	5 days	✔	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_GW_2021_Q3_NP	E318	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_GW_2021_Q3_NP	E318	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWB_GW_2021_Q3_NP	E372-U	17-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BRGW_GW_2021_Q3_NP	E372-U	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC5GW_WG_2021_Q3_NP	E372-U	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC6GW_WG_2021_Q3_NP	E372-U	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ2_WG_2021_Q3_NP	E372-U	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWA_GW_2021_Q3_NP	E372-U	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_GW_2021_Q3_NP	E372-U	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_GW_2021_Q3_NP	E372-U	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_GW_2021_Q3_NP	E372-U	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MCGWB_GW_2021_Q3_NP	E421.Cr-L	17-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_BRGW_GW_2021_Q3_NP	E421.Cr-L	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_EC5GW_WG_2021_Q3_NP	E421.Cr-L	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_EC6GW_WG_2021_Q3_NP	E421.Cr-L	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_AQ2_WG_2021_Q3_NP	E421.Cr-L	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MCGWA_GW_2021_Q3_NP	E421.Cr-L	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1A_GW_2021_Q3_NP	E421.Cr-L	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1B_GW_2021_Q3_NP	E421.Cr-L	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1C_GW_2021_Q3_NP	E421.Cr-L	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MCGWB_GW_2021_Q3_NP	E509	17-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_BRGW_GW_2021_Q3_NP	E509	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_EC5GW_WG_2021_Q3_NP	E509	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_EC6GW_WG_2021_Q3_NP	E509	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_AQ2_WG_2021_Q3_NP	E509	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MCGWA_GW_2021_Q3_NP	E509	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SP1A_GW_2021_Q3_NP	E509	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SP1B_GW_2021_Q3_NP	E509	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SP1C_GW_2021_Q3_NP	E509	16-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MCGWB_GW_2021_Q3_NP	E421	17-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_BRGW_GW_2021_Q3_NP	E421	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_EC5GW_WG_2021_Q3_NP	E421	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_EC6GW_WG_2021_Q3_NP	E421	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_AQ2_WG_2021_Q3_NP	E421	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MCGWA_GW_2021_Q3_NP	E421	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1A_GW_2021_Q3_NP	E421	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1B_GW_2021_Q3_NP	E421	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1C_GW_2021_Q3_NP	E421	16-Jul-2021	21-Jul-2021	----	----		21-Jul-2021	180 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MCGWB_GW_2021_Q3_NP	E358-L	17-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_BRGW_GW_2021_Q3_NP	E358-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_EC5GW_WG_2021_Q3_NP	E358-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_EC6GW_WG_2021_Q3_NP	E358-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_AQ2_WG_2021_Q3_NP	E358-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MCGWA_GW_2021_Q3_NP	E358-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1A_GW_2021_Q3_NP	E358-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1B_GW_2021_Q3_NP	E358-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1C_GW_2021_Q3_NP	E358-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWB_GW_2021_Q3_NP	E355-L	17-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BRGW_GW_2021_Q3_NP	E355-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC5GW_WG_2021_Q3_NP	E355-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC6GW_WG_2021_Q3_NP	E355-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ2_WG_2021_Q3_NP	E355-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWA_GW_2021_Q3_NP	E355-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_GW_2021_Q3_NP	E355-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_GW_2021_Q3_NP	E355-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_GW_2021_Q3_NP	E355-L	16-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MCGWB_GW_2021_Q3_NP	E283	17-Jul-2021	----	----	----		19-Jul-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_BRGW_GW_2021_Q3_NP	E283	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_EC5GW_WG_2021_Q3_NP	E283	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_EC6GW_WG_2021_Q3_NP	E283	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_AQ2_WG_2021_Q3_NP	E283	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MCGWA_GW_2021_Q3_NP	E283	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_SP1A_GW_2021_Q3_NP	E283	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_MW_SP1B_GW_2021_Q3_NP	E283	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_MW_SP1C_GW_2021_Q3_NP	E283	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_MCGWB_GW_2021_Q3_NP	E290	17-Jul-2021	----	----	----		19-Jul-2021	14 days	2 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_BRGW_GW_2021_Q3_NP	E290	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_EC5GW_WG_2021_Q3_NP	E290	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_EC6GW_WG_2021_Q3_NP	E290	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_AQ2_WG_2021_Q3_NP	E290	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_MCGWA_GW_2021_Q3_NP	E290	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_SP1A_GW_2021_Q3_NP	E290	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_SP1B_GW_2021_Q3_NP	E290	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_SP1C_GW_2021_Q3_NP	E290	16-Jul-2021	----	----	----		19-Jul-2021	14 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_BRGW_GW_2021_Q3_NP	E100	16-Jul-2021	----	----	----		30-Jul-2021	28 days	14 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MCGWB_GW_2021_Q3_NP	E100	17-Jul-2021	----	----	----		19-Jul-2021	28 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_EC5GW_WG_2021_Q3_NP	E100	16-Jul-2021	----	----	----		19-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_EC6GW_WG_2021_Q3_NP	E100	16-Jul-2021	----	----	----		19-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_AQ2_WG_2021_Q3_NP	E100	16-Jul-2021	----	----	----		19-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MCGWA_GW_2021_Q3_NP	E100	16-Jul-2021	----	----	----		19-Jul-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_SP1A_GW_2021_Q3_NP	E100	16-Jul-2021	----	----	----		19-Jul-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_SP1B_GW_2021_Q3_NP	E100	16-Jul-2021	----	----	----		19-Jul-2021	28 days	3 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_SP1C_GW_2021_Q3_NP	E100	16-Jul-2021	----	----	----		19-Jul-2021	28 days	3 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MCGWB_GW_2021_Q3_NP	E125	17-Jul-2021	----	----	----		25-Jul-2021	0.34 hrs	194 hrs		* EHTL
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_AQ2_WG_2021_Q3_NP	E125	16-Jul-2021	----	----	----		25-Jul-2021	0.34 hrs	216 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MCGWA_GW_2021_Q3_NP	E125	16-Jul-2021	----	----	----		25-Jul-2021	0.34 hrs	217 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_BRGW_GW_2021_Q3_NP	E125	16-Jul-2021	----	----	----		25-Jul-2021	0.34 hrs	221 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_SP1A_GW_2021_Q3_NP	E125	16-Jul-2021	----	----	----		25-Jul-2021	0.34 hrs	222 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_EC5GW_WG_2021_Q3_NP	E125	16-Jul-2021	----	----	----		25-Jul-2021	0.34 hrs	223 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_EC6GW_WG_2021_Q3_NP	E125	16-Jul-2021	----	----	----		25-Jul-2021	0.34 hrs	223 hrs		* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_SP1B_GW_2021_Q3_NP	E125	16-Jul-2021	----	----	----		25-Jul-2021	0.34 hrs	223 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_SP1C_GW_2021_Q3_NP	E125	16-Jul-2021	----	----	----		25-Jul-2021	0.34 hrs	223 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MCGWB_GW_2021_Q3_NP	E108	17-Jul-2021	----	----	----		19-Jul-2021	0.25 hrs	48 hrs	*	EHTL
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_AQ2_WG_2021_Q3_NP	E108	16-Jul-2021	----	----	----		19-Jul-2021	0.25 hrs	71 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MCGWA_GW_2021_Q3_NP	E108	16-Jul-2021	----	----	----		19-Jul-2021	0.25 hrs	71 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_BRGW_GW_2021_Q3_NP	E108	16-Jul-2021	----	----	----		19-Jul-2021	0.25 hrs	75 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_SP1A_GW_2021_Q3_NP	E108	16-Jul-2021	----	----	----		19-Jul-2021	0.25 hrs	76 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_EC5GW_WG_2021_Q3_NP	E108	16-Jul-2021	----	----	----		19-Jul-2021	0.25 hrs	77 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_EC6GW_WG_2021_Q3_NP	E108	16-Jul-2021	----	----	----		19-Jul-2021	0.25 hrs	77 hrs	*	EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_SP1B_GW_2021_Q3_NP	E108	16-Jul-2021	----	----	----		19-Jul-2021	0.25 hrs	77 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_SP1C_GW_2021_Q3_NP	E108	16-Jul-2021	----	----	----		19-Jul-2021	0.25 hrs	77 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_BRGW_GW_2021_Q3_NP	E162	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_EC5GW_WG_2021_Q3_NP	E162	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_EC6GW_WG_2021_Q3_NP	E162	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_AQ2_WG_2021_Q3_NP	E162	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MCGWA_GW_2021_Q3_NP	E162	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MCGWB_GW_2021_Q3_NP	E162	17-Jul-2021	----	----	----		23-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_SP1A_GW_2021_Q3_NP	E162	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_MW_SP1B_GW_2021_Q3_NP	E162	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_MW_SP1C_GW_2021_Q3_NP	E162	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_BRGW_GW_2021_Q3_NP	E160-L	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_EC5GW_WG_2021_Q3_NP	E160-L	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_EC6GW_WG_2021_Q3_NP	E160-L	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_AQ2_WG_2021_Q3_NP	E160-L	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_MCGWA_GW_2021_Q3_NP	E160-L	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_MCGWB_GW_2021_Q3_NP	E160-L	17-Jul-2021	----	----	----		23-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_SP1A_GW_2021_Q3_NP	E160-L	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_SP1B_GW_2021_Q3_NP	E160-L	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_SP1C_GW_2021_Q3_NP	E160-L	16-Jul-2021	----	----	----		22-Jul-2021	7 days	6 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_MCGWB_GW_2021_Q3_NP	E121	17-Jul-2021	----	----	----		19-Jul-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_BRGW_GW_2021_Q3_NP	E121	16-Jul-2021	----	----	----		19-Jul-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_EC5GW_WG_2021_Q3_NP	E121	16-Jul-2021	----	----	----		19-Jul-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_EC6GW_WG_2021_Q3_NP	E121	16-Jul-2021	----	----	----		19-Jul-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_AQ2_WG_2021_Q3_NP	E121	16-Jul-2021	----	----	----		19-Jul-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_MCGWA_GW_2021_Q3_NP	E121	16-Jul-2021	----	----	----		19-Jul-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_SP1A_GW_2021_Q3_NP	E121	16-Jul-2021	----	----	----		19-Jul-2021	3 days	3 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_SP1B_GW_2021_Q3_NP	E121	16-Jul-2021	----	----	----		19-Jul-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_SP1C_GW_2021_Q3_NP	E121	16-Jul-2021	----	----	----		19-Jul-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	246835	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	246818	2	38	5.2	5.0	✓
Ammonia by Fluorescence	E298	250045	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	246082	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	246083	1	9	11.1	5.0	✓
Conductivity in Water	E100	246820	2	38	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	248314	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	249492	2	28	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	248315	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251483	2	25	8.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	246087	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	246086	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	246084	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	246085	1	9	11.1	5.0	✓
ORP by Electrode	E125	251554	2	40	5.0	5.0	✓
pH by Meter	E108	246819	2	38	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	246081	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	248924	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	248045	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	247266	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251485	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	248238	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	246720	1	9	11.1	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	246835	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	246818	2	38	5.2	5.0	✓
Ammonia by Fluorescence	E298	250045	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	246082	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	246083	1	9	11.1	5.0	✓
Conductivity in Water	E100	246820	2	38	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	248314	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	249492	2	28	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	248315	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251483	2	25	8.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	246087	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	246086	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	246084	1	9	11.1	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	246085	1	9	11.1	5.0	✓
ORP by Electrode	E125	251554	2	40	5.0	5.0	✓
pH by Meter	E108	246819	2	38	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	246081	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	248924	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	248045	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	247266	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251485	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	248238	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	248908	3	53	5.6	5.0	✓
Turbidity by Nephelometry	E121	246720	1	9	11.1	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	246835	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	246818	2	38	5.2	5.0	✓
Ammonia by Fluorescence	E298	250045	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	246082	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	246083	1	9	11.1	5.0	✓
Conductivity in Water	E100	246820	2	38	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	248314	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	249492	2	28	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	248315	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251483	2	25	8.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	246087	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	246086	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	246084	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	246085	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	246081	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	248924	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	248045	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	247266	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251485	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	248238	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	248908	3	53	5.6	5.0	✓
Turbidity by Nephelometry	E121	246720	1	9	11.1	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	250045	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	246082	0	9	0.0	5.0	✗
Chloride in Water by IC (Low Level)	E235.Cl-L	246083	0	9	0.0	5.0	✗
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	248314	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	249492	2	28	7.1	5.0	✓



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	248315	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	251483	2	25	8.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	246087	1	13	7.6	5.0	✔
Fluoride in Water by IC	E235.F	246086	0	9	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	246084	0	9	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	246085	0	9	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	246081	0	9	0.0	5.0	✘
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	248045	1	12	8.3	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	247266	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	251485	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	248238	2	40	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2102654**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210716Q3GW  
**Sampler** : C. Emslie/ S.Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 10  
**No. of samples analysed** : 9

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 17-Jul-2021 09:00  
**Date Analysis Commenced** : 18-Jul-2021  
**Issue Date** : 05-Aug-2021 10:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2102654  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 246720)</b>											
CG2102654-001	EV_MW_AQ2_WG_2021_Q3_NP	turbidity	----	E121	0.10	NTU	6.26	6.38	1.99%	15%	----
<b>Physical Tests (QC Lot: 246818)</b>											
CG2102649-021	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	438	443	1.34%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	438	443	1.34%	20%	----
<b>Physical Tests (QC Lot: 246819)</b>											
CG2102649-021	Anonymous	pH	----	E108	0.10	pH units	7.37	7.41	0.541%	4%	----
<b>Physical Tests (QC Lot: 246820)</b>											
CG2102649-021	Anonymous	conductivity	----	E100	2.0	µS/cm	2170	2170	0.00%	10%	----
<b>Physical Tests (QC Lot: 246821)</b>											
CG2102654-005	EV_MW_SP1A_GW_2021_Q3_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	270	264	2.25%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	270	264	2.25%	20%	----
<b>Physical Tests (QC Lot: 246822)</b>											
CG2102654-005	EV_MW_SP1A_GW_2021_Q3_NP	pH	----	E108	0.10	pH units	8.18	8.21	0.366%	4%	----
<b>Physical Tests (QC Lot: 246823)</b>											
CG2102654-005	EV_MW_SP1A_GW_2021_Q3_NP	conductivity	----	E100	2.0	µS/cm	552	551	0.181%	10%	----
<b>Physical Tests (QC Lot: 246835)</b>											
CG2102654-001	EV_MW_AQ2_WG_2021_Q3_NP	acidity (as CaCO3)	----	E283	10.0	mg/L	20.9	19.6	1.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 248924)</b>											
CG2102649-026	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2480	2690	8.39%	20%	----
<b>Physical Tests (QC Lot: 249952)</b>											
CG2102654-003	EV_MW_MCGWB_GW_2021_Q3_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	450	453	0.664%	20%	----
<b>Physical Tests (QC Lot: 251554)</b>											
CG2102649-021	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	332	329	0.878%	15%	----
<b>Physical Tests (QC Lot: 251555)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 251555) - continued</b>											
CG2102654-005	EV_MW_SP1A_GW_2021_Q3_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	423	428	1.03%	15%	----
<b>Anions and Nutrients (QC Lot: 246081)</b>											
CG2102654-001	EV_MW_AQ2_WG_2021_Q3_NP	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	154	153	0.0785%	20%	----
<b>Anions and Nutrients (QC Lot: 246082)</b>											
CG2102654-001	EV_MW_AQ2_WG_2021_Q3_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 246083)</b>											
CG2102654-001	EV_MW_AQ2_WG_2021_Q3_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	16.2	16.1	1.03%	20%	----
<b>Anions and Nutrients (QC Lot: 246084)</b>											
CG2102654-001	EV_MW_AQ2_WG_2021_Q3_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 246085)</b>											
CG2102654-001	EV_MW_AQ2_WG_2021_Q3_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 246086)</b>											
CG2102654-001	EV_MW_AQ2_WG_2021_Q3_NP	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 246087)</b>											
CG2102653-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0011	0.00009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 247266)</b>											
CG2102652-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.106	<0.050	0.056	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248045)</b>											
CG2102654-001	EV_MW_AQ2_WG_2021_Q3_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248238)</b>											
CG2102649-021	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0155	0.0138	0.0017	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248239)</b>											
CG2102654-005	EV_MW_SP1A_GW_2021_Q3_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0089	0.0080	0.0010	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250045)</b>											
CG2102649-021	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.317	0.289	9.47%	20%	----
<b>Anions and Nutrients (QC Lot: 250046)</b>											
CG2102654-005	EV_MW_SP1A_GW_2021_Q3_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.652	0.643	1.33%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 251483)</b>											
CG2102649-021	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 251484)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Organic / Inorganic Carbon (QC Lot: 251484) - continued</b>											
CG2102654-005	EV_MW_SP1A_GW_2021_Q3_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.88	1.02	0.14	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 251485)</b>											
CG2102652-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.66	3.54	0.12	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 248314)</b>											
CG2102623-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00013	0.00014	0.000006	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 248315)</b>											
CG2102623-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0067	0.0064	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00376	0.00377	0.130%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00037	0.00041	0.00004	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0452	0.0458	1.39%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.016	0.016	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0200	mg/L	<0.0200 µg/L	<0.0000200	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	193	198	2.38%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	8.59 µg/L	0.00873	1.60%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0939	0.0928	1.15%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	145	144	0.946%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0465	0.0468	0.854%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0197	0.0196	0.239%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0865	0.0875	1.19%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	6.48	6.32	2.38%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	41.4 µg/L	0.0406	1.89%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.82	2.64	6.74%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	15.5	15.4	0.880%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.424	0.426	0.250%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	283	271	4.38%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000038	0.000037	0.0000004	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00778	0.00793	1.92%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 248315) - continued</b>											
CG2102623-001	Anonymous	vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00053	0.00052	0.000008	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0030	0.0027	0.0003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 249492)</b>											
CG2102649-023	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 249494)</b>											
CG2102654-007	EV_MW_SP1C_GW_2021_Q3_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 246720)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 246818)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 246820)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 246821)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 246823)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 246835)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 248908)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 248909)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 248924)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 249950)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 249952)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 246081)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 246082)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 246083)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 246084)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 246085)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 246086)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 246087)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 247266)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 248045)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 248238)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 248239)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 250045)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 250046)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 251483)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 251484)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 251485)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 248314)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 248315)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 248315) - continued</b>						
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 249492)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 249494)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 246720)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.5	85.0	115	---
<b>Physical Tests (QCLot: 246818)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	95.9	85.0	115	---
<b>Physical Tests (QCLot: 246819)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 246820)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	96.9	90.0	110	---
<b>Physical Tests (QCLot: 246821)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	96.8	85.0	115	---
<b>Physical Tests (QCLot: 246822)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 246823)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.3	90.0	110	---
<b>Physical Tests (QCLot: 246835)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 248908)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	113	85.0	115	---
<b>Physical Tests (QCLot: 248909)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	91.7	85.0	115	---
<b>Physical Tests (QCLot: 248924)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	94.4	85.0	115	---
<b>Physical Tests (QCLot: 249950)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.5	85.0	115	---
<b>Physical Tests (QCLot: 249952)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	89.9	85.0	115	---
<b>Physical Tests (QCLot: 251554)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Physical Tests (QCLot: 251555)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 246081)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 246082)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 246082) - continued</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	101	85.0	115	----
<b>Anions and Nutrients (QCLot: 246083)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	97.4	90.0	110	----
<b>Anions and Nutrients (QCLot: 246084)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 246085)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	96.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 246086)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	94.5	90.0	110	----
<b>Anions and Nutrients (QCLot: 246087)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	106	80.0	120	----
<b>Anions and Nutrients (QCLot: 247266)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	82.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 248045)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	89.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 248238)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	94.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 248239)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	92.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 250045)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Anions and Nutrients (QCLot: 250046)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 251483)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 251484)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 251485)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	116	80.0	120	----
<b>Dissolved Metals (QCLot: 248314)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 248315)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.7	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.2	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 248315) - continued</b>									
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	94.7	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	92.6	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.6	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.2	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.5	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.8	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.7	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 246087)</b>										
CG2102653-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0532 mg/L	0.05 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 247266)</b>										
CG2102652-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.28 mg/L	2.5 mg/L	91.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 248045)</b>										
CG2102654-002	EV_MW_MCGWA_GW_2021_Q3_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0509 mg/L	0.0676 mg/L	75.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 248238)</b>										
CG2102649-022	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0555 mg/L	0.0676 mg/L	82.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 248239)</b>										
CG2102654-006	EV_MW_SP1B_GW_2021_Q3_NP	phosphorus, total	7723-14-0	E372-U	0.0567 mg/L	0.0676 mg/L	83.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 250045)</b>										
CG2102649-021	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 250046)</b>										
CG2102660-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.114 mg/L	0.1 mg/L	114	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 251483)</b>										
CG2102649-021	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.0 mg/L	23.9 mg/L	96.2	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 251484)</b>										
CG2102654-005	EV_MW_SP1A_GW_2021_Q3_NP	carbon, dissolved organic [DOC]	----	E358-L	23.6 mg/L	23.9 mg/L	98.9	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 251485)</b>										
CG2102652-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.2 mg/L	23.9 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 248314)</b>										
CG2102623-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
<b>Dissolved Metals (QCLot: 248315)</b>										
CG2102623-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.190 mg/L	0.2 mg/L	95.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0370 mg/L	0.04 mg/L	92.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 248315) - continued</b>										
CG2102623-002	Anonymous	bismuth, dissolved	7440-69-9	E421	0.00900 mg/L	0.01 mg/L	90.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.095 mg/L	0.1 mg/L	95.4	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00395 mg/L	0.004 mg/L	98.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0903 mg/L	0.1 mg/L	90.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0443 mg/L	0.04 mg/L	111	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.50 mg/L	10 mg/L	95.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00388 mg/L	0.004 mg/L	96.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.379 mg/L	0.4 mg/L	94.7	70.0	130	----
<b>Dissolved Metals (QCLot: 249492)</b>										
CG2102649-024	Anonymous	mercury, dissolved	7439-97-6	E509	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 249494)</b>										
CG2102654-008	EV_EC5GW_WG_2021_Q3_NP	mercury, dissolved	7439-97-6	E509	0.000104 mg/L	0.0001 mg/L	104	70.0	130	----

COC ID: **20210716Q3GW**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job# Elkview Operations				Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD	
Job Description Q3 Ground Water Sampling				Lab Contact Lyudmyla Shvets		Email 1: chris.emslie@teck.com		X	X	X	
Project Manager Jennifer Dane				Email lyudmyla.shvets@alsglobal.com		Email 2: colby.bracken@teck.com		X	X	X	
Email jennifer.dane@teck.com				Address 2559 29 Street NE		Email 3: kennedy.allen@teck.com		X	X	X	
Address RR#1 HWY# 3						Email 4: Teck.Lab.Results@sharepoint.teck.com		X	X	X	
						Email 5: teckcoal@equisonline.com					X
		Province BC	City Calgary	Province AB	Jennifer.Dane@teck.com		X	X	X		
		Country Canada	Postal Code T1Y 7B5	Country Canada							
				Phone Number 403-407-1800	PO number		VPO00741597				

Environmental Division  
Calgary  
Work Order Reference  
**CG2102654**



Telephone: +1 403 407 1800

FILE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, Bi-CL, Carbonate, CO3-CL, Hydroxide, OH-CL	TECKCOAL-ME-T-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CVI	
EV_MW_AQ2_WG_2021_Q3_NP	EV_MW_AQ2	WG	N	07/16/21	16:18	G	5	1	1	1	1	1	1	1				1		
EV_MW_MCGWA_GW_2021_Q3_NP	EV_MW_MCGWA	WG	N	07/16/21	15:42	G	5	1	1	1	1	1	1	1				1		
EV_MW_MCGWB_GW_2021_Q3_NP	EV_MW_MCGWB	WG	N	07/16/21	14:43	G	5	1	1	1	1	1	1	1				1		
EV_BRGW_GW_2021_Q3_NP	EV_BRGW	WG	N	07/16/21	12:10	G	5	1	1	1	1	1	1	1				1		
EV_MW_SPIA_GW_2021_Q3_NP	EV_MW_SPIA	WG	N	07/16/21	11:30	G	5	1	1	1	1	1	1	1				1		
EV_MW_SPIB_GW_2021_Q3_NP	EV_MW_SPIB	WG	N	07/16/21	10:15	G	5	1	1	1	1	1	1	1				1		
EV_MW_SPIC_GW_2021_Q3_NP	EV_MW_SPIC	WG	N	07/16/21	10:11	G	5	1	1	1	1	1	1	1				1		
EV_EC5GW_WG_2021_Q3_NP	EV_EC5GW	WG	N	07/16/21	10:12	G	5	1	1	1	1	1	1	1				1		
EV_EC6GW_WG_2021_Q3_NP	EV_EC6GW	WG	N	07/16/21	10:13	G	5	1	1	1	1	1	1	1				1		
EV_EC7GW_WG_2021_Q3_NP	EV_EC7GW	WG	N	07/16/21	10:15	G	5	1	1	1	1	1	1	1				1		
							Total	50												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION C. Emslie/ S.Hansen	DATE/TIME July 16, 2021	ACCEPTED BY/AFFILIATION <i>[Signature]</i>	DATE/TIME 17/07/21
------------------------------------------	----------------------------------------------------	----------------------------	-----------------------------------------------	-----------------------

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	C. Emslie/ S.Hansen	Mobile #	
Sampler's Signature	<i>[Signature]</i>	Date/Time	July 16, 2021

12





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102703**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210719Q3GW  
**Sampler** : C. BRACKEN/ S.HANSEN  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Jul-2021 08:40  
**Date Analysis Commenced** : 20-Jul-2021  
**Issue Date** : 04-Aug-2021 17:25

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_ECGW_WG	----	----	----	----
(Matrix: Water)						_2021_Q3_NP				
					Client sampling date / time	19-Jul-2021 10:27	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102703-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	406	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	153	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	452	----	----	----	----	----
pH	----	E108	0.10	pH units	8.40	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	277	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	37.3	----	----	----	----	----
turbidity	----	E121	0.10	NTU	46.6	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	192	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	3.6	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	189	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	230	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	2.2	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.144	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.56	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.737	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.202	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0667	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0141	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0128	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0691	----	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0121	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	26.6	----	----	----	----	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.283	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.38	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.73	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_ECGW_WG	----	----	----	----
(Matrix: Water)						_2021_Q3_NP				
					Client sampling date / time	19-Jul-2021 10:27	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102703-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.45	---	---	---	---	---
cation sum	----	EC101	0.10	meq/L	4.50	---	---	---	---	---
ion balance (cations/anions ratio)	----	EC101	0.010	%	101	---	---	---	---	---
ion balance (cation-anion difference)	----	EC101	0.010	%	0.559	---	---	---	---	---
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	---	---	---	---	---
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00040	---	---	---	---	---
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0545	---	---	---	---	---
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	---	---	---	---	---
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.113	---	---	---	---	---
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0215	---	---	---	---	---
calcium, dissolved	7440-70-2	E421	0.050	mg/L	35.1	---	---	---	---	---
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	---	---	---	---	---
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.11	---	---	---	---	---
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00080	---	---	---	---	---
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	---	---	---	---	---
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0123	---	---	---	---	---
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	15.9	---	---	---	---	---
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.107	---	---	---	---	---
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	---	---	---	---	---
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0144	---	---	---	---	---
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00098	---	---	---	---	---
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.07	---	---	---	---	---
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.086	---	---	---	---	---
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.08	---	---	---	---	---
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	---	---	---	---	---
sodium, dissolved	17341-25-2	E421	0.050	mg/L	32.1	---	---	---	---	---
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.408	---	---	---	---	---
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	9.18	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_ECGW_WG	----	----	----	----
(Matrix: Water)						_2021_Q3_NP				
					Client sampling date / time	19-Jul-2021 10:27	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102703-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Dissolved Metals</b>										
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000047	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00158	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0019	----	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2102703</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : <b>Jennifer Dane</b> <b>Address</b> : <b>RR#1 HIGHWAY #3</b> <b>Sparwood BC Canada V0B 2G1</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>ELKVIEW OPERATIONS</b> <b>PO</b> : <b>VPO00741597</b> <b>C-O-C number</b> : <b>20210719Q3GW</b> <b>Sampler</b> : <b>C. BRACKEN/ S.HANSEN</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>Teck Coal Master Quote</b> <b>No. of samples received</b> : <b>1</b> <b>No. of samples analysed</b> : <b>1</b>	<b>Page</b> : <b>1 of 10</b>  <b>Laboratory</b> : <b>Calgary - Environmental</b> <b>Account Manager</b> : <b>Lyudmyla Shvets</b> <b>Address</b> : <b>2559 29th Street NE</b> <b>Calgary, Alberta Canada T1Y 7B5</b>  <b>Telephone</b> : <b>+1 403 407 1800</b> <b>Date Samples Received</b> : <b>20-Jul-2021 08:40</b> <b>Issue Date</b> : <b>04-Aug-2021 17:25</b>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### **Summary of Outliers**

#### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

#### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_ECGW_WG_2021_Q3_NP	E298	19-Jul-2021	24-Jul-2021	----	----		24-Jul-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ECGW_WG_2021_Q3_NP	E235.Br-L	19-Jul-2021	----	----	----		20-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ECGW_WG_2021_Q3_NP	E235.Cl-L	19-Jul-2021	----	----	----		20-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> EV_ECGW_WG_2021_Q3_NP	E378-U	19-Jul-2021	----	----	----		21-Jul-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_ECGW_WG_2021_Q3_NP	E235.F	19-Jul-2021	----	----	----		20-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ECGW_WG_2021_Q3_NP	E235.NO3-L	19-Jul-2021	----	----	----		20-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ECGW_WG_2021_Q3_NP	E235.NO2-L	19-Jul-2021	----	----	----		20-Jul-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_ECGW_WG_2021_Q3_NP	E235.SO4	19-Jul-2021	----	----	----		20-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ECGW_WG_2021_Q3_NP	E375-T	19-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ECGW_WG_2021_Q3_NP	E318	19-Jul-2021	22-Jul-2021	----	----		22-Jul-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ECGW_WG_2021_Q3_NP	E372-U	19-Jul-2021	23-Jul-2021	----	----		23-Jul-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ECGW_WG_2021_Q3_NP	E421.Cr-L	19-Jul-2021	23-Jul-2021	----	----		25-Jul-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_ECGW_WG_2021_Q3_NP	E509	19-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ECGW_WG_2021_Q3_NP	E421	19-Jul-2021	23-Jul-2021	----	----		25-Jul-2021	180 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ECGW_WG_2021_Q3_NP	E358-L	19-Jul-2021	29-Jul-2021	----	----		31-Jul-2021	28 days	12 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ECGW_WG_2021_Q3_NP	E355-L	19-Jul-2021	29-Jul-2021	----	----		31-Jul-2021	28 days	12 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_ECGW_WG_2021_Q3_NP	E283	19-Jul-2021	----	----	----		21-Jul-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_ECGW_WG_2021_Q3_NP	E290	19-Jul-2021	----	----	----		21-Jul-2021	14 days	2 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_ECGW_WG_2021_Q3_NP	E100	19-Jul-2021	----	----	----		21-Jul-2021	28 days	2 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_ECGW_WG_2021_Q3_NP	E125	19-Jul-2021	----	----	----		27-Jul-2021	0.34 hrs	197 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE EV_ECGW_WG_2021_Q3_NP	E108	19-Jul-2021	----	----	----		21-Jul-2021	0.25 hrs	43 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_ECGW_WG_2021_Q3_NP	E162	19-Jul-2021	----	----	----		25-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_ECGW_WG_2021_Q3_NP	E160-L	19-Jul-2021	----	----	----		25-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_ECGW_WG_2021_Q3_NP	E121	19-Jul-2021	----	----	----		21-Jul-2021	3 days	2 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	248002	1	12	8.3	5.0	✓
Alkalinity Species by Titration	E290	247999	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	250927	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	247681	1	3	33.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	247682	1	3	33.3	5.0	✓
Conductivity in Water	E100	248000	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	250486	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	251440	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	250485	1	3	33.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	254925	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	248424	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	247679	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	247683	1	3	33.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	247684	1	3	33.3	5.0	✓
ORP by Electrode	E125	252219	1	15	6.6	5.0	✓
pH by Meter	E108	247998	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	247680	1	3	33.3	5.0	✓
TDS by Gravimetry	E162	251341	1	19	5.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	248045	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	248120	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	254930	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249960	1	10	10.0	5.0	✓
Turbidity by Nephelometry	E121	248581	1	10	10.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	248002	1	12	8.3	5.0	✓
Alkalinity Species by Titration	E290	247999	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	250927	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	247681	1	3	33.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	247682	1	3	33.3	5.0	✓
Conductivity in Water	E100	248000	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	250486	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	251440	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	250485	1	3	33.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	254925	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	248424	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	247679	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	247683	1	3	33.3	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	247684	1	3	33.3	5.0	✓
ORP by Electrode	E125	252219	1	15	6.6	5.0	✓
pH by Meter	E108	247998	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	247680	1	3	33.3	5.0	✓
TDS by Gravimetry	E162	251341	1	19	5.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	248045	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	248120	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	254930	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249960	1	10	10.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	251339	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	248581	1	10	10.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	248002	1	12	8.3	5.0	✓
Alkalinity Species by Titration	E290	247999	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	250927	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	247681	1	3	33.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	247682	1	3	33.3	5.0	✓
Conductivity in Water	E100	248000	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	250486	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	251440	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	250485	1	3	33.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	254925	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	248424	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	247679	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	247683	1	3	33.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	247684	1	3	33.3	5.0	✓
Sulfate in Water by IC	E235.SO4	247680	1	3	33.3	5.0	✓
TDS by Gravimetry	E162	251341	1	19	5.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	248045	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	248120	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	254930	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249960	1	10	10.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	251339	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	248581	1	10	10.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	250927	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	247681	0	3	0.0	5.0	✗
Chloride in Water by IC (Low Level)	E235.Cl-L	247682	0	3	0.0	5.0	✗
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	250486	0	1	0.0	5.0	✗
Dissolved Mercury in Water by CVAAS	E509	251440	1	6	16.6	5.0	✓



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	250485	1	3	33.3	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	254925	1	14	7.1	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	248424	1	6	16.6	5.0	✔
Fluoride in Water by IC	E235.F	247679	0	3	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	247683	0	3	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	247684	0	3	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	247680	0	3	0.0	5.0	✘
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	248045	1	12	8.3	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	248120	1	4	25.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	254930	1	15	6.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	249960	1	10	10.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102703**

**Page** : 1 of 13

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210719Q3GW  
**Sampler** : C. BRACKEN/ S.HANSEN  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Jul-2021 08:40  
**Date Analysis Commenced** : 20-Jul-2021  
**Issue Date** : 04-Aug-2021 17:25

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia

Page : 2 of 13  
Work Order : CG2102703  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 247998)</b>											
CG2102663-001	Anonymous	pH	----	E108	0.10	pH units	7.99	8.05	0.748%	4%	----
<b>Physical Tests (QC Lot: 247999)</b>											
CG2102672-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	386	393	1.85%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	386	393	1.85%	20%	----
<b>Physical Tests (QC Lot: 248000)</b>											
CG2102699-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1480	1480	0.0674%	10%	----
<b>Physical Tests (QC Lot: 248002)</b>											
CG2102698-004	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 248581)</b>											
CG2102697-003	Anonymous	turbidity	----	E121	0.10	NTU	1.83	1.81	0.990%	15%	----
<b>Physical Tests (QC Lot: 251341)</b>											
CG2102687-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	267	261	2.46%	20%	----
<b>Physical Tests (QC Lot: 252219)</b>											
CG2102698-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	466	469	0.641%	15%	----
<b>Anions and Nutrients (QC Lot: 247679)</b>											
CG2102703-001	EV_ECGW_WG_2021_Q3_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.737	0.728	1.35%	20%	----
<b>Anions and Nutrients (QC Lot: 247680)</b>											
CG2102703-001	EV_ECGW_WG_2021_Q3_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	26.6	26.7	0.387%	20%	----
<b>Anions and Nutrients (QC Lot: 247681)</b>											
CG2102703-001	EV_ECGW_WG_2021_Q3_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 247682)</b>											
CG2102703-001	EV_ECGW_WG_2021_Q3_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.56	0.52	0.04	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 247683)</b>											
CG2102703-001	EV_ECGW_WG_2021_Q3_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0667	0.0664	0.451%	20%	----
<b>Anions and Nutrients (QC Lot: 247684)</b>											
CG2102703-001	EV_ECGW_WG_2021_Q3_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0141	0.0142	0.707%	20%	----
<b>Anions and Nutrients (QC Lot: 248045)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 248045) - continued</b>											
CG2102654-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248120)</b>											
CG2102701-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248424)</b>											
CG2102703-001	EV_ECGW_WG_2021_Q3_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0128	0.0127	0.780%	20%	----
<b>Anions and Nutrients (QC Lot: 249960)</b>											
CG2102698-007	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250927)</b>											
CG2102685-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 254925)</b>											
CG2102685-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 254930)</b>											
CG2102685-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 250485)</b>											
CG2102703-001	EV_ECGW_WG_2021_Q3_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0010	0.00004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00040	0.00038	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0545	0.0542	0.466%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.113	0.118	3.78%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0215 µg/L	0.0000194	0.0000021	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	35.1	36.0	2.39%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.11 µg/L	0.00011	0.000007	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00080	0.00080	0.000004	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0123	0.0125	1.84%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	15.9	15.4	2.64%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.107	0.106	0.976%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0144	0.0146	1.72%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00098	0.00098	0.000003	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.07	1.06	0.379%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.086 µg/L	0.000078	0.000008	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 250485) - continued</b>											
CG2102703-001	EV_ECGW_WG_2021_Q3_NP	silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.08	5.04	0.697%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	32.1	31.9	0.575%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.408	0.414	1.58%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	9.18	9.30	1.26%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000047	0.000047	0.000000003	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00158	0.00160	1.32%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0019	0.0020	0.0001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 250486)</b>											
CG2102703-001	EV_ECGW_WG_2021_Q3_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 251440)</b>											
CG2102599-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 247999)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 248000)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 248002)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 248581)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 251339)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 251341)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 247679)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 247680)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 247681)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 247682)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 247683)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 247684)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 248045)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 248120)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 248424)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 249960)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 249960) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 250927)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 254925)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 254930)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 250485)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 250485) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 250486)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 251440)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 247998)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 247999)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	96.0	85.0	115	---
<b>Physical Tests (QCLot: 248000)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.2	90.0	110	---
<b>Physical Tests (QCLot: 248002)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 248581)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	95.7	85.0	115	---
<b>Physical Tests (QCLot: 251339)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.1	85.0	115	---
<b>Physical Tests (QCLot: 251341)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 252219)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	104	95.4	104	---
<b>Anions and Nutrients (QCLot: 247679)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	90.7	90.0	110	---
<b>Anions and Nutrients (QCLot: 247680)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 247681)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 247682)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 247683)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 247684)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 248045)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	89.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 248120)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	82.1	75.0	125	---
<b>Anions and Nutrients (QCLot: 248424)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 248424) - continued</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	98.7	80.0	120	----
<b>Anions and Nutrients (QCLot: 249960)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 250927)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	111	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 254925)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	98.6	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 254930)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	92.2	80.0	120	----
<b>Dissolved Metals (QCLot: 250485)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.5	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	94.9	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	99.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.3	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.2	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.9	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	89.9	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 250485) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.5	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.8	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	108	80.0	120	----
<b>Dissolved Metals (QCLot: 250486)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.3	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 248045)</b>										
CG2102654-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0509 mg/L	0.0676 mg/L	75.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 248120)</b>										
CG2102703-001	EV_ECGW_WG_2021_Q3_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.22 mg/L	2.5 mg/L	88.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 248424)</b>										
CG2102728-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0492 mg/L	0.05 mg/L	98.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 249960)</b>										
CG2102699-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0685 mg/L	0.0676 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 250927)</b>										
CG2102686-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.122 mg/L	0.1 mg/L	122	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 254925)</b>										
CG2102685-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.7 mg/L	23.9 mg/L	99.3	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 254930)</b>										
CG2102685-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.5 mg/L	23.9 mg/L	107	70.0	130	----
<b>Dissolved Metals (QCLot: 250485)</b>										
WR2100840-037	Anonymous	aluminum, dissolved	7429-90-5	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0394 mg/L	0.04 mg/L	98.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00960 mg/L	0.01 mg/L	96.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	96.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0965 mg/L	0.1 mg/L	96.5	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 250485) - continued</b>										
WR2100840-037	Anonymous	manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.09 mg/L	4 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.50 mg/L	10 mg/L	95.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00388 mg/L	0.004 mg/L	97.1	70.0	130	----
		sodium, dissolved	17341-25-2	E421	2.08 mg/L	2 mg/L	104	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00389 mg/L	0.004 mg/L	97.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00399 mg/L	0.004 mg/L	99.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	ND mg/L	0.4 mg/L	ND	70.0	130	----
<b>Dissolved Metals (QCLot: 251440)</b>										
CG2102599-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----

COC ID: 20210719Q3GW      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emslie@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB		Jennifer.Dane@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	PHOSPHORUS	No	Yes	Yes	No	No	No	No	Yes	Yes		
EV_ECGW_WG_2021_Q3_NP	EV_ECGW	WG		07/19/21	10:27	G	5	TECKCOAL-ROUTINE-VA (E305.1) Bicarbonat. BI-CL, Carbonat. CO3-CL Hydroxide, OH-CL	Nitric	1	1	1	Sulphuric	1			NO	Sodium Bisulphate	HCl	NaOH
								TECKCOAL-MET-D-VA (SW6020)	Sulphuric											
								DOC (APHA 5310)												
								Dissolved Phosphorus												
								TKN/TOC (APHA 4500-NORG)												
								Total Nitrogen for BC (NO2 and NO3)												
								T-ULTRA MERCURY (SW6020)												
								D-ULTRA MERCURY (SW6020)												
								EPH (C10-C32)												
								D-Mercury												
								D-CrVI												
							Total													

Environmental Division  
Calgary  
Work Order Reference  
**CG2102703**



Telephone: +1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED	DATE/TIME
	C. Bracken/ S.Hansen	July 19, 2021		

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #	Date/Time
Regular (default)	X	C. Bracken/ S.Hansen	(250) 425-1227	July 19, 2021
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102704**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210718Q3GW  
**Sampler** : CB/SH  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Jul-2021 08:40  
**Date Analysis Commenced** : 20-Jul-2021  
**Issue Date** : 01-Aug-2021 12:41

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					EV_MW_SPR1A _WG_2021_Q3 _NP	EV_MW_SPR1C _WG_2021_Q3 _NP	----	----	----
Client sampling date / time					18-Jul-2021 12:48	18-Jul-2021 11:45	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102704-001	CG2102704-002	-----	-----	-----
					Result	Result	----	----	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	5.1	2.7	----	----	----
conductivity	----	E100	2.0	µS/cm	599	555	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	330	281	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	376	458	----	----	----
pH	----	E108	0.10	pH units	8.18	8.23	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	414	338	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.2	1.3	----	----	----
turbidity	----	E121	0.10	NTU	2.71	0.38	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	277	201	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	277	201	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	338	246	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	----	----	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0572	0.0051	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	0.311	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	16.6	27.2	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.220	0.142	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.052	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0337	0.215	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0033 <sup>RRV</sup>	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0785	0.0036	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	0.0043	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	29.7	58.0	----	----	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	<0.050	0.267	----	----	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.93 <sup>DTC, RRV</sup>	2.55	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SPR1A _WG_2021_Q3 _NP	EV_MW_SPR1C _WG_2021_Q3 _NP	----	----	----
Client sampling date / time					18-Jul-2021 12:48	18-Jul-2021 11:45	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102704-001	CG2102704-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.59	1.58 <sup>RRV</sup>	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.64	6.01	----	----	----	
cation sum	----	EC101	0.10	meq/L	6.84	5.98	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	103	99.5	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.48	0.250	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0014	0.0013	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00011	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00098	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.386	0.118	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.023	0.015	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0482	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	83.4	75.4	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00020	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.59	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00029	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.232	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0151	0.0134	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	29.6	22.5	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.289	0.00032	----	----	----	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00121	0.000872	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00164	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.60	1.25	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	3.65	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.85	2.66	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SPR1A _WG_2021_Q3 _NP	EV_MW_SPR1C _WG_2021_Q3 _NP	----	----	----
Client sampling date / time					18-Jul-2021 12:48	18-Jul-2021 11:45	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102704-001	CG2102704-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.10	7.72	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.315	0.173	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	10.5	19.9	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000012	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000977	0.000994	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0014	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102704**

**Page** : 1 of 13

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210718Q3GW  
**Sampler** : CB/SH  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Jul-2021 08:40  
**Date Analysis Commenced** : 20-Jul-2021  
**Issue Date** : 01-Aug-2021 12:41

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 13  
Work Order : CG2102704  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 247655)</b>											
CG2102701-001	Anonymous	turbidity	----	E121	0.10	NTU	0.19	0.20	0.01	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 247998)</b>											
CG2102663-001	Anonymous	pH	----	E108	0.10	pH units	7.99	8.05	0.748%	4%	----
<b>Physical Tests (QC Lot: 247999)</b>											
CG2102672-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	386	393	1.85%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	386	393	1.85%	20%	----
<b>Physical Tests (QC Lot: 248000)</b>											
CG2102699-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1480	1480	0.0674%	10%	----
<b>Physical Tests (QC Lot: 248002)</b>											
CG2102698-004	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 250843)</b>											
CG2102660-021	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1720	1860	7.69%	20%	----
<b>Physical Tests (QC Lot: 252219)</b>											
CG2102698-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	466	469	0.641%	15%	----
<b>Anions and Nutrients (QC Lot: 247679)</b>											
CG2102703-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.737	0.728	1.35%	20%	----
<b>Anions and Nutrients (QC Lot: 247680)</b>											
CG2102703-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	26.6	26.7	0.387%	20%	----
<b>Anions and Nutrients (QC Lot: 247681)</b>											
CG2102703-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 247682)</b>											
CG2102703-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.56	0.52	0.04	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 247683)</b>											
CG2102703-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0667	0.0664	0.451%	20%	----
<b>Anions and Nutrients (QC Lot: 247684)</b>											
CG2102703-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0141	0.0142	0.707%	20%	----
<b>Anions and Nutrients (QC Lot: 248022)</b>											
CG2102701-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248045)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 248045) - continued</b>											
CG2102654-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248120)</b>											
CG2102701-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249960)</b>											
CG2102698-007	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 251352)</b>											
CG2102698-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.108	0.100	7.96%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 251872)</b>											
CG2102683-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.72	1.77	0.05	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 251873)</b>											
CG2102683-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.60	1.60	0.01	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 249938)</b>											
CG2102701-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 249939)</b>											
CG2102701-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00504	0.00510	1.18%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00015	0.00016	0.000007	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0213	0.0220	3.50%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.107	0.111	4.27%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	1.54 µg/L	0.00158	2.73%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	490	510	4.11%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	111 µg/L	0.120	7.86%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00048	0.00051	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.011	0.012	0.0007	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	1.03	1.06	2.35%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	219	232	5.77%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.389	0.422	8.04%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0131	0.0134	2.04%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.556	0.591	6.21%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	24.7	26.5	6.94%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	64.2 µg/L	0.0692	7.44%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.81	2.84	0.764%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 249939) - continued</b>											
CG2102701-001	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	26.7	28.3	5.60%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.804	0.823	2.30%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	391	393	0.408%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000280	0.000291	3.89%	20%	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0364	0.0374	2.79%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.109	0.114	4.52%	20%	----
<b>Dissolved Metals (QC Lot: 252030)</b>											
CG2102701-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 247655)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 247999)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 248000)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 248002)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 250841)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 250843)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 247679)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 247680)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 247681)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 247682)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 247683)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 247684)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 248022)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 248045)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 248120)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 249960)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 249960) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 251352)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 251872)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 251873)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 249938)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 249939)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---





Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 249939) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 252030)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 247655)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.9	85.0	115	---
<b>Physical Tests (QCLot: 247998)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 247999)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	96.0	85.0	115	---
<b>Physical Tests (QCLot: 248000)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.2	90.0	110	---
<b>Physical Tests (QCLot: 248002)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 250841)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	115	85.0	115	---
<b>Physical Tests (QCLot: 250843)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	90.0	85.0	115	---
<b>Physical Tests (QCLot: 252219)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	104	95.4	104	---
<b>Anions and Nutrients (QCLot: 247679)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	90.7	90.0	110	---
<b>Anions and Nutrients (QCLot: 247680)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 247681)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 247682)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 247683)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 247684)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 248022)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	99.3	80.0	120	---
<b>Anions and Nutrients (QCLot: 248045)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	89.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 248120)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 248120) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	82.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 249960)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 251352)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	92.6	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 251872)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.3	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 251873)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	97.5	80.0	120	----
<b>Dissolved Metals (QCLot: 249938)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	96.5	80.0	120	----
<b>Dissolved Metals (QCLot: 249939)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.8	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	94.7	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	95.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	89.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.0	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	93.5	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.2	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 249939) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.5	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	89.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.1	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.2	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	110	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.1	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 248022)</b>										
CG2102701-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0541 mg/L	0.05 mg/L	108	70.0	130	----
<b>Anions and Nutrients (QCLot: 248045)</b>										
CG2102654-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0509 mg/L	0.0676 mg/L	75.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 248120)</b>										
CG2102703-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.22 mg/L	2.5 mg/L	88.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 249960)</b>										
CG2102699-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0685 mg/L	0.0676 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 251352)</b>										
CG2102698-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 251872)</b>										
CG2102683-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.5 mg/L	23.9 mg/L	98.4	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 251873)</b>										
CG2102683-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.8 mg/L	23.9 mg/L	99.7	70.0	130	----
<b>Dissolved Metals (QCLot: 249938)</b>										
CG2102701-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0790 mg/L	0.08 mg/L	98.8	70.0	130	----
<b>Dissolved Metals (QCLot: 249939)</b>										
CG2102701-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.404 mg/L	0.4 mg/L	101	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0394 mg/L	0.04 mg/L	98.5	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0369 mg/L	0.04 mg/L	92.3	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0790 mg/L	0.08 mg/L	98.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0168 mg/L	0.02 mg/L	84.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.198 mg/L	0.2 mg/L	98.9	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00753 mg/L	0.008 mg/L	94.1	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0353 mg/L	0.04 mg/L	88.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.82 mg/L	4 mg/L	95.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0368 mg/L	0.04 mg/L	92.0	70.0	130	----



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 249939) - continued</b>										
CG2102701-002	Anonymous	lithium, dissolved	7439-93-2	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0870 mg/L	0.08 mg/L	109	70.0	130	----
		silicon, dissolved	7440-21-3	E421	19.1 mg/L	20 mg/L	95.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00757 mg/L	0.008 mg/L	94.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00742 mg/L	0.008 mg/L	92.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0806 mg/L	0.08 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.718 mg/L	0.8 mg/L	89.8	70.0	130	----
<b>Dissolved Metals (QCLot: 252030)</b>										
CG2102701-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000953 mg/L	0.0001 mg/L	95.3	70.0	130	----

COC ID: 20210718Q3GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emsle@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB		Jennifer.Dane@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL, Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CVI	
EV_MW_SPR1A_WG_2021_Q3_NP	EV_MW_SPR1A	WG	N	07/18/21	12:48	G	5	1	1	1	1	1	1					1		
EV_MW_SPR1C_WG_2021_Q3_NP	EV_MW_SPR1C	WG	N	07/18/21	11:45	G	5	1	1	1	1	1	1					1		
							Total	10												

Environmental Division  
Calgary  
Work Order Reference  
**CG2102704**



Telephone: +1 403 407 1800

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
C. Bracken/ S.Hansen	July 18, 2021	<i>[Signature]</i>	7/20/21

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	C. Bracken/ S.Hansen
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>
Emergency (1 Business Day) - 100% surcharge		Mobile #	
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Date/Time	July 18, 2021



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102791**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210722Q3GW  
**Sampler** : C. Emslie/J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Jul-2021 08:50  
**Date Analysis Commenced** : 23-Jul-2021  
**Issue Date** : 30-Jul-2021 17:14

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_BALGW_W	----	----	----	----
(Matrix: Water)					G_2021_Q3_NP					
					Client sampling date / time	22-Jul-2021 15:24	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102791-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	14.9	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	728	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	346	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	448	----	----	----	----	----
pH	----	E108	0.10	pH units	7.98	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	488	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	18.2	----	----	----	----	----
turbidity	----	E121	0.10	NTU	3.84	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	341	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	341	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	416	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0476	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.63	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.189	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.207	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0154	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0019	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0356	----	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	95.4	----	----	----	----	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.224	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.71	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.08	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_BALGW_W	---	---	---	---
(Matrix: Water)					G_2021_Q3_NP	---	---	---	---	---
					Client sampling date / time	22-Jul-2021 15:24	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2102791-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	8.86	---	---	---	---	---
cation sum	---	EC101	0.10	meq/L	8.56	---	---	---	---	---
ion balance (cations/anions ratio)	---	EC101	0.010	%	96.6	---	---	---	---	---
ion balance (cation-anion difference)	---	EC101	0.010	%	1.72	---	---	---	---	---
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	---	---	---	---	---
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00019	---	---	---	---	---
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0353	---	---	---	---	---
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	---	---	---	---	---
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.168	---	---	---	---	---
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	---	---	---	---	---
calcium, dissolved	7440-70-2	E421	0.050	mg/L	89.0	---	---	---	---	---
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	---	---	---	---	---
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.12	---	---	---	---	---
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00056	---	---	---	---	---
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.047	---	---	---	---	---
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.116	---	---	---	---	---
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	30.2	---	---	---	---	---
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0282	---	---	---	---	---
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	---	---	---	---	---
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000231	---	---	---	---	---
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	---	---	---	---	---
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.76	---	---	---	---	---
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	---	---	---	---	---
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.46	---	---	---	---	---
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	---	---	---	---	---
sodium, dissolved	17341-25-2	E421	0.050	mg/L	35.8	---	---	---	---	---
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	2.41	---	---	---	---	---
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	34.0	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_BALGW_W	----	----	----	----
(Matrix: Water)					G_2021_Q3_NP					
					Client sampling date / time	22-Jul-2021 15:24	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102791-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Dissolved Metals</b>										
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000118	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0060	----	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102791**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210722Q3GW  
**Sampler** : C. Emslie/J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Jul-2021 08:50  
**Date Analysis Commenced** : 23-Jul-2021  
**Issue Date** : 30-Jul-2021 17:14

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2102791  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 251124)</b>											
CG2102787-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	12.6	12.3	0.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 251150)</b>											
CG2102788-001	Anonymous	turbidity	----	E121	0.10	NTU	1.60	1.63	1.73%	15%	----
<b>Physical Tests (QC Lot: 251335)</b>											
CG2102791-001	EV_BALGW_WG_2021_Q3_NP	pH	----	E108	0.10	pH units	7.98	7.94	0.502%	4%	----
<b>Physical Tests (QC Lot: 251336)</b>											
CG2102791-001	EV_BALGW_WG_2021_Q3_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	341	344	0.817%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	341	344	0.817%	20%	----
<b>Physical Tests (QC Lot: 251337)</b>											
CG2102791-001	EV_BALGW_WG_2021_Q3_NP	conductivity	----	E100	2.0	µS/cm	728	737	1.23%	10%	----
<b>Physical Tests (QC Lot: 253358)</b>											
CG2102788-004	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	262	268	2.07%	20%	----
<b>Physical Tests (QC Lot: 254246)</b>											
CG2102787-007	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	482	481	0.291%	15%	----
<b>Anions and Nutrients (QC Lot: 250425)</b>											
CG2102788-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250858)</b>											
CG2102787-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.216	0.200	0.016	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250859)</b>											
CG2102787-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	295	292	0.988%	20%	----
<b>Anions and Nutrients (QC Lot: 250860)</b>											
CG2102787-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250861)</b>											
CG2102787-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.35	1.07	0.28	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250862)</b>											
CG2102787-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	30.8	30.6	0.498%	20%	----
<b>Anions and Nutrients (QC Lot: 250863)</b>											
CG2102787-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 251515)</b>											
CG2102789-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 252460)</b>											
CG2102791-001	EV_BALGW_WG_2021_Q3_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 253439)</b>											
CG2102788-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0219	0.0210	4.04%	20%	----
<b>Anions and Nutrients (QC Lot: 253526)</b>											
CG2102787-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0083	0.0057	0.0026	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 253578)</b>											
CG2102789-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.67	3.82	0.15	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 253583)</b>											
CG2102789-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.37	4.69	0.33	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 252819)</b>											
CG2102757-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 252820)</b>											
CG2102757-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0114	0.0119	4.52%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00582	0.00589	1.15%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00141	0.00135	4.34%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.515	0.544	5.50%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.092	0.090	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0300	mg/L	<0.0300 µg/L	<0.0000300	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	63.3	64.6	2.10%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	4.57 µg/L	0.00459	0.577%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.402	0.386	4.14%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	32.1	31.6	1.64%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0245	0.0248	1.08%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0258	0.0258	0.104%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0285	0.0292	2.13%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	17.8	18.4	3.30%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	2.90 µg/L	0.00273	6.03%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.28	3.29	0.480%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 252820) - continued</b>											
CG2102757-001	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	28.3	28.5	0.598%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.432	0.441	2.16%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	26.5	27.0	2.13%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000129	0.000126	1.80%	20%	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00283	0.00281	0.870%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00137	0.00136	0.00001	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0011	0.00004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 254919)</b>											
CG2102775-027	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 251124)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 251150)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 251336)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 251337)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 253353)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 253358)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 250425)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 250858)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 250859)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 250860)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 250861)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 250862)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 250863)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 251515)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 252460)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 253439)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 253439) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 253526)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 253578)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 253583)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 252819)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 252820)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 252820) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 254919)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 251124)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 251150)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.5	85.0	115	---
<b>Physical Tests (QCLot: 251335)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 251336)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 251337)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	95.3	90.0	110	---
<b>Physical Tests (QCLot: 253353)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	88.7	85.0	115	---
<b>Physical Tests (QCLot: 253358)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.5	85.0	115	---
<b>Physical Tests (QCLot: 254246)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 250425)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	99.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 250858)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 250859)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 250860)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 250861)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 250862)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 250863)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 251515)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	76.0	75.0	125	---
<b>Anions and Nutrients (QCLot: 252460)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 252460) - continued</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	93.3	80.0	120	----
<b>Anions and Nutrients (QCLot: 253439)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	90.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 253526)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.8	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 253578)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 253583)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 252819)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 252820)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.9	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	108	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.6	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	108	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 252820) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	108	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	111	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	86.6	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 250425)</b>										
CG2102788-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0460 mg/L	0.05 mg/L	92.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 250858)</b>										
CG2102787-010	Anonymous	fluoride	16984-48-8	E235.F	0.986 mg/L	1 mg/L	98.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 250859)</b>										
CG2102787-010	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 250860)</b>										
CG2102787-010	Anonymous	bromide	24959-67-9	E235.Br-L	0.513 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 250861)</b>										
CG2102787-010	Anonymous	chloride	16887-00-6	E235.Cl-L	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 250862)</b>										
CG2102787-010	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.59 mg/L	2.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 250863)</b>										
CG2102787-010	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.522 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 251515)</b>										
CG2102789-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.84 mg/L	2.5 mg/L	73.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 252460)</b>										
CG2102798-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0518 mg/L	0.0676 mg/L	76.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 253439)</b>										
CG2102788-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0713 mg/L	0.0676 mg/L	105	70.0	130	----
<b>Anions and Nutrients (QCLot: 253526)</b>										
CG2102787-010	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 253578)</b>										
CG2102789-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.5 mg/L	23.9 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 253583)</b>										
CG2102789-001	Anonymous	carbon, total organic [TOC]	----	E355-L	26.3 mg/L	23.9 mg/L	110	70.0	130	----
<b>Dissolved Metals (QCLot: 252819)</b>										
CG2102757-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 252820)</b>										
CG2102757-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.203 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00878 mg/L	0.01 mg/L	87.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.099 mg/L	0.1 mg/L	99.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00391 mg/L	0.004 mg/L	97.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.97 mg/L	2 mg/L	98.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0442 mg/L	0.04 mg/L	110	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.28 mg/L	10 mg/L	92.8	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00373 mg/L	0.004 mg/L	93.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0209 mg/L	0.02 mg/L	105	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.383 mg/L	0.4 mg/L	95.8	70.0	130	----
<b>Dissolved Metals (QCLot: 254919)</b>										
CG2102788-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000911 mg/L	0.0001 mg/L	91.1	70.0	130	----



# Teck

COC ID: 20210722Q3GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emslie@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB		Jennifer.Dane@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE PRESERV	No	Yes	Yes	No	No	No	No	Yes	Yes		
								ANALYSIS		Nitric	Sulphuric	Sulphuric		NO	Sodium Bisulphate	HCl	NaOH		
								TECKCOAL-ROUTINE-VA (E305.1) Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL											
EV_BALGW_WG_2021_Q3_NP	EV_BALGW	WG		07/22/21	15:24	G	5	TECKCOAL-MET-D-VA (SW6020)	1	1	1	1					1		
								DOC (APHA 5310)											
								Dissolved Phosphorus											
								TKN/TOC (APHA 4500-NORG)											
								Total Nitrogen for BC (NO2 and NO3)											
								T-ULTRA MERCURY (SW6020)											
								D-ULTRA MERCURY (SW6020)											
								EPH (C10-C32)											
								D-Mercury											
								D-CrVI											
							Total										5		

CG279

Environmental Division  
Calgary  
Work Order Reference  
**CG2102791**



Telephone : +1 403 407 1800

INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Emslie/J. Batstone	July 22, 2021	<i>[Signature]</i>	23/07/21 8:50

SERVICE REQUEST (rush - subject to availability)	Samplers Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	C. Emslie/J. Batstone	
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Samplers Signature	Date/Time
		July 22, 2021

70



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102926**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210728Q3GW  
**Sampler** : CB/JB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 30-Jul-2021 08:50  
**Date Analysis Commenced** : 30-Jul-2021  
**Issue Date** : 10-Aug-2021 14:34

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_GC1B_ WG_2021_Q3_ NP	EV_RCSGW_W G_2021_Q3_NP	----	----	----
Client sampling date / time					28-Jul-2021 15:09	28-Jul-2021 15:09	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102926-001	CG2102926-002	-----	-----	-----	
					Result	Result	----	----	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	8.0	59.6	----	----	----	
conductivity	----	E100	2.0	µS/cm	1070	2260	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	610	1560	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	429	396	----	----	----	
pH	----	E108	0.10	pH units	8.14	7.67	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	810	2160	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.1	----	----	----	
turbidity	----	E121	0.10	NTU	0.31	0.94	----	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	360	282	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	360	282	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	439	344	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0611	0.0164	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	23.2	8.20	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.169	0.136	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.328	<0.050 <sup>TKNI</sup>	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0250 <sup>DLDS</sup>	28.0	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0026	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0070	----	----	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	0.0055	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	290	1220	----	----	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.328	28.0	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.83 <sup>DTC,RRV</sup>	1.76	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_GC1B_WG_2021_Q3_NP	EV_RCSGW_WG_2021_Q3_NP	---	---	---
Client sampling date / time					28-Jul-2021 15:09	28-Jul-2021 15:09	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2102926-001	CG2102926-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	1.55 <sup>DTC,RRV</sup>	1.72	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	13.9	33.3	---	---	---	
cation sum	---	EC101	0.10	meq/L	13.1	31.5	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	94.2	94.6	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	2.96	2.78	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0017	0.0031	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00014	0.00026	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00020	<0.00020 <sup>DLA</sup>	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.107	0.0342	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.040 <sup>DLA</sup>	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.068	0.021	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.118	0.212	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	130	326	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.50	<0.20 <sup>DLA</sup>	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00211	0.173	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.054	0.021	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000075	0.00211	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0456	0.0670	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	69.3	181	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.775	0.00307	---	---	---	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00247	0.00156	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00403	0.00378	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.80	3.65	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	3.17	232	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.76	4.37	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_GC1B_WG_2021_Q3_NP	EV_RCSGW_WG_2021_Q3_NP	----	----	----
Client sampling date / time					28-Jul-2021 15:09	28-Jul-2021 15:09	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102926-001	CG2102926-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	19.6	5.43	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.920	0.424	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	104	433	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000069	<0.000020 <sup>DLA</sup>	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00060 <sup>DLA</sup>	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00169	0.00723	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0044	0.0994	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102926</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V1C 4C3	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 30-Jul-2021 08:50
PO	: VPO00741597	Issue Date	: 10-Aug-2021 14:34
C-O-C number	: 20210728Q3GW		
Sampler	: CB/JB		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q3_NP	E298	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_RCSGW_WG_2021_Q3_NP	E298	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GC1B_WG_2021_Q3_NP	E235.Br-L	28-Jul-2021	----	----	----		30-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_RCSGW_WG_2021_Q3_NP	E235.Br-L	28-Jul-2021	----	----	----		30-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GC1B_WG_2021_Q3_NP	E235.Cl-L	28-Jul-2021	----	----	----		30-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_RCSGW_WG_2021_Q3_NP	E235.Cl-L	28-Jul-2021	----	----	----		30-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> EV_MW_GC1B_WG_2021_Q3_NP	E378-U	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_RCSGW_WG_2021_Q3_NP	E378-U	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_GC1B_WG_2021_Q3_NP	E235.F	28-Jul-2021	----	----	----		30-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_RCSGW_WG_2021_Q3_NP	E235.F	28-Jul-2021	----	----	----		30-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_GC1B_WG_2021_Q3_NP	E235.NO3-L	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_RCSGW_WG_2021_Q3_NP	E235.NO3-L	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_GC1B_WG_2021_Q3_NP	E235.NO2-L	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_RCSGW_WG_2021_Q3_NP	E235.NO2-L	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_GC1B_WG_2021_Q3_NP	E235.SO4	28-Jul-2021	----	----	----		30-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_RCSGW_WG_2021_Q3_NP	E235.SO4	28-Jul-2021	----	----	----		30-Jul-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q3_NP	E375-T	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_RCSGW_WG_2021_Q3_NP	E375-T	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q3_NP	E318	28-Jul-2021	05-Aug-2021	----	----		05-Aug-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_RCSGW_WG_2021_Q3_NP	E318	28-Jul-2021	05-Aug-2021	----	----		05-Aug-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q3_NP	E372-U	28-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_RCSGW_WG_2021_Q3_NP	E372-U	28-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GC1B_WG_2021_Q3_NP	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		03-Aug-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_RCSGW_WG_2021_Q3_NP	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		03-Aug-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GC1B_WG_2021_Q3_NP	E509	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_RCSGW_WG_2021_Q3_NP	E509	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GC1B_WG_2021_Q3_NP	E421	28-Jul-2021	02-Aug-2021	----	----		03-Aug-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_RCSGW_WG_2021_Q3_NP	E421	28-Jul-2021	02-Aug-2021	----	----		03-Aug-2021	180 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q3_NP	E358-L	28-Jul-2021	02-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_RCSGW_WG_2021_Q3_NP	E358-L	28-Jul-2021	02-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q3_NP	E355-L	28-Jul-2021	02-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_RCSGW_WG_2021_Q3_NP	E355-L	28-Jul-2021	02-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_GC1B_WG_2021_Q3_NP	E283	28-Jul-2021	----	----	----		05-Aug-2021	14 days	8 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_RCSGW_WG_2021_Q3_NP	E283	28-Jul-2021	----	----	----		05-Aug-2021	14 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_GC1B_WG_2021_Q3_NP	E290	28-Jul-2021	----	----	----		07-Aug-2021	14 days	10 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_RCSGW_WG_2021_Q3_NP	E290	28-Jul-2021	----	----	----		07-Aug-2021	14 days	10 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_GC1B_WG_2021_Q3_NP	E100	28-Jul-2021	----	----	----		07-Aug-2021	28 days	10 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_RCSGW_WG_2021_Q3_NP	E100	28-Jul-2021	----	----	----		07-Aug-2021	28 days	10 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_GC1B_WG_2021_Q3_NP	E125	28-Jul-2021	----	----	----		09-Aug-2021	0.34 hrs	286 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_RCSGW_WG_2021_Q3_NP	E125	28-Jul-2021	----	----	----		09-Aug-2021	0.34 hrs	286 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_GC1B_WG_2021_Q3_NP	E108	28-Jul-2021	----	----	----		07-Aug-2021	0.25 hrs	237 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_RCSGW_WG_2021_Q3_NP	E108	28-Jul-2021	----	----	----		07-Aug-2021	0.25 hrs	237 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_GC1B_WG_2021_Q3_NP	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> EV_RCSGW_WG_2021_Q3_NP	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_GC1B_WG_2021_Q3_NP	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_RCSGW_WG_2021_Q3_NP	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_GC1B_WG_2021_Q3_NP	E121	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_RCSGW_WG_2021_Q3_NP	E121	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	259576	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	261164	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	257533	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	255552	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	255553	1	4	25.0	5.0	✓
Conductivity in Water	E100	261166	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256879	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	258235	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	256880	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256902	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	255706	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	255547	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	255548	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	255549	1	6	16.6	5.0	✓
ORP by Electrode	E125	261199	1	20	5.0	5.0	✓
pH by Meter	E108	261165	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	255551	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	257006	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	257315	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	258082	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256909	1	2	50.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258020	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	255516	1	3	33.3	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	259576	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	261164	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	257533	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	255552	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	255553	1	4	25.0	5.0	✓
Conductivity in Water	E100	261166	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256879	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	258235	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	256880	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256902	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	255706	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	255547	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	255548	1	6	16.6	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	255549	1	6	16.6	5.0	✓
ORP by Electrode	E125	261199	1	20	5.0	5.0	✓
pH by Meter	E108	261165	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	255551	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	257006	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	257315	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	258082	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256909	1	2	50.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258020	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	256997	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	255516	1	3	33.3	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	259576	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	261164	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	257533	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	255552	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	255553	1	4	25.0	5.0	✓
Conductivity in Water	E100	261166	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256879	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	258235	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	256880	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256902	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	255706	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	255547	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	255548	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	255549	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	255551	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	257006	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	257315	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	258082	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256909	1	2	50.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258020	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	256997	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	255516	1	3	33.3	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	257533	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	255552	0	4	0.0	5.0	✗
Chloride in Water by IC (Low Level)	E235.Cl-L	255553	0	4	0.0	5.0	✗
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256879	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	258235	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	256880	1	14	7.1	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256902	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	255706	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	255547	0	14	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	255548	0	6	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	255549	0	6	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	255551	0	14	0.0	5.0	✘
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	257315	1	15	6.6	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	258082	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256909	1	2	50.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258020	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102926**

**Page** : 1 of 13

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210728Q3GW  
**Sampler** : CB/JB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 30-Jul-2021 08:50  
**Date Analysis Commenced** : 30-Jul-2021  
**Issue Date** : 10-Aug-2021 14:34

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 13  
Work Order : CG2102926  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 255516)</b>											
CG2102925-001	Anonymous	turbidity	----	E121	0.10	NTU	0.95	0.95	0.004	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 257006)</b>											
CG2102907-006	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1990	2010	1.10%	20%	----
<b>Physical Tests (QC Lot: 259576)</b>											
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	8.0	8.0	0.04	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 261164)</b>											
CG2102922-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	330	317	4.14%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	330	317	4.14%	20%	----
<b>Physical Tests (QC Lot: 261165)</b>											
CG2102922-001	Anonymous	pH	----	E108	0.10	pH units	8.16	8.16	0.00%	4%	----
<b>Physical Tests (QC Lot: 261166)</b>											
CG2102922-001	Anonymous	conductivity	----	E100	2.0	µS/cm	991	984	0.709%	10%	----
<b>Physical Tests (QC Lot: 261199)</b>											
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	429	429	0.0699%	15%	----
<b>Anions and Nutrients (QC Lot: 255547)</b>											
CG2102922-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.233	0.239	0.006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 255548)</b>											
CG2102922-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.437	0.414	5.26%	20%	----
<b>Anions and Nutrients (QC Lot: 255549)</b>											
CG2102922-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 255551)</b>											
CG2102922-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	314	312	0.722%	20%	----
<b>Anions and Nutrients (QC Lot: 255552)</b>											
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 255553)</b>											
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	23.2	23.3	0.695%	20%	----
<b>Anions and Nutrients (QC Lot: 255706)</b>											





Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 255706) - continued</b>											
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 257315)</b>											
CG2102911-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0079	0.0085	0.0006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 257533)</b>											
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0611	0.0591	3.33%	20%	----
<b>Anions and Nutrients (QC Lot: 258020)</b>											
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0032	0.0012	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 258082)</b>											
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.328	0.324	0.004	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 256902)</b>											
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.83	2.03	0.20	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 256909)</b>											
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.55	1.42	0.14	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 256879)</b>											
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 256880)</b>											
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0017	0.0012	0.0006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00014	0.00014	0.000005	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00020	0.00023	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.107	0.105	1.43%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.068	0.070	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.118 µg/L	0.000114	3.67%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	130	129	0.327%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.50 µg/L	0.00049	0.00001	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00211	0.00215	1.89%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.054	0.054	0.0002	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000075	0.000072	0.000003	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0456	0.0465	1.88%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	69.3	68.8	0.660%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.775	0.760	1.92%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 256880) - continued</b>											
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00247	0.00247	0.153%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00403	0.00408	0.00004	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.80	2.76	1.17%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	3.17 µg/L	0.00330	3.89%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.76	4.76	0.0474%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	19.6	19.6	0.246%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.920	0.908	1.38%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	104	103	0.982%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000069	0.000069	0.0000006	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00169	0.00170	0.838%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0044	0.0042	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 258235)</b>											
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 255516)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 256997)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 257006)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 259576)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 261164)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 261166)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 255547)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 255548)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 255549)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 255551)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 255552)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 255553)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 255706)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 257315)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 257533)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 258020)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 258020) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 258082)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 256902)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 256909)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 256879)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 256880)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 256880) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 258235)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 255516)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	95.0	85.0	115	----
<b>Physical Tests (QCLot: 256997)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	101	85.0	115	----
<b>Physical Tests (QCLot: 257006)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	98.8	85.0	115	----
<b>Physical Tests (QCLot: 259576)</b>									
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	50 mg/L	104	85.0	115	----
<b>Physical Tests (QCLot: 261164)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	500 mg/L	110	85.0	115	----
<b>Physical Tests (QCLot: 261165)</b>									
pH	----	E108	----	pH units	7 pH units	99.8	98.6	101	----
<b>Physical Tests (QCLot: 261166)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	----
<b>Physical Tests (QCLot: 261199)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
<b>Anions and Nutrients (QCLot: 255547)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 255548)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 255549)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 255551)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 255552)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 255553)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.4	90.0	110	----
<b>Anions and Nutrients (QCLot: 255706)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	99.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 257315)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	95.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 257533)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 257533) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	94.9	85.0	115	----
<b>Anions and Nutrients (QCLot: 258020)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	100	80.0	120	----
<b>Anions and Nutrients (QCLot: 258082)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	106	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 256902)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	93.7	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 256909)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	97.7	80.0	120	----
<b>Dissolved Metals (QCLot: 256879)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
<b>Dissolved Metals (QCLot: 256880)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	106	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.7	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	110	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	94.5	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 256880) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	90.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.2	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	105	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	115	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 255706)</b>										
CG2102926-002	EV_RCSGW_WG_2021_Q3_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0561 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 257315)</b>										
CG2102911-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0635 mg/L	0.0676 mg/L	94.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 257533)</b>										
CG2102926-002	EV_RCSGW_WG_2021_Q3_NP	ammonia, total (as N)	7664-41-7	E298	0.0920 mg/L	0.1 mg/L	92.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 258020)</b>										
CG2102926-002	EV_RCSGW_WG_2021_Q3_NP	phosphorus, total	7723-14-0	E372-U	0.0822 mg/L	0.0676 mg/L	122	70.0	130	----
<b>Anions and Nutrients (QCLot: 258082)</b>										
CG2102926-002	EV_RCSGW_WG_2021_Q3_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.26 mg/L	2.5 mg/L	90.2	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 256902)</b>										
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	carbon, dissolved organic [DOC]	----	E358-L	21.8 mg/L	23.9 mg/L	91.3	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 256909)</b>										
CG2102926-001	EV_MW_GC1B_WG_2021_Q3_NP	carbon, total organic [TOC]	----	E355-L	21.2 mg/L	23.9 mg/L	88.6	70.0	130	----
<b>Dissolved Metals (QCLot: 256879)</b>										
CG2102926-002	EV_RCSGW_WG_2021_Q3_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0837 mg/L	0.08 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 256880)</b>										
CG2102926-002	EV_RCSGW_WG_2021_Q3_NP	aluminum, dissolved	7429-90-5	E421	0.420 mg/L	0.4 mg/L	105	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0769 mg/L	0.08 mg/L	96.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.198 mg/L	0.2 mg/L	98.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00763 mg/L	0.008 mg/L	95.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 256880) - continued</b>										
CG2102926-002	EV_RCSGW_WG_2021_Q3_NP	copper, dissolved	7440-50-8	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.96 mg/L	4 mg/L	99.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.187 mg/L	0.2 mg/L	93.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0425 mg/L	0.04 mg/L	106	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0742 mg/L	0.08 mg/L	92.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	8.52 mg/L	8 mg/L	106	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.4 mg/L	20 mg/L	92.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00773 mg/L	0.008 mg/L	96.7	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00766 mg/L	0.008 mg/L	95.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0839 mg/L	0.08 mg/L	105	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00772 mg/L	0.008 mg/L	96.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.211 mg/L	0.2 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.773 mg/L	0.8 mg/L	96.6	70.0	130	----
<b>Dissolved Metals (QCLot: 258235)</b>										
CG2102926-002	EV_RCSGW_WG_2021_Q3_NP	mercury, dissolved	7439-97-6	E509	0.000113 mg/L	0.0001 mg/L	113	70.0	130	----

COC ID: 20210728Q3GW      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution				
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emsle@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:	teckcoal@equisonline.com			X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada		Jennifer.Dane@teck.com	X	X	X
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MW_GC1B_WG_2021_Q3_NP	EV_MW_GC1B	WG		07/28/21	15:09	G	5	1		1	1			1				1		
EV_RCSgw_WG_2021_Q3_NP	EV_RCSgw	WG		07/28/21	15:58	G	5	1		1	1			1				1		
Total							10													

Environmental Division  
Calgary  
Work Order Reference  
**CG2102926**



Telephone: 1 403 407 1800

AL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Bracken/J. Batstone	July 28, 2021	<i>[Signature]</i>	30/07 8:50

Service Requested (Subject to availability)	Sampler's Name	Mobile #	Date/Time
Regular (default) X	C. Bracken/J. Batstone		July 28, 2021
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

(140)

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2102960**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210730Q3GW  
**Sampler** : C. Emslie/J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 7  
**No. of samples analysed** : 6

**Page** : 1 of 8  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 31-Jul-2021 08:30  
**Date Analysis Commenced** : 01-Aug-2021  
**Issue Date** : 12-Aug-2021 12:34

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					EV_MW_GV3G W_WG_2021_Q 3_NP	EV_MW_GV3G WS_WG_2021_ Q3_NP	EV_MW_GV4A_ WG_2021_Q3_ NP	EV_MW_GV4B_ WG_2021_Q3_ NP	EV_MW_MC10 A_WG_2021_Q 3_NP
Client sampling date / time					30-Jul-2021 09:22	30-Jul-2021 10:14	30-Jul-2021 11:25	30-Jul-2021 11:17	30-Jul-2021 11:21
Analyte	CAS Number	Method	LOR	Unit	CG2102960-001	CG2102960-002	CG2102960-003	CG2102960-004	CG2102960-005
					Result	Result	Result	Result	Result
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	2.2	5.4	6.9	5.0	<2.0
conductivity	----	E100	2.0	µS/cm	597	477	565	539	534
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	337	279	304	312	309
oxidation-reduction potential [ORP]	----	E125	0.10	mV	494	472	479	492	482
pH	----	E108	0.10	pH units	8.22	8.03	8.20	8.14	8.17
solids, total dissolved [TDS]	----	E162	10	mg/L	412	291	474	341	338
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	5.0	<1.0	1.0
turbidity	----	E121	0.10	NTU	0.17	0.84	1.97	0.47	0.39
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	206	247	278	254	247
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	206	247	278	254	247
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	251	301	340	310	301
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0.0073	<0.0050	<0.0050
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0.068	<0.050	<0.050
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.36	0.40	1.96	0.79	0.84
fluoride	16984-48-8	E235.F	0.020	mg/L	0.390	0.241	0.641	0.519	0.518
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.323	<0.050	0.163	<0.050	<0.050
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.142	0.0809	0.0210	0.0579	0.0629
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0016	0.0023	<0.0010	0.0021	0.0016
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0081	0.0382	<0.0020	<0.0020
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0.0036	<0.0020	<0.0020
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	146	33.0	128	65.6	65.8
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.465	0.081	0.184	0.058	0.063
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.17	1.18	9.05 <sup>RRV</sup>	0.61	<0.50



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_GV3G W_WG_2021_Q 3_NP	EV_MW_GV3G WS_WG_2021_ Q3_NP	EV_MW_GV4A_ WG_2021_Q3_ NP	EV_MW_GV4B_ WG_2021_Q3_ NP	EV_MW_MC10 A_WG_2021_Q 3_NP
Client sampling date / time					30-Jul-2021 09:22	30-Jul-2021 10:14	30-Jul-2021 11:25	30-Jul-2021 11:17	30-Jul-2021 11:21	
Analyte	CAS Number	Method	LOR	Unit	CG2102960-001	CG2102960-002	CG2102960-003	CG2102960-004	CG2102960-005	
					Result	Result	Result	Result	Result	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.59	1.12	8.37	<0.50	<0.50	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	7.22	5.65	8.31	6.50	6.36	
cation sum	----	EC101	0.10	meq/L	6.90	5.70	7.86	6.39	6.32	
ion balance (cations/anions ratio)	----	EC101	0.010	%	95.6	101	94.6	98.3	99.4	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.27	0.440	2.78	0.853	0.315	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0.00013	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0.00084	<0.00010	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0183	0.0764	0.0502	0.0667	0.0660	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.011	0.021	<0.010	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0070	0.0058	<0.0050	0.0121	0.0086	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	83.2	74.0	74.5	75.6	74.3	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00022	0.00017	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	0.69	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00045	<0.00020	<0.00020	<0.00020	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0.170	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0145	0.0069	0.0109	0.0090	0.0090	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	31.5	22.9	28.6	30.0	30.0	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00017	0.00011	0.344	0.00014	0.00016	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000937	0.00102	0.00348	0.00172	0.00170	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00139	<0.00050	0.00127	<0.00050	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.04	1.06	1.45	1.19	1.20	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	4.50	3.29	3.27	3.84	3.75	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.21	3.43	4.39	4.33	4.35	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_GV3G W_WG_2021_Q 3_NP	EV_MW_GV3G WS_WG_2021_ Q3_NP	EV_MW_GV4A_ WG_2021_Q3_ NP	EV_MW_GV4B_ WG_2021_Q3_ NP	EV_MW_MC10 A_WG_2021_Q 3_NP
Client sampling date / time					30-Jul-2021 09:22	30-Jul-2021 10:14	30-Jul-2021 11:25	30-Jul-2021 11:17	30-Jul-2021 11:21	
Analyte	CAS Number	Method	LOR	Unit	CG2102960-001	CG2102960-002	CG2102960-003	CG2102960-004	CG2102960-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.13	2.20	39.8	2.87	2.75	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.577	0.200	0.360	0.285	0.276	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	45.9	10.9	39.9	20.8	20.9	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0.00016	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00164	0.00124	0.00604	0.00131	0.00130	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0014	<0.0010	<0.0010	<0.0010	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.





## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_MW_MC10	----	----	----	----
(Matrix: Water)					B_WG_2021_Q	----	----	----	----	----
					3_NP	----	----	----	----	----
Client sampling date / time					30-Jul-2021 11:26	----	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102960-006	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	<2.0	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	<0.50	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	491	----	----	----	----	----
pH	----	E108	0.10	pH units	5.51	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	----	----	----	----	----
turbidity	----	E121	0.10	NTU	0.20	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	----	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	----	----	----	----	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	<0.050	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_MW_MC10	----	----	----	----
(Matrix: Water)					B_WG_2021_Q					
					3_NP					
					Client sampling date / time	30-Jul-2021 11:26	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102960-006	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	<0.10	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	----	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	----	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	----	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	----	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	----	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	----	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	----	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	----	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC10	----	----	----	----
					B_WG_2021_Q					
					3_NP					
					Client sampling date / time	30-Jul-2021 11:26	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102960-006	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	----	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2102960</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : <b>Jennifer Dane</b> <b>Address</b> : <b>RR#1 HIGHWAY #3</b> <b>Sparwood BC Canada V0B 2G1</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>ELKVIEW OPERATIONS</b> <b>PO</b> : <b>VPO00741597</b> <b>C-O-C number</b> : <b>20210730Q3GW</b> <b>Sampler</b> : <b>C. Emslie/J. Batstone</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>Teck Coal Master Quote</b> <b>No. of samples received</b> : <b>7</b> <b>No. of samples analysed</b> : <b>6</b>	<b>Page</b> : <b>1 of 24</b>  <b>Laboratory</b> : <b>Calgary - Environmental</b> <b>Account Manager</b> : <b>Lyudmyla Shvets</b> <b>Address</b> : <b>2559 29th Street NE</b> <b>Calgary, Alberta Canada T1Y 7B5</b>  <b>Telephone</b> : <b>+1 403 407 1800</b> <b>Date Samples Received</b> : <b>31-Jul-2021 08:30</b> <b>Issue Date</b> : <b>12-Aug-2021 12:35</b>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### **Summary of Outliers**

#### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

#### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV3GW_WG_2021_Q3_NP	E298	30-Jul-2021	05-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV3GWS_WG_2021_Q3_NP	E298	30-Jul-2021	05-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q3_NP	E298	30-Jul-2021	05-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q3_NP	E298	30-Jul-2021	05-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E298	30-Jul-2021	05-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E298	30-Jul-2021	05-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GV3GW_WG_2021_Q3_NP	E235.Br-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MW_GV3GWS_WG_2021_Q3_NP	E235.Br-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MW_GV4A_WG_2021_Q3_NP	E235.Br-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MW_GV4B_WG_2021_Q3_NP	E235.Br-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E235.Br-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E235.Br-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_GV3GW_WG_2021_Q3_NP	E235.Cl-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_GV3GWS_WG_2021_Q3_NP	E235.Cl-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_GV4A_WG_2021_Q3_NP	E235.Cl-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_GV4B_WG_2021_Q3_NP	E235.Cl-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E235.CI-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E235.CI-L	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_GV3GW_WG_2021_Q3_NP	E378-U	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_GV3GWS_WG_2021_Q3_NP	E378-U	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_GV4A_WG_2021_Q3_NP	E378-U	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_GV4B_WG_2021_Q3_NP	E378-U	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E378-U	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E378-U	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_GV3GW_WG_2021_Q3_NP	E235.F	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_MW_GV3GWS_WG_2021_Q3_NP	E235.F	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q3_NP	E235.F	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q3_NP	E235.F	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_MW_MC10A_WG_2021_Q3_NP	E235.F	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_MW_MC10B_WG_2021_Q3_NP	E235.F	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_GV3GW_WG_2021_Q3_NP	E235.NO3-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_GV3GWS_WG_2021_Q3_NP	E235.NO3-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q3_NP	E235.NO3-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q3_NP	E235.NO3-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✔





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E235.NO3-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E235.NO3-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_GV3GW_WG_2021_Q3_NP	E235.NO2-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_GV3GWS_WG_2021_Q3_NP	E235.NO2-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_GV4A_WG_2021_Q3_NP	E235.NO2-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_GV4B_WG_2021_Q3_NP	E235.NO2-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E235.NO2-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E235.NO2-L	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE EV_MW_GV3GW_WG_2021_Q3_NP	E235.SO4	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_GV3GWS_WG_2021_Q3_NP	E235.SO4	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q3_NP	E235.SO4	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q3_NP	E235.SO4	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_MC10A_WG_2021_Q3_NP	E235.SO4	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_MC10B_WG_2021_Q3_NP	E235.SO4	30-Jul-2021	----	----	----		01-Aug-2021	28 days	2 days	✓
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV3GW_WG_2021_Q3_NP	E375-T	30-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	5 days	✓
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV3GWS_WG_2021_Q3_NP	E375-T	30-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	5 days	✓
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q3_NP	E375-T	30-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	5 days	✓
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q3_NP	E375-T	30-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	5 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E375-T	30-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E375-T	30-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV3GW_WG_2021_Q3_NP	E318	30-Jul-2021	08-Aug-2021	----	----		08-Aug-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV3GWS_WG_2021_Q3_NP	E318	30-Jul-2021	08-Aug-2021	----	----		08-Aug-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q3_NP	E318	30-Jul-2021	08-Aug-2021	----	----		08-Aug-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q3_NP	E318	30-Jul-2021	08-Aug-2021	----	----		08-Aug-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E318	30-Jul-2021	08-Aug-2021	----	----		08-Aug-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E318	30-Jul-2021	08-Aug-2021	----	----		08-Aug-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV3GW_WG_2021_Q3_NP	E372-U	30-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV3GWS_WG_2021_Q3_NP	E372-U	30-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q3_NP	E372-U	30-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q3_NP	E372-U	30-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E372-U	30-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E372-U	30-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV3GW_WG_2021_Q3_NP	E421.Cr-L	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV3GWS_WG_2021_Q3_NP	E421.Cr-L	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV4A_WG_2021_Q3_NP	E421.Cr-L	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV4B_WG_2021_Q3_NP	E421.Cr-L	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E421.Cr-L	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E421.Cr-L	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GV3GW_WG_2021_Q3_NP	E509	30-Jul-2021	07-Aug-2021	----	----		07-Aug-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GV3GWS_WG_2021_Q3_NP	E509	30-Jul-2021	07-Aug-2021	----	----		07-Aug-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GV4A_WG_2021_Q3_NP	E509	30-Jul-2021	07-Aug-2021	----	----		07-Aug-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GV4B_WG_2021_Q3_NP	E509	30-Jul-2021	07-Aug-2021	----	----		07-Aug-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E509	30-Jul-2021	07-Aug-2021	----	----		07-Aug-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E509	30-Jul-2021	07-Aug-2021	----	----		07-Aug-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV3GW_WG_2021_Q3_NP	E421	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV3GWS_WG_2021_Q3_NP	E421	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV4A_WG_2021_Q3_NP	E421	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV4B_WG_2021_Q3_NP	E421	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E421	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E421	30-Jul-2021	05-Aug-2021	----	----		06-Aug-2021	180 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q3_NP	E358-L	30-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E358-L	30-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E358-L	30-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q3_NP	E358-L	30-Jul-2021	03-Aug-2021	----	----		04-Aug-2021	28 days	5 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV3GW_WG_2021_Q3_NP	E358-L	30-Jul-2021	03-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV3GWS_WG_2021_Q3_NP	E358-L	30-Jul-2021	03-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q3_NP	E355-L	30-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E355-L	30-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E355-L	30-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	4 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q3_NP	E355-L	30-Jul-2021	03-Aug-2021	----	----		04-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV3GW_WG_2021_Q3_NP	E355-L	30-Jul-2021	03-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV3GWS_WG_2021_Q3_NP	E355-L	30-Jul-2021	03-Aug-2021	----	----		05-Aug-2021	28 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_GV3GW_WG_2021_Q3_NP	E283	30-Jul-2021	----	----	----		07-Aug-2021	14 days	8 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_MW_GV3GWS_WG_2021_Q3_NP	E283	30-Jul-2021	----	----	----		07-Aug-2021	14 days	8 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_MW_GV4A_WG_2021_Q3_NP	E283	30-Jul-2021	----	----	----		07-Aug-2021	14 days	8 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_MW_GV4B_WG_2021_Q3_NP	E283	30-Jul-2021	----	----	----		07-Aug-2021	14 days	8 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E283	30-Jul-2021	----	----	----		07-Aug-2021	14 days	8 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E283	30-Jul-2021	----	----	----		07-Aug-2021	14 days	8 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_GV3GW_WG_2021_Q3_NP	E290	30-Jul-2021	----	----	----		09-Aug-2021	14 days	10 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_GV3GWS_WG_2021_Q3_NP	E290	30-Jul-2021	----	----	----		09-Aug-2021	14 days	10 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_GV4A_WG_2021_Q3_NP	E290	30-Jul-2021	----	----	----		09-Aug-2021	14 days	10 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_GV4B_WG_2021_Q3_NP	E290	30-Jul-2021	----	----	----		09-Aug-2021	14 days	10 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E290	30-Jul-2021	----	----	----		09-Aug-2021	14 days	10 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E290	30-Jul-2021	----	----	----		09-Aug-2021	14 days	10 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_GV3GW_WG_2021_Q3_NP	E100	30-Jul-2021	----	----	----		09-Aug-2021	28 days	10 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_GV3GWS_WG_2021_Q3_NP	E100	30-Jul-2021	----	----	----		09-Aug-2021	28 days	10 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_GV4A_WG_2021_Q3_NP	E100	30-Jul-2021	----	----	----		09-Aug-2021	28 days	10 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_GV4B_WG_2021_Q3_NP	E100	30-Jul-2021	----	----	----		09-Aug-2021	28 days	10 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E100	30-Jul-2021	----	----	----		09-Aug-2021	28 days	10 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E100	30-Jul-2021	----	----	----		09-Aug-2021	28 days	10 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_GV4A_WG_2021_Q3_NP	E125	30-Jul-2021	----	----	----		10-Aug-2021	0.34 hrs	260 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_GV4B_WG_2021_Q3_NP	E125	30-Jul-2021	----	----	----		10-Aug-2021	0.34 hrs	260 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E125	30-Jul-2021	----	----	----		10-Aug-2021	0.34 hrs	260 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E125	30-Jul-2021	----	----	----		10-Aug-2021	0.34 hrs	260 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_GV3GWS_WG_2021_Q3_NP	E125	30-Jul-2021	----	----	----		10-Aug-2021	0.34 hrs	261 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_GV3GW_WG_2021_Q3_NP	E125	30-Jul-2021	----	----	----		10-Aug-2021	0.34 hrs	262 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_GV4A_WG_2021_Q3_NP	E108	30-Jul-2021	----	----	----		09-Aug-2021	0.25 hrs	240 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_GV4B_WG_2021_Q3_NP	E108	30-Jul-2021	----	----	----		09-Aug-2021	0.25 hrs	240 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E108	30-Jul-2021	----	----	----		09-Aug-2021	0.25 hrs	240 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E108	30-Jul-2021	----	----	----		09-Aug-2021	0.25 hrs	240 hrs	*	EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_GV3GWS_WG_2021_Q3_NP	E108	30-Jul-2021	----	----	----		09-Aug-2021	0.25 hrs	241 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_GV3GW_WG_2021_Q3_NP	E108	30-Jul-2021	----	----	----		09-Aug-2021	0.25 hrs	242 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_GV3GW_WG_2021_Q3_NP	E162	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_GV3GWS_WG_2021_Q3_NP	E162	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_GV4A_WG_2021_Q3_NP	E162	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_GV4B_WG_2021_Q3_NP	E162	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E162	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E162	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] EV_MW_GV3GW_WG_2021_Q3_NP	E160-L	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_GV3GWS_WG_2021_Q3_NP	E160-L	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_GV4A_WG_2021_Q3_NP	E160-L	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_GV4B_WG_2021_Q3_NP	E160-L	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_MC10A_WG_2021_Q3_NP	E160-L	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MW_MC10B_WG_2021_Q3_NP	E160-L	30-Jul-2021	----	----	----		04-Aug-2021	7 days	5 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_GV3GW_WG_2021_Q3_NP	E121	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_GV3GWS_WG_2021_Q3_NP	E121	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q3_NP	E121	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q3_NP	E121	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_MC10A_WG_2021_Q3_NP	E121	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_MC10B_WG_2021_Q3_NP	E121	30-Jul-2021	----	----	----		01-Aug-2021	3 days	2 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	261011	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	261931	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	259039	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	256598	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	256596	1	14	7.1	5.0	✓
Conductivity in Water	E100	261933	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	258865	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	260844	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	258866	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	257564	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	256594	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	256601	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	256599	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	256600	1	13	7.6	5.0	✓
ORP by Electrode	E125	262326	1	19	5.2	5.0	✓
pH by Meter	E108	261932	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	256597	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	257843	2	30	6.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	257315	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	259284	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	257565	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258973	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	256747	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	261011	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	261931	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	259039	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	256598	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	256596	1	14	7.1	5.0	✓
Conductivity in Water	E100	261933	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	258865	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	260844	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	258866	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	257564	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	256594	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	256601	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	256599	1	13	7.6	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	256600	1	13	7.6	5.0	✓
ORP by Electrode	E125	262326	1	19	5.2	5.0	✓
pH by Meter	E108	261932	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	256597	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	257843	2	30	6.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	257315	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	259284	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	257565	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258973	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	257837	2	31	6.4	5.0	✓
Turbidity by Nephelometry	E121	256747	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	261011	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	261931	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	259039	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	256598	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	256596	1	14	7.1	5.0	✓
Conductivity in Water	E100	261933	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	258865	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	260844	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	258866	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	257564	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	256594	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	256601	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	256599	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	256600	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	256597	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	257843	2	30	6.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	257315	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	259284	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	257565	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258973	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	257837	2	31	6.4	5.0	✓
Turbidity by Nephelometry	E121	256747	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	259039	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	256598	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	256596	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	258865	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	260844	2	40	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	258866	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	257564	1	10	10.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	256594	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	256601	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	256599	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	256600	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	256597	1	13	7.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	257315	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	259284	1	17	5.8	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	257565	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258973	1	19	5.2	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102960**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210730Q3GW  
**Sampler** : C. Emslie/J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 7  
**No. of samples analysed** : 6

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 31-Jul-2021 08:30  
**Date Analysis Commenced** : 01-Aug-2021  
**Issue Date** : 12-Aug-2021 12:34

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2102960  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 256747)</b>											
CG2102958-021	Anonymous	turbidity	----	E121	0.10	NTU	1.38	1.30	5.99%	15%	----
<b>Physical Tests (QC Lot: 257843)</b>											
CG2102958-013	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 257844)</b>											
CG2102960-003	EV_MW_GV4A_WG_2021_Q3_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	474	476	0.421%	20%	----
<b>Physical Tests (QC Lot: 261011)</b>											
CG2102959-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	4.3	3.9	0.4	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 261931)</b>											
CG2102958-021	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	460	460	0.0653%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	460	460	0.0653%	20%	----
<b>Physical Tests (QC Lot: 261932)</b>											
CG2102958-021	Anonymous	pH	----	E108	0.10	pH units	7.82	7.83	0.128%	4%	----
<b>Physical Tests (QC Lot: 261933)</b>											
CG2102958-021	Anonymous	conductivity	----	E100	2.0	µS/cm	2120	2120	0.00%	10%	----
<b>Physical Tests (QC Lot: 262326)</b>											
CG2102958-021	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	322	319	0.936%	15%	----
<b>Anions and Nutrients (QC Lot: 256594)</b>											
CG2102958-021	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0024	0.0026	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 256596)</b>											
CG2102955-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	73.0	73.4	0.492%	20%	----
<b>Anions and Nutrients (QC Lot: 256597)</b>											
CG2102959-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	35.1	34.5	1.83%	20%	----
<b>Anions and Nutrients (QC Lot: 256598)</b>											
CG2102959-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 256599)</b>											
CG2102959-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.359	0.351	2.14%	20%	----
<b>Anions and Nutrients (QC Lot: 256600)</b>											
CG2102959-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 256601)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 256601) - continued</b>											
CG2102959-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.123	0.124	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 257315)</b>											
CG2102911-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0079	0.0085	0.0006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 258973)</b>											
CG2102958-021	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 259039)</b>											
CG2102958-021	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.260	0.246	5.38%	20%	----
<b>Anions and Nutrients (QC Lot: 259284)</b>											
CG2102959-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.063	0.013	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 257564)</b>											
CG2102959-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.90	0.93	0.02	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 257565)</b>											
CG2102959-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.13	1.05	0.08	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 258865)</b>											
CG2102959-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00026	0.00022	0.00004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 258866)</b>											
CG2102959-001	Anonymous	copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00076	0.00038	0.00038	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00101	0.00087	0.00013	Diff <2x LOR	----
CG2102959-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0021	0.0014	0.0008	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	0.00014	0.000007	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0831	0.0850	2.29%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.013	0.012	0.0001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	0.0000065	0.0000015	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	53.1	54.4	2.44%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0136	0.0139	1.60%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	17.6	17.8	1.29%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00017	0.00018	0.00001	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00164	0.00161	1.68%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.981	1.03	4.46%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 258866) - continued</b>											
CG2102959-001	Anonymous	selenium, dissolved	7782-49-2	E421	0.050	mg/L	2.62 µg/L	0.00252	3.95%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.39	2.43	1.88%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.00	6.08	1.26%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.175	0.181	2.91%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	11.7	11.2	3.95%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00126	0.00130	3.26%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 260844)</b>											
CG2102941-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 260845)</b>											
CG2102960-002	EV_MW_GV3GWS_WG_2 021_Q3_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 256747)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 257837)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 257838)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 257843)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 257844)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 261011)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 261931)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 261933)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 256594)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 256596)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 256597)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 256598)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 256599)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 256600)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 256601)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 257315)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 257315) - continued</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 258973)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 259039)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 259284)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Organic / Inorganic Carbon (QCLot: 257564)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 257565)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 258865)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 258866)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 258866) - continued</b>						
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 260844)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 260845)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 256747)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	95.4	85.0	115	---
<b>Physical Tests (QCLot: 257837)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	92.8	85.0	115	---
<b>Physical Tests (QCLot: 257838)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	92.8	85.0	115	---
<b>Physical Tests (QCLot: 257843)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	93.6	85.0	115	---
<b>Physical Tests (QCLot: 257844)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.1	85.0	115	---
<b>Physical Tests (QCLot: 261011)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 261931)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	99.8	85.0	115	---
<b>Physical Tests (QCLot: 261932)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 261933)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.2	90.0	110	---
<b>Physical Tests (QCLot: 262326)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Anions and Nutrients (QCLot: 256594)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	110	80.0	120	---
<b>Anions and Nutrients (QCLot: 256596)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 256597)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 256598)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.2	85.0	115	---
<b>Anions and Nutrients (QCLot: 256599)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 256600)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 256601)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 256601) - continued</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 257315)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	95.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 258973)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	106	80.0	120	----
<b>Anions and Nutrients (QCLot: 259039)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 259284)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	85.9	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 257564)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	104	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 257565)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	98.7	80.0	120	----
<b>Dissolved Metals (QCLot: 258865)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	95.7	80.0	120	----
<b>Dissolved Metals (QCLot: 258866)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.3	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	94.9	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.2	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	94.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.9	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.3	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier	
					Concentration	LCS	Low	High		
<b>Dissolved Metals (QCLot: 258866) - continued</b>										
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.3	80.0	120	----	
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.2	80.0	120	----	
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.1	80.0	120	----	
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	98.0	80.0	120	----	
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.4	80.0	120	----	
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	104	80.0	120	----	
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.6	80.0	120	----	
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----	
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.9	80.0	120	----	
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	93.4	80.0	120	----	
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.5	80.0	120	----	
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.9	80.0	120	----	
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	93.4	80.0	120	----	
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.1	80.0	120	----	



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 256594)</b>										
CG2102958-022	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0541 mg/L	0.05 mg/L	108	70.0	130	----
<b>Anions and Nutrients (QCLot: 256596)</b>										
CG2102959-001	Anonymous	chloride	16887-00-6	E235.Cl-L	80.1 mg/L	100 mg/L	80.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 256597)</b>										
CG2102959-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	86.3 mg/L	100 mg/L	86.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 256598)</b>										
CG2102959-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.556 mg/L	0.5 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 256599)</b>										
CG2102959-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.19 mg/L	2.5 mg/L	87.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 256600)</b>										
CG2102959-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.484 mg/L	0.5 mg/L	96.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 256601)</b>										
CG2102959-002	Anonymous	fluoride	16984-48-8	E235.F	0.975 mg/L	1 mg/L	97.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 257315)</b>										
CG2102911-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0635 mg/L	0.0676 mg/L	94.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 258973)</b>										
CG2102958-022	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0613 mg/L	0.0676 mg/L	90.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 259039)</b>										
CG2102958-021	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 259284)</b>										
CG2102959-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.91 mg/L	2.5 mg/L	76.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 257564)</b>										
CG2102959-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	21.2 mg/L	23.9 mg/L	88.6	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 257565)</b>										
CG2102959-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.9 mg/L	23.9 mg/L	95.7	70.0	130	----
<b>Dissolved Metals (QCLot: 258865)</b>										
CG2102959-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 258866)</b>										
CG2102959-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.190 mg/L	0.2 mg/L	95.1	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0362 mg/L	0.04 mg/L	90.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0173 mg/L	0.02 mg/L	86.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00390 mg/L	0.004 mg/L	97.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0149 mg/L	0.02 mg/L	74.5	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.79 mg/L	2 mg/L	89.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0176 mg/L	0.02 mg/L	87.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0799 mg/L	0.1 mg/L	79.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0182 mg/L	0.02 mg/L	91.1	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0353 mg/L	0.04 mg/L	88.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.68 mg/L	4 mg/L	92.0	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0638 mg/L	0.08 mg/L	79.8	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.36 mg/L	10 mg/L	83.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00316 mg/L	0.004 mg/L	79.1	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00350 mg/L	0.004 mg/L	87.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00364 mg/L	0.004 mg/L	91.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0968 mg/L	0.1 mg/L	96.8	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.370 mg/L	0.4 mg/L	92.6	70.0	130	----
<b>Dissolved Metals (QCLot: 260844)</b>										
CG2102941-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000972 mg/L	0.0001 mg/L	97.2	70.0	130	----
<b>Dissolved Metals (QCLot: 260845)</b>										
CG2102960-003	EV_MW_GV4A_WG_2021_Q3_NP	mercury, dissolved	7439-97-6	E509	0.0000862 mg/L	0.0001 mg/L	86.2	70.0	130	----





**COC ID:** 20210730Q3GW      **TURNAROUND TIME:**      **RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emslie@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 6:	Jennifer.Dane@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET.D.VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
1 EV_MW_GV3GW_WG_2021_Q3_NP	EV_MW_GV3GW	WG		07/30/21	9:22	G	5	1	1	1	1	1	1					1		
2 EV_MW_GV3GWS_WG_2021_Q3_NP	EV_MW_GV3GWS	WG		07/30/21	10:14	G	5	1	1	1	1	1	1					1		
3 EV_MW_GV4A_WG_2021_Q3_NP	EV_MW_GV4A	WG		07/30/21	11:25	G	5	1	1	1	1	1	1					1		
4 EV_MW_GV4B_WG_2021_Q3_NP	EV_MW_GV4B	WG		07/30/21	11:17	G	5	1	1	1	1	1	1					1		
5 EV_MW_MC10A_WG_2021_Q3_NP	EV_MW_MC10A	WG		07/30/21	11:21	G	5	1	1	1	1	1	1					1		
6 EV_MW_MC10B_WG_2021_Q3_NP	EV_MW_MC10B	WG		07/30/21	11:26	G	5	1	1	1	1	1	1					1		
7 EV_MW_MC10C_WG_2021_Q3_NP	EV_MW_MC10C	WG		07/30/21	11:30	G	5	1	1	1	1	1	1					1		
							<b>Total</b>	35												

Environmental Division  
Calgary  
Work Order Reference  
**CG2102960**



RECEIVED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
C. Emslie/J. Batstone	July 30, 2021	<i>[Signature]</i>	July 30, 2021
Sampler's Name	C. Emslie/J. Batstone	Mobile #	
Sampler's Signature	<i>[Signature]</i>	Date/Time	July 30, 2021

Telephone : +1 403 407 1800

*[Handwritten mark]*



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2103834**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210903Q3GW  
**Sampler** : C. Emslie/S. Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 04-Sep-2021 08:50  
**Date Analysis Commenced** : 05-Sep-2021  
**Issue Date** : 30-Sep-2021 11:48

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_MCgwD_W G_2021_Q3_NP	EV_MCgwS_W G_2021_Q3_NP	----	----	----
(Matrix: Water)					Client sampling date / time	03-Sep-2021 13:15	03-Sep-2021 14:33	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103834-001 Result	CG2103834-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	6.5	----	----	----	
conductivity	----	E100	2.0	µS/cm	525	748	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	226	376	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	271	351	----	----	----	
pH	----	E108	0.10	pH units	8.40	8.16	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	318	509	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	6.3	5.2	----	----	----	
turbidity	----	E121	0.10	NTU	5.80	30.1	----	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	237	238	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	10.0	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	227	238	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	277	291	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	6.0	<2.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.100	0.138	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	0.285	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.19	45.2	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.912	0.308	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.138	0.190	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.193	0.0088	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0058	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0055	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0147	0.0038	----	----	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0084	0.0041	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	48.6	97.8	----	----	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.337	0.199	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.89	2.50	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MCgwd_W G_2021_Q3_NP	EV_MCgws_W G_2021_Q3_NP	---	---	---
Client sampling date / time					03-Sep-2021 13:15	03-Sep-2021 14:33	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103834-001 Result	CG2103834-002 Result	-----	-----	-----	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	1.06	2.14	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	5.93	8.08	---	---	---	
cation sum	---	EC101	0.10	meq/L	5.66	8.52	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	95.4	105	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	2.33	2.65	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0021	0.0074	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00027	<0.00010	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00036	0.00164	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0678	0.0267	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.065	0.025	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0510	0.0064	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	48.5	95.2	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.42	0.12	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00302	<0.00020	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.023	1.90	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0079	0.0209	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	25.6	33.6	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.362	0.132	---	---	---	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0121	0.00309	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00512	0.00052	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.52	1.54	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.080	<0.050	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.07	5.23	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MCgwd_W G_2021_Q3_NP	EV_MCgws_W G_2021_Q3_NP	----	----	----
Client sampling date / time					03-Sep-2021 13:15	03-Sep-2021 14:33	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103834-001	CG2103834-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	24.6	20.3	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.472	0.302	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	17.9	39.4	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000044	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00229	0.00183	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0829	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



**Environmental**

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2103950**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210908Q3GW  
**Sampler** : T PHILLIPS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 3

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Sep-2021 08:40  
**Date Analysis Commenced** : 10-Sep-2021  
**Issue Date** : 30-Sep-2021 14:32

---

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

---



## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Maqsood Ul Hassan	Laboratory Analyst	Organics, Calgary, Alberta
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Shirley Li		Metals, Calgary, Alberta
Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

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Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

ONLY RECEIVED EV\_MC6GW - EV\_MC7GW BOTTLES WERE RECEIVED EMPTY, THE OTHER SAMPLES WERE NOT RECEIVED.

9/10/21 - EC\_OCGW AND EV\_MC5GW LOCATED - WILL ADD TO FILE

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_MC6GW_W G_2021_Q3_NP	EV_OCGW_WG _2021_Q3_NP	EV_MC5GW_W G_2021_Q3_NP	----	----
(Matrix: Water)					Client sampling date / time	08-Sep-2021 15:11	08-Sep-2021 15:05	08-Sep-2021 15:08	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103950-003	CG2103950-005	CG2103950-006	-----	-----	
					Result	Result	Result	----	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
conductivity	----	E100	2.0	µS/cm	<2.0	457	456	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	<0.50	152	152	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	514	251	207	----	----	
pH	----	E108	0.10	pH units	5.02	8.42	8.42	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	286	296	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	15.1	7.8	----	----	
turbidity	----	E121	0.10	NTU	<0.10	4.56	2.82	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	<2.0	187	184	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	13.0	10.8	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	174	173	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	<2.0	213	212	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	7.8	6.5	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0050	0.0602	<0.0050	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	2.24	2.20	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	1.17	1.16	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.058	0.056	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.0170	0.0200	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0100	0.0069	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0072	0.0091	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0110	0.0278	----	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	0.0064	0.0111	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	64.8	64.6	----	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	<0.050	0.085	0.083	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	<0.50	----	----	



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_MC6GW_W G_2021_Q3_NP	EV_OCGW_WG _2021_Q3_NP	EV_MC5GW_W G_2021_Q3_NP	----	----
(Matrix: Water)					Client sampling date / time	08-Sep-2021 15:11	08-Sep-2021 15:05	08-Sep-2021 15:08	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2103950-003	CG2103950-005	CG2103950-006	-----	-----	
					Result	Result	Result	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.65 <sup>RRV</sup>	<0.50	<0.50	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	5.21	5.15	----	----	
cation sum	----	EC101	0.10	meq/L	<0.10	5.08	5.03	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	97.5	97.7	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	1.26	1.18	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0018	0.0013	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00145	0.00151	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	0.0530	0.0526	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.120	0.121	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0086	0.0090	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	28.1	28.1	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00032	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.16	0.19	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.188	0.168	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	0.0240	0.0245	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	19.9	19.8	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.0856	0.0934	----	----	
mercury, dissolved	7439-97-6	E509-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	0.0155	0.0151	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	1.45	1.44	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	<0.050	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	4.48	4.50	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MC6GW_W G_2021_Q3_NP	EV_OCGW_WG _2021_Q3_NP	EV_MC5GW_W G_2021_Q3_NP	----	----
Client sampling date / time					08-Sep-2021 15:11	08-Sep-2021 15:05	08-Sep-2021 15:08	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103950-003	CG2103950-005	CG2103950-006	-----	-----	
					Result	Result	Result	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	45.7	45.0	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	0.412	0.409	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	23.7	23.5	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	0.00106	0.00106	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0.0010	----	----	
dissolved mercury filtration location	----	EP509-L	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	
<b>Speciated Metals</b>										
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	----	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	<0.40	<0.40	----	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	----	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	----	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	90.0	86.7	90.9	----	----	
<b>Polycyclic Aromatic Hydrocarbons</b>										
acenaphthene	83-32-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
acenaphthylene	208-96-8	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
acridine	260-94-6	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
anthracene	120-12-7	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	<0.0050	<0.0050	<0.0050	----	----	
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	<0.015	<0.015	<0.015	----	----	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MC6GW_W G_2021_Q3_NP	EV_OCGW_WG _2021_Q3_NP	EV_MC5GW_W G_2021_Q3_NP	----	----
Client sampling date / time					08-Sep-2021 15:11	08-Sep-2021 15:05	08-Sep-2021 15:08	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103950-003	CG2103950-005	CG2103950-006	-----	-----	
					Result	Result	Result	---	---	
<b>Polycyclic Aromatic Hydrocarbons</b>										
chrysene	218-01-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	<0.0050	<0.0050	<0.0050	----	----	
fluoranthene	206-44-0	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
fluorene	86-73-7	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
methylnaphthalene, 1+2-	----	E641A	0.015	µg/L	<0.015	<0.015	<0.015	----	----	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
naphthalene	91-20-3	E641A	0.050	µg/L	<0.050	<0.050	<0.050	----	----	
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
quinoline	91-22-5	E641A	0.050	µg/L	<0.050	<0.050	<0.050	----	----	
B(a)P total potency equivalents [B(a)P TPE]	----	E641A	0.010	µg/L	<0.010	<0.010	<0.010	----	----	
PAHs, high molecular weight (BC AWQ)	----	E641A	0.030	µg/L	<0.030	<0.030	<0.030	----	----	
PAHs, low molecular weight (BC AWQ)	----	E641A	0.060	µg/L	<0.060	<0.060	<0.060	----	----	
PAHs, total (EPA 16)	----	E641A	0.065	µg/L	<0.065	<0.065	<0.065	----	----	
<b>Polycyclic Aromatic Hydrocarbons Surrogates</b>										
chrysene-d12	1719-03-5	E641A	0.1	%	69.1	60.4	70.8	----	----	
naphthalene-d8	1146-65-2	E641A	0.1	%	63.1	61.2	85.9	----	----	
phenanthrene-d10	1517-22-2	E641A	0.1	%	75.0	65.4	88.6	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103950</b>	Page	: 1 of 19
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 09-Sep-2021 08:40
PO	: VPO00741597	Issue Date	: 30-Sep-2021 14:32
C-O-C number	: 20210908Q3GW		
Sampler	: T PHILLIPS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 6		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Duplicate outliers occur - please see following pages for full details.
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	188 % TKND	20%	Duplicate RPD does not meet the DQO for this test.

**Result Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.

<b>Matrix Spike (MS) Recoveries</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	65.9 % MSTN	70.0-130%	Recovery less than lower data quality objective

**Result Qualifiers**

Qualifier	Description
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q3_NP	E298	08-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q3_NP	E298	08-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q3_NP	E298	08-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MC5GW_WG_2021_Q3_NP	E235.Br-L	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MC6GW_WG_2021_Q3_NP	E235.Br-L	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_OCGW_WG_2021_Q3_NP	E235.Br-L	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MC5GW_WG_2021_Q3_NP	E235.Cl-L	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MC6GW_WG_2021_Q3_NP	E235.Cl-L	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_OCGW_WG_2021_Q3_NP	E235.Cl-L	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MC5GW_WG_2021_Q3_NP	E378-U	08-Sep-2021	----	----	----		10-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MC6GW_WG_2021_Q3_NP	E378-U	08-Sep-2021	----	----	----		10-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_OCGW_WG_2021_Q3_NP	E378-U	08-Sep-2021	----	----	----		10-Sep-2021	3 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MC5GW_WG_2021_Q3_NP	E235.F	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MC6GW_WG_2021_Q3_NP	E235.F	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_OCGW_WG_2021_Q3_NP	E235.F	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MC5GW_WG_2021_Q3_NP	E235.NO3-L	08-Sep-2021	----	----	----		11-Sep-2021	3 days	3 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q3_NP	E235.NO3-L	08-Sep-2021	----	----	----		11-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_OCGW_WG_2021_Q3_NP	E235.NO3-L	08-Sep-2021	----	----	----		11-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q3_NP	E235.NO2-L	08-Sep-2021	----	----	----		11-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q3_NP	E235.NO2-L	08-Sep-2021	----	----	----		11-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_OCGW_WG_2021_Q3_NP	E235.NO2-L	08-Sep-2021	----	----	----		11-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q3_NP	E235.SO4	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q3_NP	E235.SO4	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_OCGW_WG_2021_Q3_NP	E235.SO4	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC5GW_WG_2021_Q3_NP	E375-T	08-Sep-2021	15-Sep-2021	----	----		15-Sep-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC6GW_WG_2021_Q3_NP	E375-T	08-Sep-2021	15-Sep-2021	----	----		15-Sep-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_OCGW_WG_2021_Q3_NP	E375-T	08-Sep-2021	15-Sep-2021	----	----		15-Sep-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q3_NP	E318	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q3_NP	E318	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q3_NP	E318	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q3_NP	E372-U	08-Sep-2021	13-Sep-2021	----	----		13-Sep-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q3_NP	E372-U	08-Sep-2021	14-Sep-2021	----	----		14-Sep-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q3_NP	E372-U	08-Sep-2021	14-Sep-2021	----	----		14-Sep-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC5GW_WG_2021_Q3_NP	E421.Cr-L	08-Sep-2021	14-Sep-2021	----	----		14-Sep-2021	180 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC6GW_WG_2021_Q3_NP	E421.Cr-L	08-Sep-2021	14-Sep-2021	----	----		14-Sep-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_OCGW_WG_2021_Q3_NP	E421.Cr-L	08-Sep-2021	14-Sep-2021	----	----		14-Sep-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_MC5GW_WG_2021_Q3_NP	E509-L	08-Sep-2021	16-Sep-2021	----	----		16-Sep-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_MC6GW_WG_2021_Q3_NP	E509-L	08-Sep-2021	16-Sep-2021	----	----		16-Sep-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>											
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_OCGW_WG_2021_Q3_NP	E509-L	08-Sep-2021	16-Sep-2021	----	----		16-Sep-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC5GW_WG_2021_Q3_NP	E421	08-Sep-2021	14-Sep-2021	----	----		14-Sep-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC6GW_WG_2021_Q3_NP	E421	08-Sep-2021	14-Sep-2021	----	----		14-Sep-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_OCGW_WG_2021_Q3_NP	E421	08-Sep-2021	14-Sep-2021	----	----		14-Sep-2021	180 days	6 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC5GW_WG_2021_Q3_NP	E601A	08-Sep-2021	11-Sep-2021	14 days	3 days	✓	12-Sep-2021	40 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC6GW_WG_2021_Q3_NP	E601A	08-Sep-2021	11-Sep-2021	14 days	3 days	✓	12-Sep-2021	40 days	1 days	✓	
<b>Hydrocarbons : BC PHC - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_OCGW_WG_2021_Q3_NP	E601A	08-Sep-2021	11-Sep-2021	14 days	3 days	✓	12-Sep-2021	40 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC6GW_WG_2021_Q3_NP	E358-L	08-Sep-2021	11-Sep-2021	----	----		12-Sep-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_OCGW_WG_2021_Q3_NP	E358-L	08-Sep-2021	11-Sep-2021	----	----		12-Sep-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC5GW_WG_2021_Q3_NP	E358-L	08-Sep-2021	11-Sep-2021	----	----		13-Sep-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q3_NP	E355-L	08-Sep-2021	11-Sep-2021	----	----		12-Sep-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q3_NP	E355-L	08-Sep-2021	11-Sep-2021	----	----		12-Sep-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q3_NP	E355-L	08-Sep-2021	11-Sep-2021	----	----		12-Sep-2021	28 days	4 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q3_NP	E283	08-Sep-2021	----	----	----		15-Sep-2021	14 days	7 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_MC6GW_WG_2021_Q3_NP	E283	08-Sep-2021	----	----	----		15-Sep-2021	14 days	7 days	✓
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_OCGW_WG_2021_Q3_NP	E283	08-Sep-2021	----	----	----		15-Sep-2021	14 days	7 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MC5GW_WG_2021_Q3_NP	E290	08-Sep-2021	----	----	----		18-Sep-2021	14 days	10 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MC6GW_WG_2021_Q3_NP	E290	08-Sep-2021	----	----	----		18-Sep-2021	14 days	10 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_OCGW_WG_2021_Q3_NP	E290	08-Sep-2021	----	----	----		18-Sep-2021	14 days	10 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MC5GW_WG_2021_Q3_NP	E100	08-Sep-2021	----	----	----		18-Sep-2021	28 days	10 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MC6GW_WG_2021_Q3_NP	E100	08-Sep-2021	----	----	----		18-Sep-2021	28 days	10 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_OCGW_WG_2021_Q3_NP	E100	08-Sep-2021	----	----	----		18-Sep-2021	28 days	10 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MC5GW_WG_2021_Q3_NP	E125	08-Sep-2021	----	----	----		16-Sep-2021	0.34 hrs	193 hrs	* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q3_NP	E125	08-Sep-2021	----	----	----		16-Sep-2021	0.34 hrs	193 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
<b>HDPE</b> EV_OCGW_WG_2021_Q3_NP	E125	08-Sep-2021	----	----	----		16-Sep-2021	0.34 hrs	193 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q3_NP	E108	08-Sep-2021	----	----	----		18-Sep-2021	0.25 hrs	236 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q3_NP	E108	08-Sep-2021	----	----	----		18-Sep-2021	0.25 hrs	236 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
<b>HDPE</b> EV_OCGW_WG_2021_Q3_NP	E108	08-Sep-2021	----	----	----		18-Sep-2021	0.25 hrs	236 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q3_NP	E162	08-Sep-2021	----	----	----		13-Sep-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q3_NP	E162	08-Sep-2021	----	----	----		13-Sep-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_OCGW_WG_2021_Q3_NP	E162	08-Sep-2021	----	----	----		13-Sep-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MC5GW_WG_2021_Q3_NP	E160-L	08-Sep-2021	----	----	----		14-Sep-2021	7 days	6 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MC6GW_WG_2021_Q3_NP	E160-L	08-Sep-2021	----	----	----		14-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_OCGW_WG_2021_Q3_NP	E160-L	08-Sep-2021	----	----	----		14-Sep-2021	7 days	6 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q3_NP	E121	08-Sep-2021	----	----	----		11-Sep-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q3_NP	E121	08-Sep-2021	----	----	----		11-Sep-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_OCGW_WG_2021_Q3_NP	E121	08-Sep-2021	----	----	----		11-Sep-2021	3 days	3 days	✔	
<b>Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC6GW_WG_2021_Q3_NP	E641A	08-Sep-2021	14-Sep-2021	14 days	6 days	✔	16-Sep-2021	40 days	2 days	✔	
<b>Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC5GW_WG_2021_Q3_NP	E641A	08-Sep-2021	16-Sep-2021	14 days	8 days	✔	16-Sep-2021	40 days	0 days	✔	
<b>Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_OCGW_WG_2021_Q3_NP	E641A	08-Sep-2021	16-Sep-2021	14 days	8 days	✔	16-Sep-2021	40 days	0 days	✔	
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>											
<b>HDPE - dissolved (sodium hydroxide)</b> EV_MC5GW_WG_2021_Q3_NP	E532A	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>										
<b>HDPE - dissolved (sodium hydroxide)</b> EV_MC6GW_WG_2021_Q3_NP	E532A	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✔
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>										
<b>HDPE - dissolved (sodium hydroxide)</b> EV_OCGW_WG_2021_Q3_NP	E532A	08-Sep-2021	----	----	----		11-Sep-2021	28 days	3 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	293035	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	296097	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	297315	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	289643	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	289644	1	17	5.8	5.0	✓
Conductivity in Water	E100	296095	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	291932	1	13	7.6	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	289842	1	8	12.5	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	293824	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	291931	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	289968	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	288759	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	289641	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	289645	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	289646	1	18	5.5	5.0	✓
ORP by Electrode	E125	293116	1	13	7.6	5.0	✓
pH by Meter	E108	296096	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	289642	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	290294	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	291789	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	302222	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	289969	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	288539	2	30	6.6	5.0	✓
Turbidity by Nephelometry	E121	289701	1	15	6.6	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	293035	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	296097	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	297315	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	289580	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	289643	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	289644	1	17	5.8	5.0	✓
Conductivity in Water	E100	296095	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	291932	1	13	7.6	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	289842	1	8	12.5	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	293824	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	291931	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	289968	1	16	6.2	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	288759	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	289641	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	289645	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	289646	1	18	5.5	5.0	✓
ORP by Electrode	E125	293116	1	13	7.6	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	291430	2	6	33.3	5.0	✓
pH by Meter	E108	296096	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	289642	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	290294	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	291789	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	302222	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	289969	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	288539	2	30	6.6	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	290278	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	289701	1	15	6.6	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	293035	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	296097	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	297315	1	20	5.0	5.0	✓
BC PHC - EPH by GC-FID	E601A	289580	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	289643	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	289644	1	17	5.8	5.0	✓
Conductivity in Water	E100	296095	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	291932	1	13	7.6	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	289842	1	8	12.5	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	293824	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	291931	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	289968	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	288759	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	289641	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	289645	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	289646	1	18	5.5	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	291430	2	6	33.3	5.0	✓
Sulfate in Water by IC	E235.SO4	289642	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	290294	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	291789	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	302222	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	289969	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	288539	2	30	6.6	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	290278	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	289701	1	15	6.6	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	297315	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	289643	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	289644	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	291932	1	13	7.6	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	289842	1	8	12.5	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	293824	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	291931	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	289968	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	288759	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	289641	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	289645	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	289646	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	289642	1	19	5.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	291789	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	302222	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	289969	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	288539	2	30	6.6	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Calgary - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Calgary - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A Edmonton - Environmental	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection.  sample pretreatment involved field or lab filtration following by sample preservation.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
PAHs by Hexane LVI GC-MS	E641A Calgary - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
Dissolved Hardness (Calculated)	EC100 Calgary - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.  Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.





<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Metals Water Filtration	EP421 Calgary - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration (Low Level)	EP509-L Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
PHCs and PAHs Hexane Extraction	EP601 Calgary - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

## QUALITY CONTROL REPORT

**Work Order** : **CG2103950**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210908Q3GW  
**Sampler** : T PHILLIPS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Sep-2021 08:40  
**Date Analysis Commenced** : 10-Sep-2021  
**Issue Date** : 30-Sep-2021 14:32

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
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Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
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Sorina Motea  
Tracy Harley

Laboratory Analyst  
Supervisor - Water Quality Instrumentation

Organics, Calgary, Alberta  
Inorganics, Burnaby, British Columbia

Page : 3 of 17  
Work Order : CG2103950  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 289701)</b>											
CG2103948-002	Anonymous	turbidity	----	E121	0.10	NTU	13.8	13.8	0.289%	15%	----
<b>Physical Tests (QC Lot: 290294)</b>											
CG2103948-005	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	300	293	2.53%	20%	----
<b>Physical Tests (QC Lot: 293035)</b>											
CG2103944-006	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	10.0	mg/L	60.2	51.7	8.5	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 293116)</b>											
CG2103948-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	272	268	1.26%	15%	----
<b>Physical Tests (QC Lot: 296095)</b>											
CG2103949-003	Anonymous	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 296096)</b>											
CG2103949-003	Anonymous	pH	----	E108	0.10	pH units	4.98	5.03	0.999%	4%	----
<b>Physical Tests (QC Lot: 296097)</b>											
CG2103949-003	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 288539)</b>											
CG2103950-003	EV_MC6GW_WG_2021_Q3_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 288759)</b>											
CG2103949-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0011	0.0012	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 289545)</b>											
CG2103935-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0037	0.0031	0.0006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 289641)</b>											
CG2103918-002	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.159	0.157	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 289642)</b>											
CG2103918-002	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	460	459	0.138%	20%	----
<b>Anions and Nutrients (QC Lot: 289643)</b>											
CG2103918-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 289644)</b>											
CG2103918-002	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	3.59	3.36	0.23	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 289645)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 289645) - continued</b>											
CG2103918-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	2.49	2.46	1.14%	20%	----
<b>Anions and Nutrients (QC Lot: 289646)</b>											
CG2103918-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0252	0.0248	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 291789)</b>											
CG2103926-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0082	0.0086	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 297315)</b>											
CG2103944-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.125	mg/L	4.46	4.49	0.672%	20%	----
<b>Anions and Nutrients (QC Lot: 302222)</b>											
CG2103345-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	1.65	<0.050	188%	20%	TKND
<b>Organic / Inorganic Carbon (QC Lot: 289968)</b>											
CG2103791-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.09	1.15	0.06	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 289969)</b>											
CG2103791-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.16	1.20	0.04	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 291931)</b>											
CG2103940-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0013	0.0012	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00018	0.00020	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0351	0.0359	2.24%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	48.2	48.4	0.394%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0014	0.0012	0.0002	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	13.8	14.0	1.76%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00138	0.00138	0.0298%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000514	0.000531	3.40%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00054	<0.00050	0.00004	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.350	0.355	0.004	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000271	0.000252	0.000019	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.10	2.12	0.925%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 291931) - continued</b>											
CG2103940-001	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.09	1.10	1.56%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.164	0.163	0.724%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	11.5	11.9	3.32%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000386	0.000389	0.562%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 291932)</b>											
CG2103940-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00019	0.00018	0.000001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 293824)</b>											
CG2103950-003	EV_MC6GW_WG_2021_Q 3_NP	mercury, dissolved	7439-97-6	E509-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
<b>Speciated Metals (QC Lot: 289842)</b>											
EO2102477-001	Anonymous	chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 289701)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 290278)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 290294)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 293035)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 296095)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 296097)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 288539)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 288759)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 289545)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 289641)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 289642)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 289643)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 289644)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 289645)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 289646)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 291789)</b>						





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 291789) - continued</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 297315)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 302222)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 289968)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 289969)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 291931)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 291931) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	---
<b>Dissolved Metals (QCLot: 291932)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 293824)</b>						
mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	<0.50	---
<b>Speciated Metals (QCLot: 289842)</b>						
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	<0.00050	---
<b>Hydrocarbons (QCLot: 289580)</b>						
EPH (C10-C19)	---	E601A	250	µg/L	<250	---
EPH (C19-C32)	---	E601A	250	µg/L	<250	---
TEH (C10-C30), BC	---	E601A	250	µg/L	<250	---
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 291430)</b>						
acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	---
acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	---
acridine	260-94-6	E641A	0.01	µg/L	<0.010	---
anthracene	120-12-7	E641A	0.01	µg/L	<0.010	---
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	---
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	---
benzo(b+j)fluoranthene	---	E641A	0.01	µg/L	<0.010	---
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	---
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	---
chrysene	218-01-9	E641A	0.01	µg/L	<0.010	---
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	---
fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	---
fluorene	86-73-7	E641A	0.01	µg/L	<0.010	---
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	---
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	---
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	---
naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	---
phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	---
pyrene	129-00-0	E641A	0.01	µg/L	<0.010	---
quinoline	91-22-5	E641A	0.05	µg/L	<0.050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 293605)</b>						
acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	---
acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	---
acridine	260-94-6	E641A	0.01	µg/L	<0.010	---
anthracene	120-12-7	E641A	0.01	µg/L	<0.010	---
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	---
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	---
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	<0.010	---
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	---
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	---
chrysene	218-01-9	E641A	0.01	µg/L	<0.010	---
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	---
fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	---
fluorene	86-73-7	E641A	0.01	µg/L	<0.010	---
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	---
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	---
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	---
naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	---
phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	---
pyrene	129-00-0	E641A	0.01	µg/L	<0.010	---
quinoline	91-22-5	E641A	0.05	µg/L	<0.050	---



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 289701)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.9	85.0	115	---
<b>Physical Tests (QCLot: 290278)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.3	85.0	115	---
<b>Physical Tests (QCLot: 290294)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.1	85.0	115	---
<b>Physical Tests (QCLot: 293035)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 293116)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Physical Tests (QCLot: 296095)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.7	90.0	110	---
<b>Physical Tests (QCLot: 296096)</b>									
pH	---	E108	---	pH units	7 pH units	101	98.6	101	---
<b>Physical Tests (QCLot: 296097)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	98.8	85.0	115	---
<b>Anions and Nutrients (QCLot: 288539)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	103	80.0	120	---
<b>Anions and Nutrients (QCLot: 288759)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	99.8	80.0	120	---
<b>Anions and Nutrients (QCLot: 289545)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	99.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 289641)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 289642)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 289643)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 289644)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 289645)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 289646)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 289646) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 291789)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	98.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 297315)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	108	85.0	115	----
<b>Anions and Nutrients (QCLot: 302222)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	81.2	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 289968)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	96.5	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 289969)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	107	80.0	120	----
<b>Dissolved Metals (QCLot: 291931)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.9	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.1	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.9	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	110	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.2	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	108	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.5	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.6	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.1	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 291931) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	91.6	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	90.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.2	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	92.3	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.8	80.0	120	----
<b>Dissolved Metals (QCLot: 291932)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	99.4	80.0	120	----
<b>Speciated Metals (QCLot: 289842)</b>									
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
<b>Hydrocarbons (QCLot: 289580)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	75.7	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	77.5	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	11080 µg/L	73.6	70.0	130	----
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 291430)</b>									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	67.1	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	75.2	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	83.4	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	80.2	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	77.5	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	78.5	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	77.6	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	99.9	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	76.1	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	82.4	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	82.8	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	85.4	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	77.0	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	69.2	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	75.4	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	64.1	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	83.4	60.0	130	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 291430) - continued</b>									
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	82.7	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	90.0	60.0	130	----
quinoline	91-22-5	E641A	0.05	µg/L	0.5 µg/L	115	60.0	130	----
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 293605)</b>									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	107	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	105	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	118	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	120	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	115	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	122	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	121	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	120	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	120	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	96.8	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	85.9	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	84.2	60.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	114	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	120	60.0	130	----
quinoline	91-22-5	E641A	0.05	µg/L	0.5 µg/L	108	60.0	130	----





## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 288539)</b>										
CG2103953-001	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 288759)</b>										
CG2103949-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0569 mg/L	0.05 mg/L	114	70.0	130	----
<b>Anions and Nutrients (QCLot: 289545)</b>										
CG2103935-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0740 mg/L	0.0676 mg/L	109	70.0	130	----
<b>Anions and Nutrients (QCLot: 289641)</b>										
CG2103918-003	Anonymous	fluoride	16984-48-8	E235.F	0.822 mg/L	1 mg/L	82.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 289642)</b>										
CG2103918-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 289643)</b>										
CG2103918-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.428 mg/L	0.5 mg/L	85.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 289644)</b>										
CG2103918-003	Anonymous	chloride	16887-00-6	E235.Cl-L	93.6 mg/L	100 mg/L	93.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 289645)</b>										
CG2103918-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.36 mg/L	2.5 mg/L	94.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 289646)</b>										
CG2103918-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.411 mg/L	0.5 mg/L	82.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 291789)</b>										
CG2103950-003	EV_MC6GW_WG_2021_Q3_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0670 mg/L	0.0676 mg/L	99.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 297315)</b>										
CG2103946-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.101 mg/L	0.1 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 302222)</b>										
CG2103345-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.65 mg/L	2.5 mg/L	65.9	70.0	130	MSTN
<b>Organic / Inorganic Carbon (QCLot: 289968)</b>										
CG2103791-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.4 mg/L	23.9 mg/L	93.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 289969)</b>										
CG2103791-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.2 mg/L	23.9 mg/L	97.2	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 291931)</b>										
CG2103950-003	EV_MC6GW_WG_2021_Q3_NP	aluminum, dissolved	7429-90-5	E421	1.93 mg/L	2 mg/L	96.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.194 mg/L	0.2 mg/L	96.9	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.180 mg/L	0.2 mg/L	89.9	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.188 mg/L	0.2 mg/L	94.2	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.396 mg/L	0.4 mg/L	99.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0858 mg/L	0.1 mg/L	85.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.956 mg/L	1 mg/L	95.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0379 mg/L	0.04 mg/L	94.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	37.2 mg/L	40 mg/L	93.0	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.188 mg/L	0.2 mg/L	94.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.187 mg/L	0.2 mg/L	93.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	18.7 mg/L	20 mg/L	93.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.174 mg/L	0.2 mg/L	87.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.926 mg/L	1 mg/L	92.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	9.28 mg/L	10 mg/L	92.8	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.188 mg/L	0.2 mg/L	94.2	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.189 mg/L	0.2 mg/L	94.5	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.364 mg/L	0.4 mg/L	91.1	70.0	130	----
		potassium, dissolved	7440-09-7	E421	34.8 mg/L	40 mg/L	86.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.368 mg/L	0.4 mg/L	92.1	70.0	130	----
		silicon, dissolved	7440-21-3	E421	89.3 mg/L	100 mg/L	89.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		sodium, dissolved	17341-25-2	E421	19.0 mg/L	20 mg/L	94.8	70.0	130	----
strontium, dissolved	7440-24-6	E421	0.180 mg/L	0.2 mg/L	90.1	70.0	130	----		
sulfur, dissolved	7704-34-9	E421	192 mg/L	200 mg/L	96.2	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.0342 mg/L	0.04 mg/L	85.5	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.187 mg/L	0.2 mg/L	93.5	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.379 mg/L	0.4 mg/L	94.9	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.0336 mg/L	0.04 mg/L	84.1	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.931 mg/L	1 mg/L	93.1	70.0	130	----		
zinc, dissolved	7440-66-6	E421	3.75 mg/L	4 mg/L	93.7	70.0	130	----		
<b>Dissolved Metals (QCLot: 291932)</b>										
CG2103950-003	EV_MC6GW_WG_2021_Q3_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.372 mg/L	0.4 mg/L	93.0	70.0	130	----
<b>Dissolved Metals (QCLot: 293824)</b>										
CG2103950-005	EV_OCGW_WG_2021_Q3_NP	mercury, dissolved	7439-97-6	E509-L	4.56 ng/L	5 ng/L	91.1	70.0	130	----

Page : 17 of 17  
 Work Order : CG2103950  
 Client : Teck Coal Limited  
 Project : ELKVIEW OPERATIONS



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Speciated Metals (QCLot: 289842)</b>										
EO2102477-001	Anonymous	chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0499 mg/L	0.05 mg/L	99.8	70.0	130	----

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.

COC ID: 20210908Q3GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emsle@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood		Province	BC		City	Calgary		Province	AB		
			Country	Canada		Postal Code	T1Y 7B5		Country	Canada		
				Phone Number	403-407-1800			PO number	VPO00741597			

Environmental Division  
Calgary

Work Order Reference  
**CG2103950**



Telephone : +1 403 407 1800

EE-DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PREP	ANALYSIS	No	Yes	Yes	No	No	Yes	No	Yes	Yes		
									TECKCOAL-ROUTINE-VA (E305.1) Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL			Nitric								
									TECKCOAL-MET-D-VA (SW6020)			Sulphuric								
									DOC (APHA 5310)											
									Dissolved Phosphorus											
									TKN/TOC (APHA 4500-NORG)											
									Total Nitrogen for BC (NO2 and NO3)											
									T-ULTRA MERCURY (SW6020)											
									D-ULTRA MERCURY (SW6020)											
									EPH (C10-C32)											
									D-Mercury											
									D-CrVI											
							Total													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION T. Phillips	DATE/TIME September 8, 2021	ACCEPTED BY/AFFILIATION	DATE/TIME
SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name T. Phillips	Mobile#		
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	Date/Time		September 8, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

*[Handwritten signatures and initials]*

*[Handwritten signature]*



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2104060**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210912Q3GW  
**Sampler** : CB/SH  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 14-Sep-2021 10:30  
**Date Analysis Commenced** : 14-Sep-2021  
**Issue Date** : 30-Sep-2021 12:12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
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Owen Cheng		Metals, Burnaby, British Columbia
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Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_ER1gwD_W G_2021_Q3_NP	EV_ER1gwS_W G_2021_Q3_NP	EV_MW_MC10 A_WG_2021_Q 3_NP	EV_MW_MC10 B_WG_2021_Q 3_NP	EV_MW_MC10 C_WG_2021_Q 3_NP
Client sampling date / time					12-Sep-2021 13:05	12-Sep-2021 14:10	12-Sep-2021 13:06	12-Sep-2021 13:15	12-Sep-2021 12:00	
Analyte	CAS Number	Method	LOR	Unit	CG2104060-001	CG2104060-002	CG2104060-003	CG2104060-004	CG2104060-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	2.9	2.4	2.0	<2.0	
conductivity	----	E100	2.0	µS/cm	434	502	430	<2.0	<2.0	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	215	236	214	<0.50	<0.50	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	505	488	481	476	536	
pH	----	E108	0.10	pH units	8.30	8.25	8.29	5.12	4.98	
solids, total dissolved [TDS]	----	E162	10	mg/L	240	286	225	<10	<10	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
turbidity	----	E121	0.10	NTU	0.64	0.22	0.17	<0.10	<0.10	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	210	200	203	<2.0	<2.0	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	4.2	<2.0	<2.0	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	205	200	203	<2.0	<2.0	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	250	243	248	<2.0	<2.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	2.5	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0253	<0.0050	<0.0050	0.112 <sup>RRV</sup>	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	5.19	9.16	5.17	<0.10	<0.10	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.195	0.147	0.196	<0.020	<0.020	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.051 <sup>TKN</sup>	0.183	0.091	<0.050	0.113	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.777	1.79	0.759	<0.0050	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0016	0.0029	0.0022	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0028	0.0030	0.0023	<0.0020	<0.0020	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	0.0025	0.0042	<0.0020	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	31.9	68.7	31.7	<0.30	<0.30	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.828	1.97	0.850	<0.050	0.113	
<b>Organic / Inorganic Carbon</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_ER1gwD_W G_2021_Q3_NP	EV_ER1gwS_W G_2021_Q3_NP	EV_MW_MC10 A_WG_2021_Q 3_NP	EV_MW_MC10 B_WG_2021_Q 3_NP	EV_MW_MC10 C_WG_2021_Q 3_NP
Client sampling date / time					12-Sep-2021 13:05	12-Sep-2021 14:10	12-Sep-2021 13:06	12-Sep-2021 13:15	12-Sep-2021 12:00	
Analyte	CAS Number	Method	LOR	Unit	CG2104060-001 Result	CG2104060-002 Result	CG2104060-003 Result	CG2104060-004 Result	CG2104060-005 Result	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.30 <sup>DTC,RRV</sup>	1.55	0.65	<0.50	<0.50	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.88 <sup>DTC,RRV</sup>	1.31	1.31	<0.50	<0.50	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.07	5.82	4.93	<0.10	<0.10	
cation sum	----	EC101	0.10	meq/L	4.44	5.03	4.41	<0.10	<0.10	
ion balance (cations/anions ratio)	----	EC101	0.010	%	87.6	86.4	89.4	100	100	
ion balance (cation-anion difference)	----	EC101	0.010	%	6.62	7.28	5.57	<0.010	<0.010	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0053	0.0012	0.0058	0.0021 <sup>RRV</sup>	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	<0.00010	0.00011	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0796	0.126	0.0779	0.00016 <sup>RRV</sup>	<0.00010	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0060	0.0102	<0.0050	<0.0050	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	56.8	64.9	56.7	<0.050	<0.050	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00042	0.00023	0.00043	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00030	<0.00020	0.00030	<0.00020	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0069	0.0073	0.0069	<0.0010	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	17.8	18.0	17.5	<0.0050	<0.0050	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00036	0.00011	0.00039	<0.00010	<0.00010	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00151	0.000950	0.00150	<0.000050	<0.000050	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.669	0.904	0.660	<0.050	<0.050	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	3.18	7.97	3.35	<0.050	<0.050	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_ER1gwD_W G_2021_Q3_NP	EV_ER1gwS_W G_2021_Q3_NP	EV_MW_MC10 A_WG_2021_Q 3_NP	EV_MW_MC10 B_WG_2021_Q 3_NP	EV_MW_MC10 C_WG_2021_Q 3_NP
Client sampling date / time					12-Sep-2021 13:05	12-Sep-2021 14:10	12-Sep-2021 13:06	12-Sep-2021 13:15	12-Sep-2021 12:00	
Analyte	CAS Number	Method	LOR	Unit	CG2104060-001	CG2104060-002	CG2104060-003	CG2104060-004	CG2104060-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.22	2.60	3.20	<0.050	<0.050	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.98	6.54	2.92	<0.050	<0.050	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.180	0.183	0.180	<0.00020	<0.00020	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	9.98	21.7	10.0	<0.50	<0.50	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00128	0.000949	0.00129	<0.000010	<0.000010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0030	<0.0010	0.0030	<0.0010	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104060</b>	Page	: 1 of 22
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 14-Sep-2021 10:30
PO	: VPO00741597	Issue Date	: 30-Sep-2021 12:13
C-O-C number	: 20210912Q3GW		
Sampler	: CB/SH		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.134 % TKND	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

**Result Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_ER1gWD_WG_2021_Q3_NP	E298	12-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_ER1gWS_WG_2021_Q3_NP	E298	12-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E298	12-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E298	12-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10C_WG_2021_Q3_NP	E298	12-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	12 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ER1gWD_WG_2021_Q3_NP	E235.Br-L	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ER1gWS_WG_2021_Q3_NP	E235.Br-L	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E235.Br-L	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E235.Br-L	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE EV_MW_MC10C_WG_2021_Q3_NP	E235.Br-L	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_ER1gwD_WG_2021_Q3_NP	E235.Cl-L	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_ER1gwS_WG_2021_Q3_NP	E235.Cl-L	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E235.Cl-L	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E235.Cl-L	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_MC10C_WG_2021_Q3_NP	E235.Cl-L	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_ER1gwD_WG_2021_Q3_NP	E378-U	12-Sep-2021	----	----	----		14-Sep-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_ER1gwS_WG_2021_Q3_NP	E378-U	12-Sep-2021	----	----	----		14-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E378-U	12-Sep-2021	----	----	----		14-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E378-U	12-Sep-2021	----	----	----		14-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC10C_WG_2021_Q3_NP	E378-U	12-Sep-2021	----	----	----		14-Sep-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_ER1gwD_WG_2021_Q3_NP	E235.F	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_ER1gwS_WG_2021_Q3_NP	E235.F	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E235.F	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E235.F	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC10C_WG_2021_Q3_NP	E235.F	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_ER1gwD_WG_2021_Q3_NP	E235.NO3-L	12-Sep-2021	----	----	----		15-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_ER1gwS_WG_2021_Q3_NP	E235.NO3-L	12-Sep-2021	----	----	----		15-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E235.NO3-L	12-Sep-2021	----	----	----		15-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E235.NO3-L	12-Sep-2021	----	----	----		15-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_MC10C_WG_2021_Q3_NP	E235.NO3-L	12-Sep-2021	----	----	----		15-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_ER1gwD_WG_2021_Q3_NP	E235.NO2-L	12-Sep-2021	----	----	----		15-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_ER1gwS_WG_2021_Q3_NP	E235.NO2-L	12-Sep-2021	----	----	----		15-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E235.NO2-L	12-Sep-2021	----	----	----		15-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E235.NO2-L	12-Sep-2021	----	----	----		15-Sep-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC10C_WG_2021_Q3_NP	E235.NO2-L	12-Sep-2021	----	----	----		15-Sep-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_ER1gwD_WG_2021_Q3_NP	E235.SO4	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_ER1gwS_WG_2021_Q3_NP	E235.SO4	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC10A_WG_2021_Q3_NP	E235.SO4	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC10B_WG_2021_Q3_NP	E235.SO4	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC10C_WG_2021_Q3_NP	E235.SO4	12-Sep-2021	----	----	----		15-Sep-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ER1gwD_WG_2021_Q3_NP	E375-T	12-Sep-2021	17-Sep-2021	----	----		17-Sep-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ER1gwS_WG_2021_Q3_NP	E375-T	12-Sep-2021	17-Sep-2021	----	----		17-Sep-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E375-T	12-Sep-2021	17-Sep-2021	----	----		17-Sep-2021	28 days	5 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E375-T	12-Sep-2021	17-Sep-2021	----	----		17-Sep-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10C_WG_2021_Q3_NP	E375-T	12-Sep-2021	17-Sep-2021	----	----		17-Sep-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1gwD_WG_2021_Q3_NP	E318	12-Sep-2021	20-Sep-2021	----	----		22-Sep-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1gwS_WG_2021_Q3_NP	E318	12-Sep-2021	20-Sep-2021	----	----		22-Sep-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E318	12-Sep-2021	20-Sep-2021	----	----		22-Sep-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E318	12-Sep-2021	20-Sep-2021	----	----		22-Sep-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10C_WG_2021_Q3_NP	E318	12-Sep-2021	20-Sep-2021	----	----		22-Sep-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1gwD_WG_2021_Q3_NP	E372-U	12-Sep-2021	16-Sep-2021	----	----		16-Sep-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1gwS_WG_2021_Q3_NP	E372-U	12-Sep-2021	16-Sep-2021	----	----		16-Sep-2021	28 days	4 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E372-U	12-Sep-2021	16-Sep-2021	----	----		16-Sep-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E372-U	12-Sep-2021	16-Sep-2021	----	----		16-Sep-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10C_WG_2021_Q3_NP	E372-U	12-Sep-2021	16-Sep-2021	----	----		16-Sep-2021	28 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ER1gwD_WG_2021_Q3_NP	E421.Cr-L	12-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ER1gwS_WG_2021_Q3_NP	E421.Cr-L	12-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E421.Cr-L	12-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E421.Cr-L	12-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10C_WG_2021_Q3_NP	E421.Cr-L	12-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_ER1gwD_WG_2021_Q3_NP	E509	12-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	28 days	9 days	✓	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_ER1gwS_WG_2021_Q3_NP	E509	12-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	28 days	9 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E509	12-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	28 days	9 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E509	12-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	28 days	9 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC10C_WG_2021_Q3_NP	E509	12-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	28 days	9 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ER1gwD_WG_2021_Q3_NP	E421	12-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ER1gwS_WG_2021_Q3_NP	E421	12-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E421	12-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E421	12-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC10C_WG_2021_Q3_NP	E421	12-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	180 days	8 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ER1gwD_WG_2021_Q3_NP	E358-L	12-Sep-2021	21-Sep-2021	----	----		24-Sep-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ER1gwS_WG_2021_Q3_NP	E358-L	12-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E358-L	12-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E358-L	12-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC10C_WG_2021_Q3_NP	E358-L	12-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1gwD_WG_2021_Q3_NP	E355-L	12-Sep-2021	21-Sep-2021	----	----		24-Sep-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1gwS_WG_2021_Q3_NP	E355-L	12-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10A_WG_2021_Q3_NP	E355-L	12-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10B_WG_2021_Q3_NP	E355-L	12-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	28 days	9 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC10C_WG_2021_Q3_NP	E355-L	12-Sep-2021	21-Sep-2021	----	----		21-Sep-2021	28 days	9 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_ER1gwD_WG_2021_Q3_NP	E283	12-Sep-2021	----	----	----		21-Sep-2021	14 days	9 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_ER1gwS_WG_2021_Q3_NP	E283	12-Sep-2021	----	----	----		21-Sep-2021	14 days	9 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC10A_WG_2021_Q3_NP	E283	12-Sep-2021	----	----	----		21-Sep-2021	14 days	9 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC10B_WG_2021_Q3_NP	E283	12-Sep-2021	----	----	----		21-Sep-2021	14 days	9 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC10C_WG_2021_Q3_NP	E283	12-Sep-2021	----	----	----		21-Sep-2021	14 days	9 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_ER1gwD_WG_2021_Q3_NP	E290	12-Sep-2021	----	----	----		22-Sep-2021	14 days	10 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_ER1gwS_WG_2021_Q3_NP	E290	12-Sep-2021	----	----	----		22-Sep-2021	14 days	10 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_MC10A_WG_2021_Q3_NP	E290	12-Sep-2021	----	----	----		22-Sep-2021	14 days	10 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E290	12-Sep-2021	----	----	----		22-Sep-2021	14 days	10 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_MC10C_WG_2021_Q3_NP	E290	12-Sep-2021	----	----	----		22-Sep-2021	14 days	10 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_ER1gwD_WG_2021_Q3_NP	E100	12-Sep-2021	----	----	----		22-Sep-2021	28 days	10 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_ER1gwS_WG_2021_Q3_NP	E100	12-Sep-2021	----	----	----		22-Sep-2021	28 days	10 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E100	12-Sep-2021	----	----	----		22-Sep-2021	28 days	10 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E100	12-Sep-2021	----	----	----		22-Sep-2021	28 days	10 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_MC10C_WG_2021_Q3_NP	E100	12-Sep-2021	----	----	----		22-Sep-2021	28 days	10 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_ER1gwS_WG_2021_Q3_NP	E125	12-Sep-2021	----	----	----		21-Sep-2021	0.34 hrs	217 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_ER1gwD_WG_2021_Q3_NP	E125	12-Sep-2021	----	----	----		21-Sep-2021	0.34 hrs	218 hrs	* EHTR-FM





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Container / Client Sample ID(s)				Rec	Actual			Rec	Actual	
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> EV_MW_MC10A_WG_2021_Q3_NP	E125	12-Sep-2021	----	----	----		21-Sep-2021	0.34 hrs	218 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> EV_MW_MC10B_WG_2021_Q3_NP	E125	12-Sep-2021	----	----	----		21-Sep-2021	0.34 hrs	218 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> EV_MW_MC10C_WG_2021_Q3_NP	E125	12-Sep-2021	----	----	----		21-Sep-2021	0.34 hrs	219 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
<b>HDPE</b> EV_ER1gwS_WG_2021_Q3_NP	E108	12-Sep-2021	----	----	----		22-Sep-2021	0.25 hrs	237 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
<b>HDPE</b> EV_ER1gwD_WG_2021_Q3_NP	E108	12-Sep-2021	----	----	----		22-Sep-2021	0.25 hrs	238 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
<b>HDPE</b> EV_MW_MC10A_WG_2021_Q3_NP	E108	12-Sep-2021	----	----	----		22-Sep-2021	0.25 hrs	238 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
<b>HDPE</b> EV_MW_MC10B_WG_2021_Q3_NP	E108	12-Sep-2021	----	----	----		22-Sep-2021	0.25 hrs	238 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
<b>HDPE</b> EV_MW_MC10C_WG_2021_Q3_NP	E108	12-Sep-2021	----	----	----		22-Sep-2021	0.25 hrs	239 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> EV_ER1gwD_WG_2021_Q3_NP	E162	12-Sep-2021	----	----	----		17-Sep-2021	7 days	5 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_ER1gwS_WG_2021_Q3_NP	E162	12-Sep-2021	----	----	----		17-Sep-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E162	12-Sep-2021	----	----	----		17-Sep-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E162	12-Sep-2021	----	----	----		17-Sep-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC10C_WG_2021_Q3_NP	E162	12-Sep-2021	----	----	----		17-Sep-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_ER1gwD_WG_2021_Q3_NP	E160-L	12-Sep-2021	----	----	----		19-Sep-2021	7 days	7 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_ER1gwS_WG_2021_Q3_NP	E160-L	12-Sep-2021	----	----	----		19-Sep-2021	7 days	7 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E160-L	12-Sep-2021	----	----	----		19-Sep-2021	7 days	7 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E160-L	12-Sep-2021	----	----	----		19-Sep-2021	7 days	7 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_MC10C_WG_2021_Q3_NP	E160-L	12-Sep-2021	----	----	----		19-Sep-2021	7 days	7 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_ER1gwD_WG_2021_Q3_NP	E121	12-Sep-2021	----	----	----		14-Sep-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_ER1gwS_WG_2021_Q3_NP	E121	12-Sep-2021	----	----	----		14-Sep-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MW_MC10A_WG_2021_Q3_NP	E121	12-Sep-2021	----	----	----		14-Sep-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MW_MC10B_WG_2021_Q3_NP	E121	12-Sep-2021	----	----	----		14-Sep-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MW_MC10C_WG_2021_Q3_NP	E121	12-Sep-2021	----	----	----		14-Sep-2021	3 days	2 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	298049	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	299335	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	301493	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	292650	2	21	9.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	292651	2	21	9.5	5.0	✓
Conductivity in Water	E100	299337	1	6	16.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	297288	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	297697	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	297289	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	298732	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	291926	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	292648	2	21	9.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	292652	2	21	9.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	292653	2	21	9.5	5.0	✓
ORP by Electrode	E125	297939	1	20	5.0	5.0	✓
pH by Meter	E108	299336	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	292649	2	21	9.5	5.0	✓
TDS by Gravimetry	E162	295516	1	6	16.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	293786	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	296941	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	298740	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	292427	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	291952	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	298049	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	299335	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	301493	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	292650	2	21	9.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	292651	2	21	9.5	5.0	✓
Conductivity in Water	E100	299337	1	6	16.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	297288	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	297697	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	297289	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	298732	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	291926	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	292648	2	21	9.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	292652	2	21	9.5	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	292653	2	21	9.5	5.0	✓
ORP by Electrode	E125	297939	1	20	5.0	5.0	✓
pH by Meter	E108	299336	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	292649	2	21	9.5	5.0	✓
TDS by Gravimetry	E162	295516	1	6	16.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	293786	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	296941	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	298740	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	292427	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	295514	1	6	16.6	5.0	✓
Turbidity by Nephelometry	E121	291952	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	298049	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	299335	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	301493	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	292650	2	21	9.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	292651	2	21	9.5	5.0	✓
Conductivity in Water	E100	299337	1	6	16.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	297288	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	297697	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	297289	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	298732	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	291926	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	292648	2	21	9.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	292652	2	21	9.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	292653	2	21	9.5	5.0	✓
Sulfate in Water by IC	E235.SO4	292649	2	21	9.5	5.0	✓
TDS by Gravimetry	E162	295516	1	6	16.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	293786	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	296941	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	298740	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	292427	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	295514	1	6	16.6	5.0	✓
Turbidity by Nephelometry	E121	291952	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	301493	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	292650	1	21	4.7	5.0	✗
Chloride in Water by IC (Low Level)	E235.Cl-L	292651	1	21	4.7	5.0	✗
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	297288	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	297697	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	297289	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	298732	2	40	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	291926	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	292648	1	21	4.7	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	292652	1	21	4.7	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	292653	1	21	4.7	5.0	✘
Sulfate in Water by IC	E235.SO4	292649	1	21	4.7	5.0	✘
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	293786	1	11	9.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	296941	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	298740	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	292427	2	40	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2104060**

**Page** : 1 of 15

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210912Q3GW  
**Sampler** : CB/SH  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 14-Sep-2021 10:30  
**Date Analysis Commenced** : 14-Sep-2021  
**Issue Date** : 30-Sep-2021 12:12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



Page : 2 of 15  
Work Order : CG2104060  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 291952)</b>											
CG2104057-001	Anonymous	turbidity	----	E121	0.10	NTU	0.39	0.38	0.005	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 295516)</b>											
CG2104060-001	EV_ER1gWD_WG_2021_Q3_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	240	250	4.29%	20%	----
<b>Physical Tests (QC Lot: 297939)</b>											
CG2104057-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	426	433	1.75%	15%	----
<b>Physical Tests (QC Lot: 298049)</b>											
CG2104057-002	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	12.8	11.7	1.1	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 299335)</b>											
CG2104058-010	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	304	318	4.60%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	304	318	4.60%	20%	----
<b>Physical Tests (QC Lot: 299336)</b>											
CG2104059-007	Anonymous	pH	----	E108	0.10	pH units	8.19	8.22	0.366%	4%	----
<b>Physical Tests (QC Lot: 299337)</b>											
CG2104059-007	Anonymous	conductivity	----	E100	2.0	µS/cm	1830	1830	0.109%	10%	----
<b>Anions and Nutrients (QC Lot: 291926)</b>											
CG2104057-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 292427)</b>											
CG2104053-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0204	0.0209	2.18%	20%	----
<b>Anions and Nutrients (QC Lot: 292428)</b>											
CG2104060-002	EV_ER1gWS_WG_2021_Q3_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0030	0.0022	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 292648)</b>											
CG2104052-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.184	0.179	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 292649)</b>											
CG2104052-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	910	909	0.130%	20%	----
<b>Anions and Nutrients (QC Lot: 292650)</b>											
CG2104052-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 292651)</b>											
CG2104052-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	3.00	2.86	0.14	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 292652)</b>											
CG2104052-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	4.63	4.64	0.0194%	20%	----
<b>Anions and Nutrients (QC Lot: 292653)</b>											
CG2104052-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0478	0.0412	0.0066	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 292654)</b>											
CG2104060-005	EV_MW_MC10C_WG_202_1_Q3_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 292655)</b>											
CG2104060-005	EV_MW_MC10C_WG_202_1_Q3_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 292656)</b>											
CG2104060-005	EV_MW_MC10C_WG_202_1_Q3_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 292657)</b>											
CG2104060-005	EV_MW_MC10C_WG_202_1_Q3_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 292658)</b>											
CG2104060-005	EV_MW_MC10C_WG_202_1_Q3_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 292659)</b>											
CG2104060-005	EV_MW_MC10C_WG_202_1_Q3_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 293786)</b>											
CG2104060-001	EV_ER1gWD_WG_2021_Q3_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 296941)</b>											
CG2104057-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.271	# 0.137	0.134	Diff <2x LOR	TKND
<b>Anions and Nutrients (QC Lot: 301493)</b>											
CG2104058-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0095	0.0076	0.0019	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 298732)</b>											
CG2104048-013	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 298733)</b>											
CG2104060-005	EV_MW_MC10C_WG_202_1_Q3_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 298740)</b>											
CG2104058-005	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.40	1.56	0.16	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 297288)</b>											
CG2104060-001	EV_ER1gWD_WG_2021_Q3_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00042	0.00042	0.000004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 297289)</b>											
CG2104060-001	EV_ER1gWD_WG_2021_Q3_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0053	0.0046	0.0007	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 297289) - continued</b>											
CG2104060-001	EV_ER1gwd_WG_2021_Q3_NP	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	0.00010	0.000002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00010	0.000002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0796	0.0800	0.434%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0060 µg/L	0.0000058	0.0000002	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	56.8	58.5	3.02%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00030	0.00031	0.000008	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0069	0.0069	0.00007	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	17.8	17.8	0.211%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00036	0.00039	0.00003	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00151	0.00152	0.890%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.669	0.674	0.684%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	3.18 µg/L	0.00322	1.43%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.22	3.17	1.48%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.98	2.93	1.96%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.180	0.183	1.60%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	9.98	10.2	2.07%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00128	0.00129	0.315%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0030	0.0031	0.0001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 297697)</b>											
CG2104060-001	EV_ER1gwd_WG_2021_Q3_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Qualifiers

<i>Qualifier</i>	<i>Description</i>
TKND	<i>TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.</i>



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 291952)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 295514)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 295516)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 298049)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 299335)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 299337)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 291926)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 292427)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 292428)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.200	----
<b>Anions and Nutrients (QCLot: 292648)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 292649)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 292650)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 292651)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 292652)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 292653)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 292654)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 292654) - continued</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 292655)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 292656)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 292657)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 292658)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 292659)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 293786)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 296941)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 301493)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 298732)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 298733)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 298740)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 297288)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 297289)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 297289) - continued</b>						
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 297697)</b>						
mercury, dissolved	7439-97-6	E509	0.00005	mg/L	<0.000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 291952)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.5	85.0	115	----
<b>Physical Tests (QCLot: 295514)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.1	85.0	115	----
<b>Physical Tests (QCLot: 295516)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.9	85.0	115	----
<b>Physical Tests (QCLot: 297939)</b>									
oxidation-reduction potential [ORP]	---	E125	----	mV	220 mV	101	95.4	104	----
<b>Physical Tests (QCLot: 298049)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	104	85.0	115	----
<b>Physical Tests (QCLot: 299335)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	102	85.0	115	----
<b>Physical Tests (QCLot: 299336)</b>									
pH	---	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 299337)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.6	90.0	110	----
<b>Anions and Nutrients (QCLot: 291926)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	106	80.0	120	----
<b>Anions and Nutrients (QCLot: 292427)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	94.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 292428)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 292648)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.8	90.0	110	----
<b>Anions and Nutrients (QCLot: 292649)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 292650)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 292651)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 292652)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 292653)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 292653) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	105	90.0	110	----
<b>Anions and Nutrients (QCLot: 292654)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.8	90.0	110	----
<b>Anions and Nutrients (QCLot: 292655)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 292656)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	107	85.0	115	----
<b>Anions and Nutrients (QCLot: 292657)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 292658)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 292659)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	107	90.0	110	----
<b>Anions and Nutrients (QCLot: 293786)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	96.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 296941)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 301493)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 298732)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	100	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 298733)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.9	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 298740)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Dissolved Metals (QCLot: 297288)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	94.8	80.0	120	----
<b>Dissolved Metals (QCLot: 297289)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	94.8	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	95.8	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	95.5	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	88.8	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.2	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	85.2	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 297289) - continued</b>									
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	93.5	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	91.3	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	94.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	95.3	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	94.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	85.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	91.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	94.8	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.1	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.5	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.8	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.1	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	94.8	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.5	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	93.6	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	102	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	93.9	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	90.9	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	96.5	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	92.0	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.4	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 291926)</b>										
CG2104057-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0559 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 292427)</b>										
CG2104053-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0624 mg/L	0.0676 mg/L	92.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 292428)</b>										
CG2104060-003	EV_MW_MC10A_WG_2021_Q3_NP	phosphorus, total	7723-14-0	E372-U	0.0740 mg/L	0.0676 mg/L	109	70.0	130	----
<b>Anions and Nutrients (QCLot: 292648)</b>										
CG2104060-004	EV_MW_MC10B_WG_2021_Q3_NP	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 292649)</b>										
CG2104060-004	EV_MW_MC10B_WG_2021_Q3_NP	sulfate (as SO4)	14808-79-8	E235.SO4	117 mg/L	100 mg/L	117	75.0	125	----
<b>Anions and Nutrients (QCLot: 292650)</b>										
CG2104060-004	EV_MW_MC10B_WG_2021_Q3_NP	bromide	24959-67-9	E235.Br-L	0.521 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 292651)</b>										
CG2104060-004	EV_MW_MC10B_WG_2021_Q3_NP	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 292652)</b>										
CG2104060-004	EV_MW_MC10B_WG_2021_Q3_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.64 mg/L	2.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 292653)</b>										
CG2104060-004	EV_MW_MC10B_WG_2021_Q3_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.529 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 293786)</b>										
CG2104060-002	EV_ER1gwS_WG_2021_Q3_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0547 mg/L	0.0676 mg/L	80.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 296941)</b>										
CG2104057-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.95 mg/L	2.5 mg/L	78.2	70.0	130	MSTN
<b>Anions and Nutrients (QCLot: 301493)</b>										
CG2104058-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 298732)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Organic / Inorganic Carbon (QCLot: 298732) - continued</b>										
CG2104048-013	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.5 mg/L	23.9 mg/L	103	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 298733)</b>										
CG2104060-005	EV_MW_MC10C_WG_2021_Q3_NP	carbon, dissolved organic [DOC]	----	E358-L	22.2 mg/L	23.9 mg/L	92.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 298740)</b>										
CG2104058-005	Anonymous	carbon, total organic [TOC]	----	E355-L	24.5 mg/L	23.9 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 297288)</b>										
CG2104060-002	EV_ER1gws_WG_2021_Q3_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0354 mg/L	0.04 mg/L	88.4	70.0	130	----
<b>Dissolved Metals (QCLot: 297289)</b>										
CG2104060-002	EV_ER1gws_WG_2021_Q3_NP	aluminum, dissolved	7429-90-5	E421	0.183 mg/L	0.2 mg/L	91.4	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0183 mg/L	0.02 mg/L	91.6	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0358 mg/L	0.04 mg/L	89.4	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00838 mg/L	0.01 mg/L	83.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	87.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00363 mg/L	0.004 mg/L	90.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0175 mg/L	0.02 mg/L	87.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0172 mg/L	0.02 mg/L	85.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.81 mg/L	2 mg/L	90.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0181 mg/L	0.02 mg/L	90.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0901 mg/L	0.1 mg/L	90.1	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0174 mg/L	0.02 mg/L	86.9	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0357 mg/L	0.04 mg/L	89.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.63 mg/L	4 mg/L	90.8	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0385 mg/L	0.04 mg/L	96.2	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.83 mg/L	10 mg/L	88.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00368 mg/L	0.004 mg/L	92.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00361 mg/L	0.004 mg/L	90.2	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 297289) - continued</b>										
CG2104060-002	EV_ER1gWS_WG_2021_Q3_NP	tin, dissolved	7440-31-5	E421	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0357 mg/L	0.04 mg/L	89.2	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00373 mg/L	0.004 mg/L	93.2	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0938 mg/L	0.1 mg/L	93.8	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.347 mg/L	0.4 mg/L	86.8	70.0	130	----
<b>Dissolved Metals (QCLot: 297697)</b>										
CG2104060-002	EV_ER1gWS_WG_2021_Q3_NP	mercury, dissolved	7439-97-6	E509	0.0000959 mg/L	0.0001 mg/L	95.9	70.0	130	----

### Qualifiers

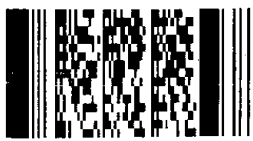
Qualifier	Description
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.

# Teck

**COC ID:** 20210912Q3GW      **TURNAROUND TIME:**      **RUSH:**

PROJECT/CLIENT INFO		LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary		Report Format / Distribution			Excel	PDF	EDD
Job Description	Q3 Ground Water Sampling	Lab Contact	Lyudmyla Shvets		Email 1:	chris.emslie@teck.com		X	X	X
Project Manager	Jennifer Dane	Email	lyudmyla.shvets@alsglobal.com		Email 2:	colby.bracken@teck.com		X	X	X
Email	jennifer.dane@teck.com	Address	2559 29 Street NE		Email 3:			X	X	X
Address	RR#1 HWY# 3				Email 4:	Teck.Lab.Results@sharepoint.teck.com		X	X	X
					Email 5:	teckcoal@equisonline.com				X
					Email 6:	Jennifer.Dane@teck.com		X	X	X
		Province	BC	City	Calgary	Province	AB			
		Country	Canada	Postal Code	T1Y 7B5	Country	Canada			
		Phone Number	403-407-1800		PO number	VPO00741597				

Environmental Division  
Calgary  
Work Order Reference  
**CG2104060**



Telephone: +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PHC	No	Yes	Yes	No	No	No	No	Yes	Yes
								ANALYSIS									
EV_ER1gwD_WG_2021_Q3_NP	EV_ER1gwD	WG	N	09/12/21	13:05	G	5	TECKCOAL-ROUTINE-V A (E305.1)									
EV_ER1gwS_WG_2021_Q3_NP	EV_ER1gwS	WG	N	09/12/21	14:10	G	5	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL		Nitric	Sulphuric	Sulphuric					
EV_MW_MC10A_WG_2021_Q3_NP	EV_MW_MC10A	WG	N	09/12/21	13:06	G	5	TECKCOAL-MET-D-V A (SW6020)									
EV_MW_MC10B_WG_2021_Q3_NP	EV_MW_MC10B	WG	N	09/12/21	13:15	G	5	DOC (APHA 5310)									
EV_MW_MC10C_WG_2021_Q3_NP	EV_MW_MC10C	WG	N	09/12/21	12:00	G	5	Dissolved Phosphorus									
								TKN/TOC (APHA 4500-NORG)									
								Total Nitrogen for BC (NO2 and NO3)									
								T-ULTRA MERCURY (SW6020)									
								D-ULTRA MERCURY (SW6020)									
								EPH (C10-C32)									
								D-Mercury									
								D-CrVI									
							<b>Total</b>										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	C. Bracken/S. Hansen	September 12, 2021	<i>[Signature]</i>	9/14 1030

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	X	Sampler's Name	C. Bracken/S. Hansen	Mobile #
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time
Emergency (1 Business Day) - 100% surcharge				September 12, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS				





## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2104253**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : ----  
**Sampler** : CB/SH  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Sep-2021 08:50  
**Date Analysis Commenced** : 21-Sep-2021  
**Issue Date** : 11-Oct-2021 13:51

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kenson Lo		Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
IB:INT	Ion Balance Reviewed: Imbalance is due to interference or non-measured component.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SPR1B _WG_2021_Q3 _NP	EV_WF_SW_W G_2021_Q3_NP	----	----	----
Client sampling date / time					20-Sep-2021 13:42	20-Sep-2021 11:32	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104253-001 Result	CG2104253-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	2.1	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	206 <sup>HTD</sup>	141	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	252 <sup>HTD</sup>	172	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	206 <sup>HTD</sup>	141	----	----	----	
conductivity	----	E100	2.0	µS/cm	387 <sup>HTD</sup>	648	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	133	422	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	434	373	----	----	----	
pH	----	E108	0.10	pH units	8.14	8.13	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	285	415	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	203	47.0	----	----	----	
turbidity	----	E121	0.10	NTU	292	46.9	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.150	0.124	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.78	3.08	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	1.20	0.141	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.230	0.299	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.0080	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0020	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.151	0.0103	----	----	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0116	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	44.0	211	----	----	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.230	0.309	----	----	----	
<b>Organic / Inorganic Carbon</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SPR1B _WG_2021_Q3 _NP	EV_WF_SW_W G_2021_Q3_NP	----	----	----
Client sampling date / time					20-Sep-2021 13:42	20-Sep-2021 11:32	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104253-001 Result	CG2104253-002 Result	-----	-----	-----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	4.47	2.95	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	4.89	4.52	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.12	7.30	----	----	----	
cation sum	----	EC101	0.10	meq/L	4.69	8.84	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	91.6	121 <sup>IB.INT</sup>	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.38	9.54	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0912	<0.0010	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00071	0.00023	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0432	0.00757	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.142	<0.010	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0150 <sup>DLM</sup>	<0.0050	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	33.6	65.4	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00022	<0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	2.13	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.169	4.05	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000079	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0105	0.0177	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	12.0	62.9	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.113	0.331	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0234	0.00153	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00298	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.17	2.69	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.347	<0.050	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SPR1B _WG_2021_Q3 _NP	EV_WF_SW_W G_2021_Q3_NP	----	----	----
Client sampling date / time					20-Sep-2021 13:42	20-Sep-2021 11:32	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104253-001 Result	CG2104253-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.46	0.897	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	45.3	3.94	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.914	0.0729	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	16.8	90.5	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00021	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00213	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00147	0.00147	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0013	0.0012	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104253</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 21-Sep-2021 08:50
PO	: VPO00741597	Issue Date	: 11-Oct-2021 13:51
C-O-C number	: ----		
Sampler	: CB/SH		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1B_WG_2021_Q3_NP	E298	20-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	9 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q3_NP	E298	20-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	9 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_SPR1B_WG_2021_Q3_NP	E235.Br-L	20-Sep-2021	----	----	----		21-Sep-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_WF_SW_WG_2021_Q3_NP	E235.Br-L	20-Sep-2021	----	----	----		21-Sep-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_SPR1B_WG_2021_Q3_NP	E235.Cl-L	20-Sep-2021	----	----	----		21-Sep-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_WF_SW_WG_2021_Q3_NP	E235.Cl-L	20-Sep-2021	----	----	----		21-Sep-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> EV_MW_SPR1B_WG_2021_Q3_NP	E378-U	20-Sep-2021	----	----	----		21-Sep-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_WF_SW_WG_2021_Q3_NP	E378-U	20-Sep-2021	----	----	----		21-Sep-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_SPR1B_WG_2021_Q3_NP	E235.F	20-Sep-2021	----	----	----		21-Sep-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_WF_SW_WG_2021_Q3_NP	E235.F	20-Sep-2021	----	----	----		21-Sep-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_SPR1B_WG_2021_Q3_NP	E235.NO3-L	20-Sep-2021	----	----	----		21-Sep-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_WF_SW_WG_2021_Q3_NP	E235.NO3-L	20-Sep-2021	----	----	----		21-Sep-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_SPR1B_WG_2021_Q3_NP	E235.NO2-L	20-Sep-2021	----	----	----		21-Sep-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_WF_SW_WG_2021_Q3_NP	E235.NO2-L	20-Sep-2021	----	----	----		21-Sep-2021	3 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE EV_MW_SPR1B_WG_2021_Q3_NP	E235.SO4	20-Sep-2021	----	----	----		21-Sep-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE EV_WF_SW_WG_2021_Q3_NP	E235.SO4	20-Sep-2021	----	----	----		21-Sep-2021	28 days	1 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SPR1B_WG_2021_Q3_NP	E375-T	20-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_WF_SW_WG_2021_Q3_NP	E375-T	20-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1B_WG_2021_Q3_NP	E318	20-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q3_NP	E318	20-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1B_WG_2021_Q3_NP	E372-U	20-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q3_NP	E372-U	20-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SPR1B_WG_2021_Q3_NP	E421.Cr-L	20-Sep-2021	27-Sep-2021	----	----		27-Sep-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_WF_SW_WG_2021_Q3_NP	E421.Cr-L	20-Sep-2021	27-Sep-2021	----	----		27-Sep-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SPR1B_WG_2021_Q3_NP	E509	20-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_WF_SW_WG_2021_Q3_NP	E509	20-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SPR1B_WG_2021_Q3_NP	E421	20-Sep-2021	27-Sep-2021	----	----		27-Sep-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_WF_SW_WG_2021_Q3_NP	E421	20-Sep-2021	27-Sep-2021	----	----		27-Sep-2021	180 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SPR1B_WG_2021_Q3_NP	E358-L	20-Sep-2021	29-Sep-2021	----	----		30-Sep-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_WF_SW_WG_2021_Q3_NP	E358-L	20-Sep-2021	29-Sep-2021	----	----		30-Sep-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1B_WG_2021_Q3_NP	E355-L	20-Sep-2021	29-Sep-2021	----	----		30-Sep-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q3_NP	E355-L	20-Sep-2021	29-Sep-2021	----	----		30-Sep-2021	28 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_SPR1B_WG_2021_Q3_NP	E283	20-Sep-2021	----	----	----		30-Sep-2021	14 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q3_NP	E283	20-Sep-2021	----	----	----		30-Sep-2021	14 days	10 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_SPR1B_WG_2021_Q3_NP	E290	20-Sep-2021	----	----	----		29-Sep-2021	14 days	9 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_WF_SW_WG_2021_Q3_NP	E290	20-Sep-2021	----	----	----		29-Sep-2021	14 days	9 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_SPR1B_WG_2021_Q3_NP	E100	20-Sep-2021	----	----	----		29-Sep-2021	28 days	9 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_WF_SW_WG_2021_Q3_NP	E100	20-Sep-2021	----	----	----		29-Sep-2021	28 days	9 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_SPR1B_WG_2021_Q3_NP	E125	20-Sep-2021	----	----	----		28-Sep-2021	0.34 hrs	191 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_WF_SW_WG_2021_Q3_NP	E125	20-Sep-2021	----	----	----		28-Sep-2021	0.34 hrs	193 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_SPR1B_WG_2021_Q3_NP	E108	20-Sep-2021	----	----	----		29-Sep-2021	0.25 hrs	213 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_WF_SW_WG_2021_Q3_NP	E108	20-Sep-2021	----	----	----		29-Sep-2021	0.25 hrs	215 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_SPR1B_WG_2021_Q3_NP	E162	20-Sep-2021	----	----	----		27-Sep-2021	7 days	7 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_WF_SW_WG_2021_Q3_NP	E162	20-Sep-2021	----	----	----		27-Sep-2021	7 days	7 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE EV_MW_SPR1B_WG_2021_Q3_NP	E160-L	20-Sep-2021	----	----	----		27-Sep-2021	7 days	7 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE EV_WF_SW_WG_2021_Q3_NP	E160-L	20-Sep-2021	----	----	----		27-Sep-2021	7 days	7 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_MW_SPR1B_WG_2021_Q3_NP	E121	20-Sep-2021	----	----	----		23-Sep-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_WF_SW_WG_2021_Q3_NP	E121	20-Sep-2021	----	----	----		23-Sep-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	306983	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	305847	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	306154	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	298249	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	298250	1	20	5.0	5.0	✓
Conductivity in Water	E100	305849	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	303253	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	304269	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	303252	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	306495	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	298400	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	298248	2	33	6.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	298251	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	298252	1	20	5.0	5.0	✓
ORP by Electrode	E125	304904	1	20	5.0	5.0	✓
pH by Meter	E108	305848	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	298253	2	33	6.0	5.0	✓
TDS by Gravimetry	E162	303320	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	299077	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303686	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	306500	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300192	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	300354	2	28	7.1	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	306983	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	305847	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	306154	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	298249	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	298250	1	20	5.0	5.0	✓
Conductivity in Water	E100	305849	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	303253	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	304269	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	303252	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	306495	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	298400	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	298248	2	33	6.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	298251	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	298252	1	20	5.0	5.0	✓
ORP by Electrode	E125	304904	1	20	5.0	5.0	✓
pH by Meter	E108	305848	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	298253	2	33	6.0	5.0	✓
TDS by Gravimetry	E162	303320	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	299077	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303686	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	306500	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300192	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	303316	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	300354	2	28	7.1	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	306983	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	305847	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	306154	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	298249	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	298250	1	20	5.0	5.0	✓
Conductivity in Water	E100	305849	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	303253	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	304269	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	303252	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	306495	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	298400	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	298248	2	33	6.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	298251	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	298252	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	298253	2	33	6.0	5.0	✓
TDS by Gravimetry	E162	303320	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	299077	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303686	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	306500	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300192	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	303316	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	300354	2	28	7.1	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	306154	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	298249	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	298250	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	303253	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	304269	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	303252	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	306495	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	298400	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	298248	2	33	6.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	298251	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	298252	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	298253	2	33	6.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	299077	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303686	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	306500	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300192	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2104253**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : ----  
**Sampler** : CB/SH  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Sep-2021 08:50  
**Date Analysis Commenced** : 21-Sep-2021  
**Issue Date** : 11-Oct-2021 13:51

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kenson Lo		Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2104253  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 300354)</b>											
CG2104241-009	Anonymous	turbidity	----	E121	0.10	NTU	3.38	3.68	8.33%	15%	----
<b>Physical Tests (QC Lot: 300525)</b>											
CG2104253-001	EV_MW_SPR1B_WG_2021_Q3_NP	turbidity	----	E121	0.10	NTU	292	296	1.22%	15%	----
<b>Physical Tests (QC Lot: 303320)</b>											
CG2104240-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1240	1240	0.121%	20%	----
<b>Physical Tests (QC Lot: 303321)</b>											
CG2104253-002	EV_WF_SW_WG_2021_Q3_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	415	406	2.07%	20%	----
<b>Physical Tests (QC Lot: 304904)</b>											
CG2104241-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	415	414	0.0964%	15%	----
<b>Physical Tests (QC Lot: 305847)</b>											
CG2104244-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	249	248	0.242%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	28.6	29.2	2.08%	20%	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	277	277	0%	20%	----
<b>Physical Tests (QC Lot: 305848)</b>											
CG2104244-001	Anonymous	pH	----	E108	0.10	pH units	8.54	8.54	0.00%	4%	----
<b>Physical Tests (QC Lot: 305849)</b>											
CG2104244-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2690	2610	3.02%	10%	----
<b>Physical Tests (QC Lot: 306983)</b>											
CG2104241-013	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<10.0	8.0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 298248)</b>											
CG2104240-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.147	0.137	0.010	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 298249)</b>											
CG2104240-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 298250)</b>											
CG2104240-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	6.33	6.29	0.722%	20%	----
<b>Anions and Nutrients (QC Lot: 298251)</b>											
CG2104240-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	13.2	13.2	0.0128%	20%	----
<b>Anions and Nutrients (QC Lot: 298252)</b>											
CG2104240-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 298253)</b>											
CG2104240-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	644	640	0.591%	20%	----
<b>Anions and Nutrients (QC Lot: 298257)</b>											
CG2104253-002	EV_WF_SW_WG_2021_Q3_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.141	0.139	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 298258)</b>											
CG2104253-002	EV_WF_SW_WG_2021_Q3_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	211	211	0.0621%	20%	----
<b>Anions and Nutrients (QC Lot: 298400)</b>											
CG2104253-001	EV_MW_SPR1B_WG_2021_Q3_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 299077)</b>											
CG2104139-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 300192)</b>											
CG2104244-005	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0100	0.0094	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 303686)</b>											
CG2104251-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.503	0.477	0.026	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 306154)</b>											
CG2104241-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.210	0.201	4.13%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 306495)</b>											
CG2104244-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.02	1.96	0.06	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 306500)</b>											
CG2104240-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.68	1.56	0.12	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 303252)</b>											
CG2104241-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00019	0.00019	0.000003	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00034	0.00036	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0509	0.0513	0.792%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	0.014	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0225 µg/L	0.0000221	0.0000004	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	249	248	0.506%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.68 µg/L	0.00065	0.00003	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.044	0.044	0.00004	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0284	0.0276	2.82%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 303252) - continued</b>											
CG2104241-008	Anonymous	magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	146	146	0.144%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0407	0.0407	0.0780%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00161	0.00164	1.59%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00271	0.00276	0.00005	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.03	3.08	1.76%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	132 µg/L	0.132	0.0629%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.56	3.59	0.710%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.80	3.81	0.375%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.264	0.264	0.0392%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	268	269	0.442%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00887	0.00877	1.14%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0016	0.0017	0.0001	Diff <2x LOR	----		
<b>Dissolved Metals (QC Lot: 303253)</b>											
CG2104241-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 304269)</b>											
CG2104251-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	0.0000062	0.0000056	0.0000006	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 300354)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 300525)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 303316)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 303317)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 303320)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 303321)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 305847)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 305849)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 306983)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 298248)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 298249)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 298250)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 298251)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 298252)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 298253)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 298257)</b>						





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 298257) - continued</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 298258)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 298400)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 299077)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 300192)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 303686)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 306154)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 306495)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 306500)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 303252)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 303252) - continued</b>						
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 303253)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 304269)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 300354)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.2	85.0	115	---
<b>Physical Tests (QCLot: 300525)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.6	85.0	115	---
<b>Physical Tests (QCLot: 303316)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 303317)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 303320)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	94.7	85.0	115	---
<b>Physical Tests (QCLot: 303321)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 304904)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Physical Tests (QCLot: 305847)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 305848)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 305849)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	---
<b>Physical Tests (QCLot: 306983)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	101	85.0	115	---
<b>Anions and Nutrients (QCLot: 298248)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 298249)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	---
<b>Anions and Nutrients (QCLot: 298250)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 298251)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 298252)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 298253)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 298253) - continued</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 298257)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.3	90.0	110	----
<b>Anions and Nutrients (QCLot: 298258)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 298400)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	104	80.0	120	----
<b>Anions and Nutrients (QCLot: 299077)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.32 mg/L	96.3	80.0	120	----
<b>Anions and Nutrients (QCLot: 300192)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	93.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 303686)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 306154)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	104	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 306495)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	91.4	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 306500)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	97.4	80.0	120	----
<b>Dissolved Metals (QCLot: 303252)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100.0	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	116	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	108	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	107	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.3	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 303252) - continued</b>									
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	108	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	95.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	112	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 303253)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.9	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 298248)</b>										
CG2104240-005	Anonymous	fluoride	16984-48-8	E235.F	0.909 mg/L	1 mg/L	90.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 298249)</b>										
CG2104240-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.485 mg/L	0.5 mg/L	97.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 298250)</b>										
CG2104240-005	Anonymous	chloride	16887-00-6	E235.Cl-L	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 298251)</b>										
CG2104240-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.58 mg/L	2.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 298252)</b>										
CG2104240-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.498 mg/L	0.5 mg/L	99.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 298253)</b>										
CG2104240-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 298257)</b>										
CG2104254-001	Anonymous	fluoride	16984-48-8	E235.F	0.937 mg/L	1 mg/L	93.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 298258)</b>										
CG2104254-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 298400)</b>										
CG2104253-002	EV_WF_SW_WG_2021_Q3_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0556 mg/L	0.05 mg/L	111	70.0	130	----
<b>Anions and Nutrients (QCLot: 299077)</b>										
CG2104139-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0556 mg/L	0.0676 mg/L	82.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 300192)</b>										
CG2104244-006	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0658 mg/L	0.0676 mg/L	97.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 303686)</b>										
CG2104251-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	ND mg/L	2.5 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 306154)</b>										
CG2104241-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.101 mg/L	0.1 mg/L	101	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 306495)</b>										
CG2104244-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.1 mg/L	23.9 mg/L	101	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Organic / Inorganic Carbon (QCLot: 306500)</b>										
CG2104240-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.3 mg/L	23.9 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 303252)</b>										
CG2104241-009	Anonymous	aluminum, dissolved	7429-90-5	E421	0.213 mg/L	0.2 mg/L	106	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00883 mg/L	0.01 mg/L	88.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00396 mg/L	0.004 mg/L	99.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	92.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	97.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0446 mg/L	0.04 mg/L	111	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.40 mg/L	10 mg/L	94.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00390 mg/L	0.004 mg/L	97.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00379 mg/L	0.004 mg/L	94.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0438 mg/L	0.04 mg/L	110	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.370 mg/L	0.4 mg/L	92.6	70.0	130	----
<b>Dissolved Metals (QCLot: 303253)</b>										
CG2104241-009	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 304269)</b>										



Page : 14 of 14  
 Work Order : CG2104253  
 Client : Teck Coal Limited  
 Project : ELKVIEW OPERATIONS



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 304269) - continued</b>										
CG2104251-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000997 mg/L	0.0001 mg/L	99.7	70.0	130	----



COC ID:	20210920Q3GW	TURNAROUND TIME:		RUSH:							
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO						
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD			
Job Description	Q3 Ground Water Sampling	Lab Contact	Lyudmyla Shvets		Email 1:	chris.emsle@teck.com	X	X	X		
Project Manager	Jennifer Dane	Email	lyudmyla.shvets@alsglobal.com		Email 2:	colby.bracken@teck.com	X	X	X		
Email	jennifer.dane@teck.com	Address	2559 29 Street NE		Email 3:		X	X	X		
Address	RR#1 HWY#3				Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X		
					Email 5:	teckcoal@ecusonline.com			X		
Province	BC	City	Calgary		Province	AB	Email 6:	Jennifer.Dane@teck.com	X	X	X
Country	Canada	Postal Code	T1Y 7B5		Country	Canada					
		Phone Number	403-407-1800		PO number	VPO00741597					

Environmental Division  
Calgary

Work Order Reference  
**CG2104253**



Telephone : +1 403 407 1800

**E DETAILS** **ANALYSIS REQUESTED** Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED													
								TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Disolved Phosphorus	TKN/TOC (APIA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI		
EV_MW_SPRIB_WG_2021_Q3_NP	EV_MW_SPRIB	WG	N	09/20/21	13:42	G	5	1	1	1	1										
EV_WF_SW_WG_2021_Q3_NP	EV_WF_SW	WG	N	09/20/21	11:32	G	5	1	1	1	1										
							<b>Total</b>	<b>10</b>													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_WF_SW metals bottle is unpreserved as it arrived w/ sulfuric preservative instead of required nitric	C. Bracken/S. Hansen	September 20, 2021	<i>[Signature]</i>	9/20/21 <i>[Signature]</i>
SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	C. Bracken/S. Hansen	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	September 20, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2104503**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210928Q3GW  
**Sampler** : CB/SH  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-Sep-2021 08:55  
**Date Analysis Commenced** : 29-Sep-2021  
**Issue Date** : 15-Oct-2021 08:52

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dwayne Bennett	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_MW-03-04_	---	---	---	---
(Matrix: Water)						WG_2021_Q3_				
					Client sampling date / time	28-Sep-2021	---	---	---	---
						15:24				
Analyte	CAS Number	Method	LOR	Unit	CG2104503-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	4.1	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	2.0	mg/L	188	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	230	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	2.0	mg/L	188	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	538	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	264	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	451	---	---	---	---	---
pH	---	E108	0.10	pH units	8.07	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	341	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	---	---	---	---	---
turbidity	---	E121	0.10	NTU	0.20	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	8.06	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.121	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	<0.050 <sup>TKN</sup>	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.782	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0037	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0066 <sup>DLM</sup>	---	---	---	---	---
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0031	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	102	---	---	---	---	---
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.782	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_MW-03-04_ WG_2021_Q3_ NP	----	----	----	----
Client sampling date / time					28-Sep-2021 15:24	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104503-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.69 <sup>DTC.RRV</sup>	----	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50 <sup>DTC.RRV</sup>	----	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.17	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	5.57	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	90.3	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.11	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00012	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.154	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0134	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	66.8	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00014	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00021	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0106	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	23.6	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00017	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00101	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.08	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	5.93	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_MW-03-04_ WG_2021_Q3_ NP	----	----	----	----
Client sampling date / time					28-Sep-2021 15:24	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104503-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.72	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.08	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.178	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	32.6	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00112	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104503</b>	Page	: 1 of 11
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 29-Sep-2021 08:55
PO	: VPO00741597	Issue Date	: 15-Oct-2021 08:52
C-O-C number	: 20210928Q3GW		
Sampler	: CB/SH		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	23.6 % <sup>MSTN</sup>	70.0-130%	Recovery less than lower data quality objective

**Result Qualifiers**

Qualifier	Description
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q3_NP	E298	28-Sep-2021	07-Oct-2021	----	----		07-Oct-2021	28 days	9 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_MW-03-04_WG_2021_Q3_NP	E235.Br-L	28-Sep-2021	----	----	----		30-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_MW-03-04_WG_2021_Q3_NP	E235.Cl-L	28-Sep-2021	----	----	----		30-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> RG_MW-03-04_WG_2021_Q3_NP	E378-U	28-Sep-2021	----	----	----		30-Sep-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> RG_MW-03-04_WG_2021_Q3_NP	E235.F	28-Sep-2021	----	----	----		30-Sep-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_MW-03-04_WG_2021_Q3_NP	E235.NO3-L	28-Sep-2021	----	----	----		30-Sep-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_MW-03-04_WG_2021_Q3_NP	E235.NO2-L	28-Sep-2021	----	----	----		30-Sep-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> RG_MW-03-04_WG_2021_Q3_NP	E235.SO4	28-Sep-2021	----	----	----		30-Sep-2021	28 days	2 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q3_NP	E375-T	28-Sep-2021	07-Oct-2021	----	----		07-Oct-2021	28 days	9 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q3_NP	E318	28-Sep-2021	05-Oct-2021	----	----		06-Oct-2021	28 days	8 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q3_NP	E372-U	28-Sep-2021	05-Oct-2021	----	----		05-Oct-2021	28 days	7 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> RG_MW-03-04_WG_2021_Q3_NP	E421.Cr-L	28-Sep-2021	05-Oct-2021	----	----		06-Oct-2021	180 days	8 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> RG_MW-03-04_WG_2021_Q3_NP	E509	28-Sep-2021	05-Oct-2021	----	----		05-Oct-2021	28 days	7 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> RG_MW-03-04_WG_2021_Q3_NP	E421	28-Sep-2021	05-Oct-2021	----	----		06-Oct-2021	180 days	8 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q3_NP	E358-L	28-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	28 days	5 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q3_NP	E355-L	28-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	28 days	5 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Acidity by Titration</b>										
HDPE RG_MW-03-04_WG_2021_Q3_NP	E283	28-Sep-2021	----	----	----		03-Oct-2021	14 days	5 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE RG_MW-03-04_WG_2021_Q3_NP	E290	28-Sep-2021	----	----	----		03-Oct-2021	14 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_MW-03-04_WG_2021_Q3_NP	E100	28-Sep-2021	----	----	----		03-Oct-2021	28 days	5 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_MW-03-04_WG_2021_Q3_NP	E125	28-Sep-2021	----	----	----		04-Oct-2021	0.25 hrs	142 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE RG_MW-03-04_WG_2021_Q3_NP	E108	28-Sep-2021	----	----	----		03-Oct-2021	0.25 hrs	114 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE RG_MW-03-04_WG_2021_Q3_NP	E162	28-Sep-2021	----	----	----		01-Oct-2021	7 days	3 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE RG_MW-03-04_WG_2021_Q3_NP	E160-L	28-Sep-2021	----	----	----		01-Oct-2021	7 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE RG_MW-03-04_WG_2021_Q3_NP	E121	28-Sep-2021	----	----	----		01-Oct-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	309584	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	309562	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	313868	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	307124	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	307125	1	10	10.0	5.0	✓
Conductivity in Water	E100	309561	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	311558	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	310856	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	311557	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	309275	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	307254	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	307121	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	307126	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	307127	1	11	9.0	5.0	✓
ORP by Electrode	E125	310336	1	20	5.0	5.0	✓
pH by Meter	E108	309560	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	307119	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	308017	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	310925	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	310993	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	309281	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	309098	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	308363	1	11	9.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	309584	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	309562	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	313868	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	307124	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	307125	1	10	10.0	5.0	✓
Conductivity in Water	E100	309561	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	311558	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	310856	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	311557	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	309275	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	307254	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	307121	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	307126	1	11	9.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	307127	1	11	9.0	5.0	✓
ORP by Electrode	E125	310336	1	20	5.0	5.0	✓
pH by Meter	E108	309560	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	307119	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	308017	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	310925	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	310993	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	309281	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	309098	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	308011	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	308363	1	11	9.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	309584	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	309562	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	313868	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	307124	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	307125	1	10	10.0	5.0	✓
Conductivity in Water	E100	309561	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	311558	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	310856	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	311557	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	309275	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	307254	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	307121	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	307126	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	307127	1	11	9.0	5.0	✓
Sulfate in Water by IC	E235.SO4	307119	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	308017	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	310925	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	310993	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	309281	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	309098	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	308011	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	308363	1	11	9.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	313868	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	307124	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	307125	1	10	10.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	311558	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	310856	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	311557	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	309275	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	307254	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	307121	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	307126	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	307127	1	11	9.0	5.0	✓
Sulfate in Water by IC	E235.SO4	307119	1	16	6.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	310925	0	1	0.0	5.0	*
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	310993	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	309281	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	309098	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2104503**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20210928Q3GW  
**Sampler** : CB/SH  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-Sep-2021 08:55  
**Date Analysis Commenced** : 29-Sep-2021  
**Issue Date** : 15-Oct-2021 08:52

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dwayne Bennett	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
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Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2104503  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 308017)</b>											
CG2104499-005	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	265	267	0.564%	20%	----
<b>Physical Tests (QC Lot: 308363)</b>											
CG2104484-001	Anonymous	turbidity	----	E121	0.10	NTU	1.85	1.80	2.74%	15%	----
<b>Physical Tests (QC Lot: 309560)</b>											
CG2104407-014	Anonymous	pH	----	E108	0.10	pH units	7.90	7.91	0.126%	4%	----
<b>Physical Tests (QC Lot: 309561)</b>											
CG2104407-016	Anonymous	conductivity	----	E100	2.0	µS/cm	1860	1870	0.429%	10%	----
<b>Physical Tests (QC Lot: 309562)</b>											
CG2104407-016	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	503	501	0.359%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	503	501	0.359%	20%	----
<b>Physical Tests (QC Lot: 309584)</b>											
CG2104450-014	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 310336)</b>											
CG2104489-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	468	469	0.235%	15%	----
<b>Anions and Nutrients (QC Lot: 307119)</b>											
CG2104501-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	264	264	0.124%	20%	----
<b>Anions and Nutrients (QC Lot: 307121)</b>											
CG2104501-002	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.113	0.107	0.006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 307124)</b>											
CG2104503-001	RG_MW-03-04_WG_2021_Q3_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 307125)</b>											
CG2104503-001	RG_MW-03-04_WG_2021_Q3_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	8.06	8.04	0.247%	20%	----
<b>Anions and Nutrients (QC Lot: 307126)</b>											
CG2104503-001	RG_MW-03-04_WG_2021_Q3_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.782	0.785	0.345%	20%	----
<b>Anions and Nutrients (QC Lot: 307127)</b>											
CG2104503-001	RG_MW-03-04_WG_2021_Q3_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 307254)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 307254) - continued</b>											
CG2104499-007	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0016	0.0018	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 309098)</b>											
CG2104489-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0027	0.0024	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 310925)</b>											
CG2104503-001	RG_MW-03-04_WG_2021_Q3_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0031	0.0039	0.0008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 310993)</b>											
CG2104503-001	RG_MW-03-04_WG_2021_Q3_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 313868)</b>											
CG2104464-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0058	<0.0050	0.0008	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 309275)</b>											
CG2104339-025	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.05	1.04	0.02	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 309281)</b>											
CG2104295-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.73	1.87	0.14	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 310856)</b>											
CG2104503-001	RG_MW-03-04_WG_2021_Q3_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 311557)</b>											
CG2104498-006	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00174	0.00170	2.19%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00024	0.00023	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.190	0.201	5.57%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.050	0.051	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.149 µg/L	0.000143	3.61%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	200	207	3.80%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.33 µg/L	0.00031	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00020	0.00023	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.090	0.092	0.003	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.165	0.173	4.80%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	151	150	0.403%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0162	0.0168	3.51%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00887	0.00861	2.92%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0348	0.0352	1.20%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 311557) - continued</b>											
CG2104498-006	Anonymous	potassium, dissolved	7440-09-7	E421	0.050	mg/L	6.52	6.61	1.36%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	225 µg/L	0.223	1.08%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.14	2.02	6.09%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	8.50	8.83	3.77%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.02	1.01	0.830%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	281	271	3.65%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000040	0.000042	0.000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00993	0.00974	1.94%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0152	0.0149	2.20%	20%	----
<b>Dissolved Metals (QC Lot: 311558)</b>											
CG2104498-006	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 308011)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 308017)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 308363)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 309561)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 309562)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 309584)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 307119)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 307121)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 307124)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 307125)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 307126)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 307127)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 307254)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 309098)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 310925)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 310993)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 310993) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 313868)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 309275)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 309281)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 310856)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 311557)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---





Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 311557) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 311558)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 308011)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	109	85.0	115	----
<b>Physical Tests (QCLot: 308017)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	95.2	85.0	115	----
<b>Physical Tests (QCLot: 308363)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	99.0	85.0	115	----
<b>Physical Tests (QCLot: 309560)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 309561)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	98.6	90.0	110	----
<b>Physical Tests (QCLot: 309562)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	500 mg/L	97.9	85.0	115	----
<b>Physical Tests (QCLot: 309584)</b>									
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	50 mg/L	103	85.0	115	----
<b>Physical Tests (QCLot: 310336)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
<b>Anions and Nutrients (QCLot: 307119)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 307121)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.1	90.0	110	----
<b>Anions and Nutrients (QCLot: 307124)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	106	85.0	115	----
<b>Anions and Nutrients (QCLot: 307125)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 307126)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 307127)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 307254)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	100	80.0	120	----
<b>Anions and Nutrients (QCLot: 309098)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	108	80.0	120	----
<b>Anions and Nutrients (QCLot: 310925)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Anions and Nutrients (QCLot: 310925) - continued</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 310993)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	98.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 313868)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 309275)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 309281)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	93.2	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.0	80.0	120	----
<b>Dissolved Metals (QCLot: 311557)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.3	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.8	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100.0	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 311557) - continued</b>									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.3	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.2	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.8	80.0	120	----
<b>Dissolved Metals (QCLot: 311558)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 307119)</b>										
CG2104501-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 307121)</b>										
CG2104501-003	Anonymous	fluoride	16984-48-8	E235.F	0.869 mg/L	1 mg/L	86.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 307124)</b>										
CG2104504-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.538 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 307125)</b>										
CG2104504-003	Anonymous	chloride	16887-00-6	E235.Cl-L	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 307126)</b>										
CG2104504-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.61 mg/L	2.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 307127)</b>										
CG2104504-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.522 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 307254)</b>										
CG2104499-008	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0546 mg/L	0.05 mg/L	109	70.0	130	----
<b>Anions and Nutrients (QCLot: 309098)</b>										
CG2104489-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0765 mg/L	0.0676 mg/L	113	70.0	130	----
<b>Anions and Nutrients (QCLot: 310993)</b>										
CG2104535-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.591 mg/L	2.5 mg/L	23.6	70.0	130	MSTN
<b>Anions and Nutrients (QCLot: 313868)</b>										
CG2104535-014	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.108 mg/L	0.1 mg/L	108	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 309275)</b>										
CG2104339-025	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.6 mg/L	23.9 mg/L	94.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 309281)</b>										
CG2104295-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.6 mg/L	23.9 mg/L	99.0	70.0	130	----
<b>Dissolved Metals (QCLot: 310856)</b>										
FJ2100959-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000968 mg/L	0.0001 mg/L	96.8	70.0	130	----
<b>Dissolved Metals (QCLot: 311557)</b>										
CG2104498-007	Anonymous	aluminum, dissolved	7429-90-5	E421	0.204 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 311557) - continued</b>										
CG2104498-007	Anonymous	arsenic, dissolved	7440-38-2	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00861 mg/L	0.01 mg/L	86.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.097 mg/L	0.1 mg/L	97.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00394 mg/L	0.004 mg/L	98.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	95.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0199 mg/L	0.02 mg/L	99.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0361 mg/L	0.04 mg/L	90.2	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.10 mg/L	10 mg/L	91.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00385 mg/L	0.004 mg/L	96.3	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00372 mg/L	0.004 mg/L	93.1	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.380 mg/L	0.4 mg/L	94.9	70.0	130	----
<b>Dissolved Metals (QCLot: 311558)</b>										
CG2104498-007	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	----

**Qualifiers**

Qualifier	Description
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.



Teck

COC ID: 20210928Q3GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job# Elkview Operations  
Job Description Q3 Ground Water Sampling  
Project Manager Jennifer Dane  
Email jennifer.dane@teck.com  
Address RR#1 HWY# 3

Lab Name ALS Calgary  
Lab Contact Lyudmyla Shvets  
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Email 1: chris.emslie@teck.com	X	X	X
Email 2: colby.bracken@teck.com	X	X	X
Email 3:	X	X	X
Email 4: Teck.Lab.Results@sharepoint.teck.com	X	X	X
Email 5: teckcoal@equisonline.com			X
Email 6: Jennifer.Dane@teck.com	X	X	X

Environmental Division  
Calgary

1 Province BC City Calgary Province AB  
Country Canada Postal Code T1Y 7B5 Country Canada  
5-5289 Phone Number 403-407-1800

PO number VPO00741597

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered: F: Field, L: Lab, FL: Field & Lab, N: None

Work Order Reference  
CG2104503



Telephone : + 1 403 407 1800

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.
RG_MW-03-04_WG_2021_Q3_NP	RG_MW-03-04	WG	N	09/28/21	15:24	G	5
Total							5

FIL	No		Yes		No		No		No		Yes		Yes	
	PRESERV.		Nitric	Sulphuric	Sulphuric		NO	Sodium Bisulphate	HCl	NaOH				
ANALYSIS	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI		
	1		1	1		1					1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

C. Bracken/S. Hansen

September 28, 2021

*[Signature]*

28/09 8:55

SERVICE REQUEST (rush - subject to availability)

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

C. Bracken/S. Hansen

Mobile #

Sampler's Signature

*[Signature]*

Date/Time

September 28, 2021

(29)

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Trueblock® Étiquettes d'expédition Mesque tout



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105311**  
**Client** : **Teck Coal Limited**  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : Regional Effects Program  
**PO** : VPO00762695  
**C-O-C number** : COC\_02-20\_2021\_Q4  
**Sampler** : EW  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-Oct-2021 08:40  
**Date Analysis Commenced** : 29-Oct-2021  
**Issue Date** : 10-Nov-2021 08:41

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_DW-02-20_	----	----	----	----
(Matrix: Water)						WP_2021_10_2				
					Client sampling date / time	28-Oct-2021	---	---	---	---
						09:45				
Analyte	CAS Number	Method	LOR	Unit	CG2105311-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	3.2	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	182	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	222	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	182	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	457	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	236	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	453	---	---	---	---	---
pH	---	E108	0.10	pH units	7.99	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	268	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	---	---	---	---	---
turbidity	---	E121	0.10	NTU	0.48	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.80	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.142	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.191 <sup>TKN</sup>	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.52	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0017	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0024	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	63.1	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	<0.50	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	<0.50	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-02-20_	----	----	----	----
					WP_2021_10_2					
					8_NP					
					Client sampling date / time	28-Oct-2021	----	----	----	----
					09:45					
Analyte	CAS Number	Method	LOR	Unit	CG2105311-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.19	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	4.85	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.4	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	3.39	----	----	----	----	----
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	----	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0822	----	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	----	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	63.3	----	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00022	----	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00226	----	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	----	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000051	----	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0074	----	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	17.7	----	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00111	----	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00107	----	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	0.605	----	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	11.1	----	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	2.51	----	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	2.42	----	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.218	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-02-20_ WP_2021_10_2 8_NP	----	----	----	----
Client sampling date / time					28-Oct-2021 09:45	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105311-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	24.0	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00108	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0047	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0889	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0062	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	63.0	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00018	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00226	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.032 <sup>DTC</sup>	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000060	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0071	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	19.2	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00104	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00114	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.634	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	12.2	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.10	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-02-20_	----	----	----	----
					WP_2021_10_2					
					8_NP					
					Client sampling date / time	28-Oct-2021	----	----	----	----
					09:45					
Analyte	CAS Number	Method	LOR	Unit	CG2105311-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.45	----	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.235	----	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	22.3	----	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00107	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0055	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105311</b>	Page	: 1 of 10
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: Regional Effects Program	Date Samples Received	: 29-Oct-2021 08:40
PO	: VPO00762695	Issue Date	: 10-Nov-2021 08:42
C-O-C number	: COC_02-20_2021_Q4		
Sampler	: EW		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-20_WP_2021_10_28_NP	E298	28-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_2021_10_28_NP	E235.Br-L	28-Oct-2021	----	----	----		29-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_2021_10_28_NP	E235.Cl-L	28-Oct-2021	----	----	----		29-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_2021_10_28_NP	E378-U	28-Oct-2021	----	----	----		29-Oct-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> RG_DW-02-20_WP_2021_10_28_NP	E235.F	28-Oct-2021	----	----	----		29-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_2021_10_28_NP	E235.NO3-L	28-Oct-2021	----	----	----		29-Oct-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_DW-02-20_WP_2021_10_28_NP	E235.NO2-L	28-Oct-2021	----	----	----		29-Oct-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> RG_DW-02-20_WP_2021_10_28_NP	E235.SO4	28-Oct-2021	----	----	----		29-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-20_WP_2021_10_28_NP	E318	28-Oct-2021	03-Nov-2021	----	----		08-Nov-2021	28 days	11 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-20_WP_2021_10_28_NP	E372-U	28-Oct-2021	05-Nov-2021	----	----		05-Nov-2021	28 days	8 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> RG_DW-02-20_WP_2021_10_28_NP	E421.Cr-L	28-Oct-2021	02-Nov-2021	----	----		04-Nov-2021	180 days	7 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> RG_DW-02-20_WP_2021_10_28_NP	E421	28-Oct-2021	02-Nov-2021	----	----		04-Nov-2021	180 days	7 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-02-20_WP_2021_10_28_NP	E358-L	28-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	6 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-02-20_WP_2021_10_28_NP	E355-L	28-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	6 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> RG_DW-02-20_WP_2021_10_28_NP	E283	28-Oct-2021	----	----	----		02-Nov-2021	14 days	5 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> RG_DW-02-20_WP_2021_10_28_NP	E290	28-Oct-2021	----	----	----		02-Nov-2021	14 days	5 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_DW-02-20_WP_2021_10_28_NP	E100	28-Oct-2021	----	----	----		02-Nov-2021	28 days	5 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_DW-02-20_WP_2021_10_28_NP	E125	28-Oct-2021	----	----	----		04-Nov-2021	0.25 hrs	169 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE RG_DW-02-20_WP_2021_10_28_NP	E108	28-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	127 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE RG_DW-02-20_WP_2021_10_28_NP	E162	28-Oct-2021	----	----	----		03-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] RG_DW-02-20_WP_2021_10_28_NP	E160-L	28-Oct-2021	----	----	----		03-Nov-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE RG_DW-02-20_WP_2021_10_28_NP	E121	28-Oct-2021	----	----	----		30-Oct-2021	3 days	2 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
HDPE total (nitric acid) RG_DW-02-20_WP_2021_10_28_NP	E420.Cr-L	28-Oct-2021	----	----	----		05-Nov-2021	180 days	8 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
HDPE total (nitric acid) RG_DW-02-20_WP_2021_10_28_NP	E420	28-Oct-2021	----	----	----		05-Nov-2021	180 days	8 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	335587	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	336122	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	337893	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332985	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332986	1	4	25.0	5.0	✓
Conductivity in Water	E100	336121	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335812	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	335811	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	337108	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	333303	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	332993	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	332987	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	332988	1	4	25.0	5.0	✓
ORP by Electrode	E125	337757	1	20	5.0	5.0	✓
pH by Meter	E108	336120	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	332992	1	3	33.3	5.0	✓
TDS by Gravimetry	E162	336452	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	337462	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	337054	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	337463	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	337110	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	337515	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	333793	1	12	8.3	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	335587	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	336122	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	337893	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332985	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332986	1	4	25.0	5.0	✓
Conductivity in Water	E100	336121	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335812	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	335811	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	337108	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	333303	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	332993	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	332987	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	332988	1	4	25.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	337757	1	20	5.0	5.0	✓
pH by Meter	E108	336120	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	332992	1	3	33.3	5.0	✓
TDS by Gravimetry	E162	336452	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	337462	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	337054	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	337463	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	337110	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	337515	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	336448	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	333793	1	12	8.3	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	335587	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	336122	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	337893	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332985	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332986	1	4	25.0	5.0	✓
Conductivity in Water	E100	336121	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335812	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	335811	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	337108	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	333303	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	332993	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	332987	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	332988	1	4	25.0	5.0	✓
Sulfate in Water by IC	E235.SO4	332992	1	3	33.3	5.0	✓
TDS by Gravimetry	E162	336452	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	337462	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	337054	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	337463	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	337110	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	337515	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	336448	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	333793	1	12	8.3	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	337893	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332985	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332986	1	4	25.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335812	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	335811	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	337108	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	333303	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	332993	1	3	33.3	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	332987	1	4	25.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	332988	1	4	25.0	5.0	✔
Sulfate in Water by IC	E235.SO4	332992	1	3	33.3	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	337462	1	19	5.2	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	337054	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	337463	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	337110	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	337515	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2105311**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
           Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : Regional Effects Program  
**PO** : VPO00762695  
**C-O-C number** : COC\_02-20\_2021\_Q4  
**Sampler** : EW  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
           Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-Oct-2021 08:40  
**Date Analysis Commenced** : 29-Oct-2021  
**Issue Date** : 10-Nov-2021 08:42

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 333793)</b>											
CG2105202-001	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 335587)</b>											
CG2105305-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	4.9	4.7	0.2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 336120)</b>											
CG2105305-001	Anonymous	pH	----	E108	0.10	pH units	7.85	7.86	0.127%	4%	----
<b>Physical Tests (QC Lot: 336121)</b>											
CG2105305-001	Anonymous	conductivity	----	E100	2.0	µS/cm	500	499	0.200%	10%	----
<b>Physical Tests (QC Lot: 336122)</b>											
CG2105305-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	263	258	2.26%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	263	258	2.26%	20%	----
<b>Physical Tests (QC Lot: 336452)</b>											
CG2105305-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	274	272	0.733%	20%	----
<b>Physical Tests (QC Lot: 337757)</b>											
CG2105305-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	457	450	1.46%	15%	----
<b>Anions and Nutrients (QC Lot: 332985)</b>											
CG2105278-012	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	0.490	0.494	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332986)</b>											
CG2105278-012	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	6.29	6.25	0.766%	20%	----
<b>Anions and Nutrients (QC Lot: 332987)</b>											
CG2105278-012	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.559	0.548	1.84%	20%	----
<b>Anions and Nutrients (QC Lot: 332988)</b>											
CG2105278-012	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0056	0.0054	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332992)</b>											
CG2105294-011	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	472	471	0.289%	20%	----
<b>Anions and Nutrients (QC Lot: 332993)</b>											
CG2105294-011	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 333303)</b>											
CG2105226-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0010	0.00002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337054)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 337054) - continued</b>											
CG2105305-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337515)</b>											
CG2105305-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337893)</b>											
CG2105280-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 337108)</b>											
CG2105305-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 337110)</b>											
CG2105305-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 337462)</b>											
CG2105305-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 337463)</b>											
CG2105305-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00050	0.00051	0.000008	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.124	0.120	3.29%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	72.7	71.5	1.70%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.16 µg/L	0.00016	0.000003	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.203	0.203	0.301%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0050	0.0049	0.0001	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	20.0	19.4	2.98%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0745	0.0745	0.00110%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00200	0.00200	0.134%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.810	0.791	2.34%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.20	4.20	0.205%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	5.28	5.28	0.0609%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 337463) - continued</b>											
CG2105305-001	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	0.133	0.137	3.18%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	6.65	6.65	0.0162%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00109	0.00106	3.64%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 335811)</b>											
CG2105310-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00058	0.00057	0.00002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00087	0.00089	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0230	0.0263	13.7%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.021	0.020	0.0006	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0102 µg/L	0.0000112	0.0000010	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	269	264	1.86%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	2.87 µg/L	0.00293	2.27%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.339	0.352	3.74%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0383	0.0379	1.02%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	153	149	2.65%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.177	0.181	2.23%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00295	0.00294	0.380%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0119	0.0119	0.235%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.37	4.44	1.54%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	41.2 µg/L	0.0412	0.0248%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.20	3.18	0.729%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.94	4.81	2.55%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.329	0.328	0.279%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	284	277	2.21%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 335811) - continued</b>											
CG2105310-008	Anonymous	tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00952	0.00972	2.06%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0034	0.0024	0.0010	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 335812)</b>											
CG2105310-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 333793)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 335587)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 336121)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 336122)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 336448)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 336452)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 332985)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 332986)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 332987)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 332988)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 332992)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 332993)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 333303)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 337054)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 337515)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 337893)</b>						





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 337893) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 337108)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 337110)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 337462)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 337463)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 337463) - continued</b>						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 335811)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 335812)</b>						

Page : 10 of 17  
Work Order : CG2105311  
Client : Teck Coal Limited  
Project : Regional Effects Program



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 335812) - continued</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 333793)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	---
<b>Physical Tests (QCLot: 335587)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 336120)</b>									
pH	---	E108	---	pH units	7 pH units	99.6	98.6	101	---
<b>Physical Tests (QCLot: 336121)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 336122)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 336448)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.5	85.0	115	---
<b>Physical Tests (QCLot: 336452)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.8	85.0	115	---
<b>Physical Tests (QCLot: 337757)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 332985)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	107	85.0	115	---
<b>Anions and Nutrients (QCLot: 332986)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	110	90.0	110	---
<b>Anions and Nutrients (QCLot: 332987)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 332988)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 332992)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	108	90.0	110	---
<b>Anions and Nutrients (QCLot: 332993)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 333303)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 337054)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	123	75.0	125	---
<b>Anions and Nutrients (QCLot: 337515)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 337515) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 337893)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	95.5	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 337108)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 337110)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Total Metals (QCLot: 337462)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Total Metals (QCLot: 337463)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	106	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	95.8	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	85.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.9	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	92.5	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	99.4	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	90.1	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	110	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 337463) - continued</b>									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, total	7440-31-5	E420	0.00001	mg/L	0.5 mg/L	96.2	80.0	120	----
titanium, total	7440-32-6	E420	0.00003	mg/L	0.25 mg/L	90.9	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
vanadium, total	7440-62-2	E420	0.00005	mg/L	0.5 mg/L	109	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 335811)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.00001	mg/L	1 mg/L	98.4	80.0	120	----
barium, dissolved	7440-39-3	E421	0.00001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	85.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.00001	mg/L	0.25 mg/L	98.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.00002	mg/L	0.25 mg/L	95.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.00001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.5	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.4	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.7	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.3	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.00002	mg/L	0.25 mg/L	96.1	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.9	80.0	120	----
tin, dissolved	7440-31-5	E421	0.00001	mg/L	0.5 mg/L	93.9	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.00003	mg/L	0.25 mg/L	98.0	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 335811) - continued</b>									
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	95.3	80.0	120	----
<b>Dissolved Metals (QCLot: 335812)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 332985)</b>										
CG2105278-013	Anonymous	bromide	24959-67-9	E235.Br-L	0.486 mg/L	0.5 mg/L	97.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 332986)</b>										
CG2105278-013	Anonymous	chloride	16887-00-6	E235.Cl-L	99.4 mg/L	100 mg/L	99.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 332987)</b>										
CG2105278-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.52 mg/L	2.5 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 332988)</b>										
CG2105278-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.487 mg/L	0.5 mg/L	97.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 332992)</b>										
CG2105294-012	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 332993)</b>										
CG2105294-012	Anonymous	fluoride	16984-48-8	E235.F	0.894 mg/L	1 mg/L	89.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 333303)</b>										
CG2105226-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0539 mg/L	0.05 mg/L	108	70.0	130	----
<b>Anions and Nutrients (QCLot: 337054)</b>										
CG2105310-012	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.68 mg/L	2.5 mg/L	107	70.0	130	----
<b>Anions and Nutrients (QCLot: 337515)</b>										
CG2105309-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0597 mg/L	0.0676 mg/L	88.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 337893)</b>										
CG2105280-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 337108)</b>										
CG2105305-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	26.4 mg/L	23.9 mg/L	110	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 337110)</b>										
CG2105305-001	Anonymous	carbon, total organic [TOC]	----	E355-L	27.9 mg/L	23.9 mg/L	117	70.0	130	----
<b>Total Metals (QCLot: 337462)</b>										
CG2105310-012	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0373 mg/L	0.04 mg/L	93.3	70.0	130	----
<b>Total Metals (QCLot: 337463)</b>										
CG2105310-012	Anonymous	aluminum, total	7429-90-5	E420	0.188 mg/L	0.2 mg/L	94.1	70.0	130	----
		antimony, total	7440-36-0	E420	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 337463) - continued</b>										
CG2105310-012	Anonymous	arsenic, total	7440-38-2	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00980 mg/L	0.01 mg/L	98.0	70.0	130	----
		boron, total	7440-42-8	E420	0.084 mg/L	0.1 mg/L	83.5	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00360 mg/L	0.004 mg/L	90.1	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0180 mg/L	0.02 mg/L	90.2	70.0	130	----
		copper, total	7440-50-8	E420	0.0180 mg/L	0.02 mg/L	90.1	70.0	130	----
		iron, total	7439-89-6	E420	1.98 mg/L	2 mg/L	99.1	70.0	130	----
		lead, total	7439-92-1	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.65 mg/L	10 mg/L	96.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00357 mg/L	0.004 mg/L	89.3	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00362 mg/L	0.004 mg/L	90.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0183 mg/L	0.02 mg/L	91.3	70.0	130	----
		titanium, total	7440-32-6	E420	0.0377 mg/L	0.04 mg/L	94.2	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.362 mg/L	0.4 mg/L	90.5	70.0	130	----
<b>Dissolved Metals (QCLot: 335811)</b>										
CG2105310-009	Anonymous	aluminum, dissolved	7429-90-5	E421	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0215 mg/L	0.02 mg/L	108	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0367 mg/L	0.04 mg/L	91.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00844 mg/L	0.01 mg/L	84.4	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 335811) - continued</b>										
CG2105310-009	Anonymous	boron, dissolved	7440-42-8	E421	0.086 mg/L	0.1 mg/L	85.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0183 mg/L	0.02 mg/L	91.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.93 mg/L	2 mg/L	96.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0172 mg/L	0.02 mg/L	85.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0931 mg/L	0.1 mg/L	93.1	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0213 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0477 mg/L	0.04 mg/L	119	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.21 mg/L	10 mg/L	92.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00358 mg/L	0.004 mg/L	89.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.372 mg/L	0.4 mg/L	92.9	70.0	130	----
<b>Dissolved Metals (QCLot: 335812)</b>										
CG2105310-009	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----

COC ID: **COC\_02-20\_2021\_Q4**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	evan.warner@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
								Email 4:	teck.lab.results@sharepoint.te	X	X	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	VOB 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	VPO00762695			

SAMPLE DETAILS							ANALYSIS REQUESTED														
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA									
RG_DW-02-20_WP_2021_10_28_NP	RG_DW-02-20	WP	N	28-Oct-21	0945	G	5	1	1	1	1	1									

Environmental Division  
Calgary  
Work Order Reference  
**CG2105311**



Telephone: -1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
				10/29/21

SERVICE REQUEST (rush - subject to availability)	SAMPLER'S NAME	MOBILE #
Regular (default) X	Evan Warner	250-433-6399
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		
	SAMPLER'S SIGNATURE	DATE/TIME
		October 28, 2021

**1400**

*W*



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105201**  
**Client** : **Teck Coal Limited**  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_Sparwood\_Muni\_2021\_Q4  
**Sampler** : EW  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Oct-2021 08:40  
**Date Analysis Commenced** : 26-Oct-2021  
**Issue Date** : 16-Nov-2021 08:06

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

SAMPLE 002 IS LABELED AS RG\_DW-04-09



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					RG_DW-03-02_	RG_DW-03-03_	RG_DW-03-04_	RG_DW-03-10_	----
					WP_2021-10-2	WP_2021-10-2	WP_2021-10-2	WP_2021-10-2	
					5_NP	5_NP	5_NP	5_NP	
Client sampling date / time					25-Oct-2021 14:10	25-Oct-2021 14:40	25-Oct-2021 13:40	25-Oct-2021 15:15	----
Analyte	CAS Number	Method	LOR	Unit	CG2105201-001	CG2105201-002	CG2105201-003	CG2105201-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	2.6	2.8	3.4	4.3	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	194	178	185	232	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	236	218	226	283	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	194	178	185	232	----
conductivity	----	E100	2.0	µS/cm	396	371	511	471	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	216	198	269	253	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	451	453	448	457	----
pH	----	E108	0.10	pH units	8.07	8.06	8.02	7.95	----
solids, total dissolved [TDS]	----	E162	10	mg/L	225	196	307	268	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
turbidity	----	E121	0.10	NTU	<0.10	<0.10	<0.10	<0.10	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0288	<0.0050	<0.0050	<0.0050	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.02	2.90	8.97	10.0	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.167	0.161	0.091	0.131	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.075	<0.050	0.077	<0.050	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.320	0.239	0.637	0.472	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	0.0017	0.0027	0.0016	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0022	0.0030	0.0029	0.0024	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	27.6	29.1	88.4	22.0	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0.52	<0.50	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-03-02_ WP_2021-10-2 5_NP	RG_DW-03-03_ WP_2021-10-2 5_NP	RG_DW-03-04_ WP_2021-10-2 5_NP	RG_DW-03-10_ WP_2021-10-2 5_NP	----
Client sampling date / time					25-Oct-2021 14:10	25-Oct-2021 14:40	25-Oct-2021 13:40	25-Oct-2021 15:15	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105201-001	CG2105201-002	CG2105201-003	CG2105201-004	-----	
					Result	Result	Result	Result	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.60	4.27	5.84	5.42	----	
cation sum	----	EC101	0.10	meq/L	4.45	4.09	5.76	5.30	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.7	95.8	98.6	97.8	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.66	2.15	0.690	1.12	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0.00010	<0.00010	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0.00012	<0.00010	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0729	0.0636	0.152	0.140	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0.013	<0.010	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	<0.0050	0.0133	0.0051	----	
calcium, total	7440-70-2	E420	0.050	mg/L	60.7	57.4	70.4	67.6	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00062	0.00066	0.00018	0.00060	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00071	<0.00050	0.00066	0.00288	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000052	<0.000050	<0.000050	0.000076	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0055	0.0052	0.0095	0.0071	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	17.9	16.9	22.6	19.8	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00144	0.00134	0.00109	0.00144	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0.00067	<0.00050	----	
potassium, total	7440-09-7	E420	0.050	mg/L	0.591	0.528	0.948	0.782	----	
selenium, total	7782-49-2	E420	0.050	µg/L	1.20	0.984	5.39	1.06	----	
silicon, total	7440-21-3	E420	0.10	mg/L	3.02	2.77	2.50	3.48	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, total	17341-25-2	E420	0.050	mg/L	2.85	2.73	7.82	5.02	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.191	0.185	0.173	0.200	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-03-02_ WP_2021-10-2 5_NP	RG_DW-03-03_ WP_2021-10-2 5_NP	RG_DW-03-04_ WP_2021-10-2 5_NP	RG_DW-03-10_ WP_2021-10-2 5_NP	----
Client sampling date / time					25-Oct-2021 14:10	25-Oct-2021 14:40	25-Oct-2021 13:40	25-Oct-2021 15:15	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105201-001	CG2105201-002	CG2105201-003	CG2105201-004	-----	
					Result	Result	Result	Result	----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	9.76	10.0	30.3	7.60	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00132	0.00125	0.00102	0.00138	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	0.0114	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0.00010	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0.00012	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0694	0.0645	0.144	0.145	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0.011	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	0.0084	0.0059	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	57.7	51.4	68.0	66.9	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00063	0.00061	0.00016	0.00064	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00043	0.00039	0.00033	0.00292	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	0.000075	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0050	0.0046	0.0090	0.0070	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	17.5	17.0	24.2	20.9	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00133	0.00123	0.00102	0.00139	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.570	0.529	0.936	0.830	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	1.16	1.10	5.67	1.08	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.13	2.87	2.66	3.77	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-03-02_ WP_2021-10-2 5_NP	RG_DW-03-03_ WP_2021-10-2 5_NP	RG_DW-03-04_ WP_2021-10-2 5_NP	RG_DW-03-10_ WP_2021-10-2 5_NP	----
Client sampling date / time					25-Oct-2021 14:10	25-Oct-2021 14:40	25-Oct-2021 13:40	25-Oct-2021 15:15	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105201-001	CG2105201-002	CG2105201-003	CG2105201-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.70	2.55	8.06	5.04	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.169	0.170	0.168	0.200	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	9.53	9.85	30.8	7.29	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00121	0.00116	0.000941	0.00133	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0011	0.0020	0.0128	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105201</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 26-Oct-2021 08:40
PO	: VPO00762695	Issue Date	: 16-Nov-2021 08:06
C-O-C number	: COC_Sparwood_Muni_2021_Q4		
Sampler	: EW		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E298	25-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E298	25-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E298	25-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E298	25-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-03-02_WP_2021-10-25_NP	E235.Br-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-03-03_WP_2021-10-25_NP	E235.Br-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-03-04_WP_2021-10-25_NP	E235.Br-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE RG_DW-03-10_WP_2021-10-25_NP	E235.Br-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE RG_DW-03-02_WP_2021-10-25_NP	E235.Cl-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE RG_DW-03-03_WP_2021-10-25_NP	E235.Cl-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE RG_DW-03-04_WP_2021-10-25_NP	E235.Cl-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE RG_DW-03-10_WP_2021-10-25_NP	E235.Cl-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE RG_DW-03-02_WP_2021-10-25_NP	E378-U	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE RG_DW-03-03_WP_2021-10-25_NP	E378-U	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE RG_DW-03-04_WP_2021-10-25_NP	E378-U	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE RG_DW-03-10_WP_2021-10-25_NP	E378-U	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE RG_DW-03-02_WP_2021-10-25_NP	E235.F	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE RG_DW-03-03_WP_2021-10-25_NP	E235.F	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE RG_DW-03-04_WP_2021-10-25_NP	E235.F	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE RG_DW-03-10_WP_2021-10-25_NP	E235.F	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_DW-03-02_WP_2021-10-25_NP	E235.NO3-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_DW-03-03_WP_2021-10-25_NP	E235.NO3-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_DW-03-04_WP_2021-10-25_NP	E235.NO3-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_DW-03-10_WP_2021-10-25_NP	E235.NO3-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_DW-03-02_WP_2021-10-25_NP	E235.NO2-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_DW-03-03_WP_2021-10-25_NP	E235.NO2-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_DW-03-04_WP_2021-10-25_NP	E235.NO2-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_DW-03-10_WP_2021-10-25_NP	E235.NO2-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_DW-03-02_WP_2021-10-25_NP	E235.SO4	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_DW-03-03_WP_2021-10-25_NP	E235.SO4	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_DW-03-04_WP_2021-10-25_NP	E235.SO4	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_DW-03-10_WP_2021-10-25_NP	E235.SO4	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
Amber glass total (sulfuric acid) RG_DW-03-02_WP_2021-10-25_NP	E318	25-Oct-2021	13-Nov-2021	----	----		15-Nov-2021	28 days	21 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
Amber glass total (sulfuric acid) RG_DW-03-03_WP_2021-10-25_NP	E318	25-Oct-2021	13-Nov-2021	----	----		15-Nov-2021	28 days	21 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E318	25-Oct-2021	13-Nov-2021	----	----		15-Nov-2021	28 days	21 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E318	25-Oct-2021	13-Nov-2021	----	----		15-Nov-2021	28 days	21 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E372-U	25-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E372-U	25-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E372-U	25-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E372-U	25-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E421.Cr-L	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E421.Cr-L	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E421.Cr-L	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E421.Cr-L	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E421	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E421	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E421	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E421	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E358-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E358-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E358-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E358-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E355-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E355-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E355-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E355-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-03-02_WP_2021-10-25_NP	E283	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-03-03_WP_2021-10-25_NP	E283	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-03-04_WP_2021-10-25_NP	E283	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_DW-03-10_WP_2021-10-25_NP	E283	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> RG_DW-03-02_WP_2021-10-25_NP	E290	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE RG_DW-03-03_WP_2021-10-25_NP	E290	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE RG_DW-03-04_WP_2021-10-25_NP	E290	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE RG_DW-03-10_WP_2021-10-25_NP	E290	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_DW-03-02_WP_2021-10-25_NP	E100	25-Oct-2021	----	----	----		31-Oct-2021	28 days	6 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_DW-03-03_WP_2021-10-25_NP	E100	25-Oct-2021	----	----	----		31-Oct-2021	28 days	6 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_DW-03-04_WP_2021-10-25_NP	E100	25-Oct-2021	----	----	----		31-Oct-2021	28 days	6 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_DW-03-10_WP_2021-10-25_NP	E100	25-Oct-2021	----	----	----		31-Oct-2021	28 days	6 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_DW-03-10_WP_2021-10-25_NP	E125	25-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	186 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_DW-03-02_WP_2021-10-25_NP	E125	25-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	187 hrs	* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_DW-03-03_WP_2021-10-25_NP	E125	25-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	187 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_DW-03-04_WP_2021-10-25_NP	E125	25-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	188 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE RG_DW-03-03_WP_2021-10-25_NP	E108	25-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	137 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE RG_DW-03-10_WP_2021-10-25_NP	E108	25-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	137 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE RG_DW-03-02_WP_2021-10-25_NP	E108	25-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	138 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE RG_DW-03-04_WP_2021-10-25_NP	E108	25-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	138 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE RG_DW-03-02_WP_2021-10-25_NP	E162	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE RG_DW-03-03_WP_2021-10-25_NP	E162	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE RG_DW-03-04_WP_2021-10-25_NP	E162	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> RG_DW-03-10_WP_2021-10-25_NP	E162	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> RG_DW-03-02_WP_2021-10-25_NP	E160-L	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> RG_DW-03-03_WP_2021-10-25_NP	E160-L	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> RG_DW-03-04_WP_2021-10-25_NP	E160-L	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> RG_DW-03-10_WP_2021-10-25_NP	E160-L	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> RG_DW-03-02_WP_2021-10-25_NP	E121	25-Oct-2021	----	----	----		28-Oct-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> RG_DW-03-03_WP_2021-10-25_NP	E121	25-Oct-2021	----	----	----		28-Oct-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> RG_DW-03-04_WP_2021-10-25_NP	E121	25-Oct-2021	----	----	----		28-Oct-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> RG_DW-03-10_WP_2021-10-25_NP	E121	25-Oct-2021	----	----	----		28-Oct-2021	3 days	3 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E420.Cr-L	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E420.Cr-L	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E420.Cr-L	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✓
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E420.Cr-L	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E420	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E420	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E420	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E420	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	334158	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334145	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	335159	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	330060	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	330061	1	20	5.0	5.0	✓
Conductivity in Water	E100	334143	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334856	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334855	2	19	10.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334441	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330134	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	330064	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	330062	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	330063	1	20	5.0	5.0	✓
ORP by Electrode	E125	335555	1	20	5.0	5.0	✓
pH by Meter	E108	334144	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	330059	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	332710	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	333609	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	343504	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	333610	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334447	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334633	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	332055	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	334158	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334145	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	335159	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	330060	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	330061	1	20	5.0	5.0	✓
Conductivity in Water	E100	334143	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334856	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334855	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334441	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330134	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	330064	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	330062	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	330063	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	335555	1	20	5.0	5.0	✓
pH by Meter	E108	334144	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	330059	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	332710	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	333609	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	343504	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	333610	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334447	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334633	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	332705	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	332055	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	334158	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334145	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	335159	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	330060	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	330061	1	20	5.0	5.0	✓
Conductivity in Water	E100	334143	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334856	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334855	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334441	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330134	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	330064	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	330062	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	330063	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	330059	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	332710	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	333609	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	343504	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	333610	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334447	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334633	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	332705	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	332055	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	335159	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	330060	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	330061	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334856	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334855	1	19	5.2	5.0	✓





Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334441	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330134	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	330064	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	330062	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	330063	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	330059	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	333609	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	343504	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	333610	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334447	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334633	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> , dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.  Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2105201**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
           Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_Sparwood\_Muni\_2021\_Q4  
**Sampler** : EW  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
           Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Oct-2021 08:40  
**Date Analysis Commenced** : 26-Oct-2021  
**Issue Date** : 16-Nov-2021 08:06

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 332055)</b>											
CG2105180-004	Anonymous	turbidity	----	E121	0.10	NTU	0.18	0.16	0.02	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 332710)</b>											
CG2105180-002	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	233	237	1.91%	20%	----
<b>Physical Tests (QC Lot: 334143)</b>											
CG2105190-005	Anonymous	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 334144)</b>											
CG2105190-005	Anonymous	pH	----	E108	0.10	pH units	4.95	4.95	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 334145)</b>											
CG2105190-005	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 334146)</b>											
CG2105201-003	RG_DW-03-04_WP_2021-10-25_NP	pH	----	E108	0.10	pH units	8.02	8.07	0.622%	4%	----
<b>Physical Tests (QC Lot: 334147)</b>											
CG2105201-004	RG_DW-03-10_WP_2021-10-25_NP	conductivity	----	E100	2.0	µS/cm	471	473	0.424%	10%	----
<b>Physical Tests (QC Lot: 334148)</b>											
CG2105201-004	RG_DW-03-10_WP_2021-10-25_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	232	233	0.301%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	232	233	0.301%	20%	----
<b>Physical Tests (QC Lot: 334158)</b>											
CG2105200-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	8.1	6.9	1.2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 335555)</b>											
CG2105197-005	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	454	456	0.462%	15%	----
<b>Anions and Nutrients (QC Lot: 330059)</b>											
CG2105197-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	280	280	0.0964%	20%	----
<b>Anions and Nutrients (QC Lot: 330060)</b>											
CG2105197-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330061)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 330061) - continued</b>											
CG2105197-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	7.28	7.25	0.380%	20%	----
<b>Anions and Nutrients (QC Lot: 330062)</b>											
CG2105197-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	12.0	12.0	0.181%	20%	----
<b>Anions and Nutrients (QC Lot: 330063)</b>											
CG2105197-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330064)</b>											
CG2105197-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.150	0.145	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330134)</b>											
CG2105197-007	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0025	0.0029	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 334633)</b>											
CG2105200-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0030	<0.0020	0.0010	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 335159)</b>											
CG2105197-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 343504)</b>											
CG2105128-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.116	0.133	0.017	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334441)</b>											
CG2105190-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.03	1.08	0.05	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334442)</b>											
CG2105201-003	RG_DW-03-04_WP_2021-10-25_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	0.58	0.08	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334447)</b>											
CG2105201-001	RG_DW-03-02_WP_2021-10-25_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 333609)</b>											
CG2105197-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00012	0.000004	Diff <2x LOR	----
<b>Total Metals (QC Lot: 333610)</b>											
CG2105197-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0076	0.0099	0.0023	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00038	0.00038	0.000002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00010	0.00011	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0708	0.0668	5.72%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.024	0.024	0.0006	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.358 µg/L	0.000334	6.90%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	123	126	2.57%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 333610) - continued</b>											
CG2105197-001	Anonymous	copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0753	0.0753	0.0143%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	54.9	53.2	3.23%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00035	0.00036	0.00002	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00200	0.00196	1.85%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0114	0.0110	3.20%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.06	2.01	2.32%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	47.2 µg/L	0.0460	2.57%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.16	2.13	1.71%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	11.2	11.1	1.29%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.260	0.261	0.556%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	99.0	95.6	3.49%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000019	0.000017	0.000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00394	0.00395	0.381%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0144	0.0139	0.0005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 334855)</b>											
CG2105201-001	RG_DW-03-02_WP_2021-10-25_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
CG2105201-001	RG_DW-03-02_WP_2021-10-25_NP	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0694	0.0693	0.124%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	57.7	55.9	3.14%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00043	0.00042	0.00001	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 334855) - continued</b>											
CG2105201-001	RG_DW-03-02_WP_2021-10-25_NP	lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0050	0.0049	0.0001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	17.5	17.8	1.88%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.00014	0.00004	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00133	0.00126	5.12%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.570	0.577	1.15%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	1.16 µg/L	0.00115	1.44%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.13	3.22	2.82%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.70	2.83	4.75%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.169	0.165	2.63%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	9.53	9.87	3.43%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	0.00058	0.00028	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00121	0.00119	1.39%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0013	0.00005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 334856)</b>											
CG2105201-001	RG_DW-03-02_WP_2021-10-25_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00063	0.00065	0.00002	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 332055)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 332705)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 332710)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 334143)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 334145)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 334147)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 334148)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 334158)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 330059)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 330060)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 330061)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 330062)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 330063)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 330064)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 330134)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 334633)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 335159)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 343504)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 334441)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 334442)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 334447)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 333609)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
<b>Total Metals (QCLot: 333610)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 333610) - continued</b>						
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 334855)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 334855) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 334856)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 332055)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.4	85.0	115	---
<b>Physical Tests (QCLot: 332705)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 332710)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	95.0	85.0	115	---
<b>Physical Tests (QCLot: 334143)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 334144)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 334145)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 334146)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 334147)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.6	90.0	110	---
<b>Physical Tests (QCLot: 334148)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 334158)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	99.2	85.0	115	---
<b>Physical Tests (QCLot: 335555)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 330059)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 330060)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	---
<b>Anions and Nutrients (QCLot: 330061)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 330062)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 330063)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 330064)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 330064) - continued</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.4	90.0	110	----
<b>Anions and Nutrients (QCLot: 330134)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	110	80.0	120	----
<b>Anions and Nutrients (QCLot: 334633)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	98.7	80.0	120	----
<b>Anions and Nutrients (QCLot: 335159)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.0	85.0	115	----
<b>Anions and Nutrients (QCLot: 343504)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	97.8	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 334441)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 334442)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	107	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 334447)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Total Metals (QCLot: 333609)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	94.5	80.0	120	----
<b>Total Metals (QCLot: 333610)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	99.7	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	94.3	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	95.6	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.3	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	90.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	94.8	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.7	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	92.8	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	92.2	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	92.2	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	95.1	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.5	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	94.3	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	94.5	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 333610) - continued</b>									
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	91.9	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	98.1	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	93.3	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	94.2	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	87.6	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	98.2	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	88.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	92.7	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	91.7	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	92.6	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	95.0	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	91.5	80.0	120	----
<b>Dissolved Metals (QCLot: 334855)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	91.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	83.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	91.7	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.7	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	96.9	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.4	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	94.1	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.6	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 334855) - continued</b>									
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.9	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	87.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.2	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.9	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100.0	80.0	120	----
<b>Dissolved Metals (QCLot: 334856)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 330059)</b>										
CG2105197-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	98.3 mg/L	100 mg/L	98.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 330060)</b>										
CG2105197-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.479 mg/L	0.5 mg/L	95.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 330061)</b>										
CG2105197-004	Anonymous	chloride	16887-00-6	E235.Cl-L	96.8 mg/L	100 mg/L	96.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 330062)</b>										
CG2105197-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.41 mg/L	2.5 mg/L	96.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 330063)</b>										
CG2105197-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.476 mg/L	0.5 mg/L	95.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 330064)</b>										
CG2105197-004	Anonymous	fluoride	16984-48-8	E235.F	0.919 mg/L	1 mg/L	91.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 330134)</b>										
CG2105197-008	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0514 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 334633)</b>										
CG2105201-001	RG_DW-03-02_WP_2021-1 0-25_NP	phosphorus, total	7723-14-0	E372-U	0.0579 mg/L	0.0676 mg/L	85.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 335159)</b>										
CG2105197-009	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0937 mg/L	0.1 mg/L	93.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 343504)</b>										
CG2105128-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.60 mg/L	2.5 mg/L	104	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 334441)</b>										
CG2105190-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.7 mg/L	23.9 mg/L	103	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 334442)</b>										
CG2105201-003	RG_DW-03-04_WP_2021-1 0-25_NP	carbon, dissolved organic [DOC]	----	E358-L	25.3 mg/L	23.9 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 334447)</b>										
CG2105201-001	RG_DW-03-02_WP_2021-1 0-25_NP	carbon, total organic [TOC]	----	E355-L	24.0 mg/L	23.9 mg/L	100	70.0	130	----
<b>Total Metals (QCLot: 333609)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 333609) - continued</b>										
CG2105197-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 333610)</b>										
CG2105197-002	Anonymous	aluminum, total	7429-90-5	E420	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		antimony, total	7440-36-0	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0105 mg/L	0.01 mg/L	105	70.0	130	----
		boron, total	7440-42-8	E420	0.098 mg/L	0.1 mg/L	98.5	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00411 mg/L	0.004 mg/L	103	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		iron, total	7439-89-6	E420	1.95 mg/L	2 mg/L	97.5	70.0	130	----
		lead, total	7439-92-1	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0903 mg/L	0.1 mg/L	90.3	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0376 mg/L	0.04 mg/L	93.9	70.0	130	----
		potassium, total	7440-09-7	E420	4.07 mg/L	4 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0422 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, total	7440-21-3	E420	8.74 mg/L	10 mg/L	87.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00394 mg/L	0.004 mg/L	98.4	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00366 mg/L	0.004 mg/L	91.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		titanium, total	7440-32-6	E420	0.0393 mg/L	0.04 mg/L	98.3	70.0	130	----
		uranium, total	7440-61-1	E420	0.00387 mg/L	0.004 mg/L	96.7	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.379 mg/L	0.4 mg/L	94.7	70.0	130	----
<b>Dissolved Metals (QCLot: 334855)</b>										
CG2105201-002	RG_DW-03-03_WP_2021-1 0-25_NP	aluminum, dissolved	7429-90-5	E421	0.209 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 334855) - continued</b>										
CG2105201-002	RG_DW-03-03_WP_2021-1 0-25_NP	arsenic, dissolved	7440-38-2	E421	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00863 mg/L	0.01 mg/L	86.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	87.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00403 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0938 mg/L	0.1 mg/L	93.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.89 mg/L	4 mg/L	97.3	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.69 mg/L	10 mg/L	86.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00398 mg/L	0.004 mg/L	99.5	70.0	130	----
sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----		
strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----		
sulfur, dissolved	7704-34-9	E421	19.5 mg/L	20 mg/L	97.5	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00372 mg/L	0.004 mg/L	93.1	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00380 mg/L	0.004 mg/L	95.1	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.399 mg/L	0.4 mg/L	99.6	70.0	130	----		
<b>Dissolved Metals (QCLot: 334856)</b>										
CG2105201-002	RG_DW-03-03_WP_2021-1 0-25_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0408 mg/L	0.04 mg/L	102	70.0	130	----



COC ID: COC\_Sparwood\_Muni\_2021\_Q4      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY			OTHER INFO					
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	evan.warner@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
								Email 4:	teck.lab.results@sharepoint.ca	X	X	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	VPO00762695			

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	<small>Filtered? F? Field? Field? Lab? Lab? Field? Lab? None</small>				
RG_DW-03-02_WP_2021_10_25_NP	RG_DW-03-02	WP	N	25-Oct-21	1410	G	5	H2SO4	H2SO4	HNO3	HNO3	None					
RG_DW-03-03_WP_2021_10_25_NP	RG_DW-03-03	WP	N	25-Oct-21	1440	G	5										
RG_DW-03-04_WP_2021_10_25_NP	RG_DW-03-04	WP	N	25-Oct-21	1340	G	5										
RG_DW-03-10_WP_2021_10_25_NP	RG_DW-03-10	WP	N	25-Oct-21	1515	G	5										

Environmental Division  
Calgary  
Work Order Reference  
**CG2105201**



Telephone : +1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	10/28/21

SERVICE REQUEST (rush subject to availability)			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Evan Warner	Mobile #	250-433-6399
Sampler's Signature	<i>[Signature]</i>	Date/Time	October 25, 2021 1700



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105201**  
**Client** : **Teck Coal Limited**  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_Sparwood\_Muni\_2021\_Q4  
**Sampler** : EW  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Oct-2021 08:40  
**Date Analysis Commenced** : 26-Oct-2021  
**Issue Date** : 16-Nov-2021 08:06

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

SAMPLE 002 IS LABELED AS RG\_DW-04-09





## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					RG_DW-03-02_ WP_2021-10-2 5_NP	RG_DW-03-03_ WP_2021-10-2 5_NP	RG_DW-03-04_ WP_2021-10-2 5_NP	RG_DW-03-10_ WP_2021-10-2 5_NP	----
Client sampling date / time					25-Oct-2021 14:10	25-Oct-2021 14:40	25-Oct-2021 13:40	25-Oct-2021 15:15	----
Analyte	CAS Number	Method	LOR	Unit	CG2105201-001	CG2105201-002	CG2105201-003	CG2105201-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	2.6	2.8	3.4	4.3	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	194	178	185	232	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	236	218	226	283	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	194	178	185	232	----
conductivity	----	E100	2.0	µS/cm	396	371	511	471	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	216	198	269	253	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	451	453	448	457	----
pH	----	E108	0.10	pH units	8.07	8.06	8.02	7.95	----
solids, total dissolved [TDS]	----	E162	10	mg/L	225	196	307	268	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
turbidity	----	E121	0.10	NTU	<0.10	<0.10	<0.10	<0.10	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0288	<0.0050	<0.0050	<0.0050	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.02	2.90	8.97	10.0	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.167	0.161	0.091	0.131	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.075	<0.050	0.077	<0.050	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.320	0.239	0.637	0.472	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	0.0017	0.0027	0.0016	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0022	0.0030	0.0029	0.0024	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	27.6	29.1	88.4	22.0	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0.52	<0.50	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-03-02_ WP_2021-10-2 5_NP	RG_DW-03-03_ WP_2021-10-2 5_NP	RG_DW-03-04_ WP_2021-10-2 5_NP	RG_DW-03-10_ WP_2021-10-2 5_NP	----
Client sampling date / time					25-Oct-2021 14:10	25-Oct-2021 14:40	25-Oct-2021 13:40	25-Oct-2021 15:15	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105201-001	CG2105201-002	CG2105201-003	CG2105201-004	-----	
					Result	Result	Result	Result	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.60	4.27	5.84	5.42	----	
cation sum	----	EC101	0.10	meq/L	4.45	4.09	5.76	5.30	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.7	95.8	98.6	97.8	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.66	2.15	0.690	1.12	----	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0.00010	<0.00010	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0.00012	<0.00010	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0729	0.0636	0.152	0.140	----	
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0.013	<0.010	----	
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	<0.0050	0.0133	0.0051	----	
calcium, total	7440-70-2	E420	0.050	mg/L	60.7	57.4	70.4	67.6	----	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00062	0.00066	0.00018	0.00060	----	
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00071	<0.00050	0.00066	0.00288	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000052	<0.000050	<0.000050	0.000076	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0055	0.0052	0.0095	0.0071	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	17.9	16.9	22.6	19.8	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00144	0.00134	0.00109	0.00144	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0.00067	<0.00050	----	
potassium, total	7440-09-7	E420	0.050	mg/L	0.591	0.528	0.948	0.782	----	
selenium, total	7782-49-2	E420	0.050	µg/L	1.20	0.984	5.39	1.06	----	
silicon, total	7440-21-3	E420	0.10	mg/L	3.02	2.77	2.50	3.48	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, total	17341-25-2	E420	0.050	mg/L	2.85	2.73	7.82	5.02	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.191	0.185	0.173	0.200	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-03-02_ WP_2021-10-2 5_NP	RG_DW-03-03_ WP_2021-10-2 5_NP	RG_DW-03-04_ WP_2021-10-2 5_NP	RG_DW-03-10_ WP_2021-10-2 5_NP	----
Client sampling date / time					25-Oct-2021 14:10	25-Oct-2021 14:40	25-Oct-2021 13:40	25-Oct-2021 15:15	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105201-001 Result	CG2105201-002 Result	CG2105201-003 Result	CG2105201-004 Result	----- ----	
<b>Total Metals</b>										
sulfur, total	7704-34-9	E420	0.50	mg/L	9.76	10.0	30.3	7.60	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00132	0.00125	0.00102	0.00138	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	0.0114	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0.00010	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0.00012	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0694	0.0645	0.144	0.145	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0.011	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	0.0084	0.0059	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	57.7	51.4	68.0	66.9	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00063	0.00061	0.00016	0.00064	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00043	0.00039	0.00033	0.00292	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	0.000075	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0050	0.0046	0.0090	0.0070	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	17.5	17.0	24.2	20.9	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00133	0.00123	0.00102	0.00139	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.570	0.529	0.936	0.830	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	1.16	1.10	5.67	1.08	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.13	2.87	2.66	3.77	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_DW-03-02_ WP_2021-10-2 5_NP	RG_DW-03-03_ WP_2021-10-2 5_NP	RG_DW-03-04_ WP_2021-10-2 5_NP	RG_DW-03-10_ WP_2021-10-2 5_NP	----
Client sampling date / time					25-Oct-2021 14:10	25-Oct-2021 14:40	25-Oct-2021 13:40	25-Oct-2021 15:15	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105201-001	CG2105201-002	CG2105201-003	CG2105201-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.70	2.55	8.06	5.04	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.169	0.170	0.168	0.200	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	9.53	9.85	30.8	7.29	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00121	0.00116	0.000941	0.00133	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0011	0.0020	0.0128	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105201</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 26-Oct-2021 08:40
PO	: VPO00762695	Issue Date	: 16-Nov-2021 08:06
C-O-C number	: COC_Sparwood_Muni_2021_Q4		
Sampler	: EW		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E298	25-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E298	25-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E298	25-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E298	25-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-03-02_WP_2021-10-25_NP	E235.Br-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-03-03_WP_2021-10-25_NP	E235.Br-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_DW-03-04_WP_2021-10-25_NP	E235.Br-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE RG_DW-03-10_WP_2021-10-25_NP	E235.Br-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE RG_DW-03-02_WP_2021-10-25_NP	E235.Cl-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE RG_DW-03-03_WP_2021-10-25_NP	E235.Cl-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE RG_DW-03-04_WP_2021-10-25_NP	E235.Cl-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE RG_DW-03-10_WP_2021-10-25_NP	E235.Cl-L	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE RG_DW-03-02_WP_2021-10-25_NP	E378-U	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE RG_DW-03-03_WP_2021-10-25_NP	E378-U	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE RG_DW-03-04_WP_2021-10-25_NP	E378-U	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE RG_DW-03-10_WP_2021-10-25_NP	E378-U	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE RG_DW-03-02_WP_2021-10-25_NP	E235.F	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE RG_DW-03-03_WP_2021-10-25_NP	E235.F	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE RG_DW-03-04_WP_2021-10-25_NP	E235.F	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE RG_DW-03-10_WP_2021-10-25_NP	E235.F	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_DW-03-02_WP_2021-10-25_NP	E235.NO3-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_DW-03-03_WP_2021-10-25_NP	E235.NO3-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_DW-03-04_WP_2021-10-25_NP	E235.NO3-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE RG_DW-03-10_WP_2021-10-25_NP	E235.NO3-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_DW-03-02_WP_2021-10-25_NP	E235.NO2-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_DW-03-03_WP_2021-10-25_NP	E235.NO2-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_DW-03-04_WP_2021-10-25_NP	E235.NO2-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE RG_DW-03-10_WP_2021-10-25_NP	E235.NO2-L	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_DW-03-02_WP_2021-10-25_NP	E235.SO4	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_DW-03-03_WP_2021-10-25_NP	E235.SO4	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_DW-03-04_WP_2021-10-25_NP	E235.SO4	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE RG_DW-03-10_WP_2021-10-25_NP	E235.SO4	25-Oct-2021	----	----	----		26-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
Amber glass total (sulfuric acid) RG_DW-03-02_WP_2021-10-25_NP	E318	25-Oct-2021	13-Nov-2021	----	----		15-Nov-2021	28 days	21 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
Amber glass total (sulfuric acid) RG_DW-03-03_WP_2021-10-25_NP	E318	25-Oct-2021	13-Nov-2021	----	----		15-Nov-2021	28 days	21 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E318	25-Oct-2021	13-Nov-2021	----	----		15-Nov-2021	28 days	21 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E318	25-Oct-2021	13-Nov-2021	----	----		15-Nov-2021	28 days	21 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E372-U	25-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E372-U	25-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E372-U	25-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E372-U	25-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E421.Cr-L	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E421.Cr-L	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E421.Cr-L	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E421.Cr-L	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E421	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E421	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E421	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E421	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E358-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E358-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E358-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E358-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E355-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E355-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E355-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E355-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> RG_DW-03-02_WP_2021-10-25_NP	E283	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> RG_DW-03-03_WP_2021-10-25_NP	E283	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> RG_DW-03-04_WP_2021-10-25_NP	E283	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> RG_DW-03-10_WP_2021-10-25_NP	E283	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> RG_DW-03-02_WP_2021-10-25_NP	E290	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE RG_DW-03-03_WP_2021-10-25_NP	E290	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE RG_DW-03-04_WP_2021-10-25_NP	E290	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE RG_DW-03-10_WP_2021-10-25_NP	E290	25-Oct-2021	----	----	----		31-Oct-2021	14 days	6 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_DW-03-02_WP_2021-10-25_NP	E100	25-Oct-2021	----	----	----		31-Oct-2021	28 days	6 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_DW-03-03_WP_2021-10-25_NP	E100	25-Oct-2021	----	----	----		31-Oct-2021	28 days	6 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_DW-03-04_WP_2021-10-25_NP	E100	25-Oct-2021	----	----	----		31-Oct-2021	28 days	6 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_DW-03-10_WP_2021-10-25_NP	E100	25-Oct-2021	----	----	----		31-Oct-2021	28 days	6 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_DW-03-10_WP_2021-10-25_NP	E125	25-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	186 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_DW-03-02_WP_2021-10-25_NP	E125	25-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	187 hrs	* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-03-03_WP_2021-10-25_NP	E125	25-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	187 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE RG_DW-03-04_WP_2021-10-25_NP	E125	25-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	188 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-03-03_WP_2021-10-25_NP	E108	25-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	137 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-03-10_WP_2021-10-25_NP	E108	25-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	137 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-03-02_WP_2021-10-25_NP	E108	25-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	138 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE RG_DW-03-04_WP_2021-10-25_NP	E108	25-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	138 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-03-02_WP_2021-10-25_NP	E162	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-03-03_WP_2021-10-25_NP	E162	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE RG_DW-03-04_WP_2021-10-25_NP	E162	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> RG_DW-03-10_WP_2021-10-25_NP	E162	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> RG_DW-03-02_WP_2021-10-25_NP	E160-L	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> RG_DW-03-03_WP_2021-10-25_NP	E160-L	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> RG_DW-03-04_WP_2021-10-25_NP	E160-L	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> RG_DW-03-10_WP_2021-10-25_NP	E160-L	25-Oct-2021	----	----	----		30-Oct-2021	7 days	5 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> RG_DW-03-02_WP_2021-10-25_NP	E121	25-Oct-2021	----	----	----		28-Oct-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> RG_DW-03-03_WP_2021-10-25_NP	E121	25-Oct-2021	----	----	----		28-Oct-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> RG_DW-03-04_WP_2021-10-25_NP	E121	25-Oct-2021	----	----	----		28-Oct-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> RG_DW-03-10_WP_2021-10-25_NP	E121	25-Oct-2021	----	----	----		28-Oct-2021	3 days	3 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E420.Cr-L	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E420.Cr-L	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E420.Cr-L	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✔
<b>Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E420.Cr-L	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-02_WP_2021-10-25_NP	E420	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-03_WP_2021-10-25_NP	E420	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-04_WP_2021-10-25_NP	E420	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> RG_DW-03-10_WP_2021-10-25_NP	E420	25-Oct-2021	----	----	----		02-Nov-2021	180 days	8 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	334158	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334145	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	335159	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	330060	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	330061	1	20	5.0	5.0	✓
Conductivity in Water	E100	334143	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334856	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334855	2	19	10.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334441	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330134	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	330064	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	330062	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	330063	1	20	5.0	5.0	✓
ORP by Electrode	E125	335555	1	20	5.0	5.0	✓
pH by Meter	E108	334144	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	330059	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	332710	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	333609	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	343504	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	333610	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334447	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334633	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	332055	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	334158	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334145	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	335159	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	330060	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	330061	1	20	5.0	5.0	✓
Conductivity in Water	E100	334143	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334856	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334855	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334441	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330134	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	330064	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	330062	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	330063	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	335555	1	20	5.0	5.0	✓
pH by Meter	E108	334144	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	330059	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	332710	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	333609	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	343504	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	333610	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334447	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334633	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	332705	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	332055	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	334158	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334145	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	335159	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	330060	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	330061	1	20	5.0	5.0	✓
Conductivity in Water	E100	334143	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334856	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334855	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334441	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330134	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	330064	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	330062	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	330063	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	330059	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	332710	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	333609	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	343504	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	333610	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334447	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334633	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	332705	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	332055	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	335159	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	330060	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	330061	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334856	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334855	1	19	5.2	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334441	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330134	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	330064	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	330062	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	330063	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	330059	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	333609	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	343504	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	333610	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334447	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334633	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> , dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .

## QUALITY CONTROL REPORT

**Work Order** : **CG2105201**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Cam Jaeger  
**Address** : 421 Pine Avenue  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : REGIONAL EFFECTS PROGRAM  
**PO** : VPO00762695  
**C-O-C number** : COC\_Sparwood\_Muni\_2021\_Q4  
**Sampler** : EW  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Oct-2021 08:40  
**Date Analysis Commenced** : 26-Oct-2021  
**Issue Date** : 16-Nov-2021 08:06

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 332055)</b>											
CG2105180-004	Anonymous	turbidity	----	E121	0.10	NTU	0.18	0.16	0.02	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 332710)</b>											
CG2105180-002	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	233	237	1.91%	20%	----
<b>Physical Tests (QC Lot: 334143)</b>											
CG2105190-005	Anonymous	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 334144)</b>											
CG2105190-005	Anonymous	pH	----	E108	0.10	pH units	4.95	4.95	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 334145)</b>											
CG2105190-005	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 334146)</b>											
CG2105201-003	RG_DW-03-04_WP_2021-10-25_NP	pH	----	E108	0.10	pH units	8.02	8.07	0.622%	4%	----
<b>Physical Tests (QC Lot: 334147)</b>											
CG2105201-004	RG_DW-03-10_WP_2021-10-25_NP	conductivity	----	E100	2.0	µS/cm	471	473	0.424%	10%	----
<b>Physical Tests (QC Lot: 334148)</b>											
CG2105201-004	RG_DW-03-10_WP_2021-10-25_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	232	233	0.301%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	232	233	0.301%	20%	----
<b>Physical Tests (QC Lot: 334158)</b>											
CG2105200-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	8.1	6.9	1.2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 335555)</b>											
CG2105197-005	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	454	456	0.462%	15%	----
<b>Anions and Nutrients (QC Lot: 330059)</b>											
CG2105197-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	280	280	0.0964%	20%	----
<b>Anions and Nutrients (QC Lot: 330060)</b>											
CG2105197-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330061)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 330061) - continued</b>											
CG2105197-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	7.28	7.25	0.380%	20%	----
<b>Anions and Nutrients (QC Lot: 330062)</b>											
CG2105197-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	12.0	12.0	0.181%	20%	----
<b>Anions and Nutrients (QC Lot: 330063)</b>											
CG2105197-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330064)</b>											
CG2105197-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.150	0.145	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330134)</b>											
CG2105197-007	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0025	0.0029	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 334633)</b>											
CG2105200-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0030	<0.0020	0.0010	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 335159)</b>											
CG2105197-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 343504)</b>											
CG2105128-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.116	0.133	0.017	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334441)</b>											
CG2105190-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.03	1.08	0.05	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334442)</b>											
CG2105201-003	RG_DW-03-04_WP_2021-10-25_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	0.58	0.08	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334447)</b>											
CG2105201-001	RG_DW-03-02_WP_2021-10-25_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 333609)</b>											
CG2105197-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00012	0.000004	Diff <2x LOR	----
<b>Total Metals (QC Lot: 333610)</b>											
CG2105197-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0076	0.0099	0.0023	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00038	0.00038	0.000002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00010	0.00011	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0708	0.0668	5.72%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.024	0.024	0.0006	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.358 µg/L	0.000334	6.90%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	123	126	2.57%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 333610) - continued</b>											
CG2105197-001	Anonymous	copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0753	0.0753	0.0143%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	54.9	53.2	3.23%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00035	0.00036	0.00002	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00200	0.00196	1.85%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0114	0.0110	3.20%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.06	2.01	2.32%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	47.2 µg/L	0.0460	2.57%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.16	2.13	1.71%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	11.2	11.1	1.29%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.260	0.261	0.556%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	99.0	95.6	3.49%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000019	0.000017	0.000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00394	0.00395	0.381%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0144	0.0139	0.0005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 334855)</b>											
CG2105201-001	RG_DW-03-02_WP_2021-10-25_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
CG2105201-001	RG_DW-03-02_WP_2021-10-25_NP	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0694	0.0693	0.124%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	57.7	55.9	3.14%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00043	0.00042	0.00001	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 334855) - continued</b>											
CG2105201-001	RG_DW-03-02_WP_2021-10-25_NP	lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0050	0.0049	0.0001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	17.5	17.8	1.88%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.00014	0.00004	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00133	0.00126	5.12%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.570	0.577	1.15%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	1.16 µg/L	0.00115	1.44%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.13	3.22	2.82%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.70	2.83	4.75%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.169	0.165	2.63%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	9.53	9.87	3.43%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	0.00058	0.00028	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00121	0.00119	1.39%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0013	0.00005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 334856)</b>											
CG2105201-001	RG_DW-03-02_WP_2021-10-25_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00063	0.00065	0.00002	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 332055)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 332705)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 332710)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 334143)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 334145)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 334147)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 334148)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 334158)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 330059)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 330060)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 330061)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 330062)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 330063)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 330064)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 330134)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 334633)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 335159)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 343504)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Organic / Inorganic Carbon (QCLot: 334441)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 334442)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 334447)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Total Metals (QCLot: 333609)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 333610)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 333610) - continued</b>						
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
<b>Dissolved Metals (QCLot: 334855)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----





Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 334855) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 334856)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 332055)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.4	85.0	115	---
<b>Physical Tests (QCLot: 332705)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 332710)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	95.0	85.0	115	---
<b>Physical Tests (QCLot: 334143)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 334144)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 334145)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 334146)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 334147)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.6	90.0	110	---
<b>Physical Tests (QCLot: 334148)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 334158)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	99.2	85.0	115	---
<b>Physical Tests (QCLot: 335555)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 330059)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 330060)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	---
<b>Anions and Nutrients (QCLot: 330061)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 330062)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 330063)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 330064)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 330064) - continued</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.4	90.0	110	----
<b>Anions and Nutrients (QCLot: 330134)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	110	80.0	120	----
<b>Anions and Nutrients (QCLot: 334633)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	98.7	80.0	120	----
<b>Anions and Nutrients (QCLot: 335159)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.0	85.0	115	----
<b>Anions and Nutrients (QCLot: 343504)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	97.8	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 334441)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 334442)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	107	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 334447)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Total Metals (QCLot: 333609)</b>									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	94.5	80.0	120	----
<b>Total Metals (QCLot: 333610)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	99.7	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	94.3	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	95.6	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.3	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	90.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	94.8	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.7	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	92.8	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	92.2	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	92.2	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	95.1	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.5	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	94.3	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	94.5	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 333610) - continued</b>									
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	91.9	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	98.1	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	93.3	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	94.2	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	87.6	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	98.2	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	88.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	92.7	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	91.7	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	92.6	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	95.0	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	91.5	80.0	120	----
<b>Dissolved Metals (QCLot: 334855)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	91.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	83.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	91.7	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.7	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	96.9	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.4	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	94.1	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.6	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 334855) - continued</b>									
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.9	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	87.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.2	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.9	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100.0	80.0	120	----
<b>Dissolved Metals (QCLot: 334856)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 330059)</b>										
CG2105197-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	98.3 mg/L	100 mg/L	98.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 330060)</b>										
CG2105197-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.479 mg/L	0.5 mg/L	95.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 330061)</b>										
CG2105197-004	Anonymous	chloride	16887-00-6	E235.Cl-L	96.8 mg/L	100 mg/L	96.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 330062)</b>										
CG2105197-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.41 mg/L	2.5 mg/L	96.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 330063)</b>										
CG2105197-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.476 mg/L	0.5 mg/L	95.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 330064)</b>										
CG2105197-004	Anonymous	fluoride	16984-48-8	E235.F	0.919 mg/L	1 mg/L	91.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 330134)</b>										
CG2105197-008	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0514 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 334633)</b>										
CG2105201-001	RG_DW-03-02_WP_2021-1 0-25_NP	phosphorus, total	7723-14-0	E372-U	0.0579 mg/L	0.0676 mg/L	85.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 335159)</b>										
CG2105197-009	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0937 mg/L	0.1 mg/L	93.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 343504)</b>										
CG2105128-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.60 mg/L	2.5 mg/L	104	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 334441)</b>										
CG2105190-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.7 mg/L	23.9 mg/L	103	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 334442)</b>										
CG2105201-003	RG_DW-03-04_WP_2021-1 0-25_NP	carbon, dissolved organic [DOC]	----	E358-L	25.3 mg/L	23.9 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 334447)</b>										
CG2105201-001	RG_DW-03-02_WP_2021-1 0-25_NP	carbon, total organic [TOC]	----	E355-L	24.0 mg/L	23.9 mg/L	100	70.0	130	----
<b>Total Metals (QCLot: 333609)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 333609) - continued</b>										
CG2105197-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
<b>Total Metals (QCLot: 333610)</b>										
CG2105197-002	Anonymous	aluminum, total	7429-90-5	E420	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		antimony, total	7440-36-0	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0105 mg/L	0.01 mg/L	105	70.0	130	----
		boron, total	7440-42-8	E420	0.098 mg/L	0.1 mg/L	98.5	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00411 mg/L	0.004 mg/L	103	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		iron, total	7439-89-6	E420	1.95 mg/L	2 mg/L	97.5	70.0	130	----
		lead, total	7439-92-1	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0903 mg/L	0.1 mg/L	90.3	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0376 mg/L	0.04 mg/L	93.9	70.0	130	----
		potassium, total	7440-09-7	E420	4.07 mg/L	4 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0422 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, total	7440-21-3	E420	8.74 mg/L	10 mg/L	87.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00394 mg/L	0.004 mg/L	98.4	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00366 mg/L	0.004 mg/L	91.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		titanium, total	7440-32-6	E420	0.0393 mg/L	0.04 mg/L	98.3	70.0	130	----
		uranium, total	7440-61-1	E420	0.00387 mg/L	0.004 mg/L	96.7	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.379 mg/L	0.4 mg/L	94.7	70.0	130	----
<b>Dissolved Metals (QCLot: 334855)</b>										
CG2105201-002	RG_DW-03-03_WP_2021-1 0-25_NP	aluminum, dissolved	7429-90-5	E421	0.209 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 334855) - continued</b>										
CG2105201-002	RG_DW-03-03_WP_2021-1 0-25_NP	arsenic, dissolved	7440-38-2	E421	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00863 mg/L	0.01 mg/L	86.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	87.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00403 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0938 mg/L	0.1 mg/L	93.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.89 mg/L	4 mg/L	97.3	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.69 mg/L	10 mg/L	86.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00398 mg/L	0.004 mg/L	99.5	70.0	130	----
sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----		
strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----		
sulfur, dissolved	7704-34-9	E421	19.5 mg/L	20 mg/L	97.5	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00372 mg/L	0.004 mg/L	93.1	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00380 mg/L	0.004 mg/L	95.1	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.399 mg/L	0.4 mg/L	99.6	70.0	130	----		
<b>Dissolved Metals (QCLot: 334856)</b>										
CG2105201-002	RG_DW-03-03_WP_2021-1 0-25_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0408 mg/L	0.04 mg/L	102	70.0	130	----





COC ID: **COC\_Sparwood\_Muni\_2021\_Q4** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	evan.warner@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
								Email 4:	teck.lab.results@sharepoint.ca	X	X	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	VPO00762695			


SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered by Field 1 Lab 1 Field 2 Lab 2 Field 3 Lab 3 None																							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	F	N	F	N	N																			
RG_DW-03-02_WP_2021_10_25_NP	RG_DW-03-02	WP	N	25-Oct-21	1410	G	5	1	1	1	1	1	1	1	1	1	1																			
RG_DW-03-03_WP_2021_10_25_NP	RG_DW-03-03	WP	N	25-Oct-21	1440	G	5	1	1	1	1	1	1	1	1	1	1																			
RG_DW-03-04_WP_2021_10_25_NP	RG_DW-03-04	WP	N	25-Oct-21	1340	G	5	1	1	1	1	1	1	1	1	1	1																			
RG_DW-03-10_WP_2021_10_25_NP	RG_DW-03-10	WP	N	25-Oct-21	1515	G	5	1	1	1	1	1	1	1	1	1	1																			

Environmental Division  
Calgary  
Work Order Reference  
**CG2105201**



Telephone : +1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME

SERVICE REQUEST (rush subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Evan Warner	250-433-6399
	Sampler's Signature	Date/Time
		October 25, 2021 1700



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2104994**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** :  
 BC Canada  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211017Q4GW  
**Sampler** : J. Batstone/ C. Bracken  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 19-Oct-2021 08:40  
**Date Analysis Commenced** : 19-Oct-2021  
**Issue Date** : 21-Dec-2021 16:25

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilmaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_GV3GW_W G_2021_Q4_NP	EV_GV3GWS_ WG_2021_Q4_ NP	EV_MW_GV4A_ WG_2021_Q4_ NP	EV_MW_GV4B_ WG_2021_Q4_ NP	----
Client sampling date / time					17-Oct-2021 14:50	17-Oct-2021 13:05	17-Oct-2021 16:25	17-Oct-2021 16:15	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104994-001	CG2104994-002	CG2104994-003	CG2104994-004	-----	
					Result	Result	Result	Result	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	4.1	4.1	4.9	4.1	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	217	247	292	253	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	265	301	357	308	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	7.4	11.0	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	4.4	6.6	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	217	247	300	264	----	
conductivity	----	E100	2.0	µS/cm	611	486	637	562	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	361	297	334	331	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	449	451	442	446	----	
pH	----	E108	0.10	pH units	8.22	8.08	8.32	8.35	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	404	298	398	345	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.2	<1.0	1.8	----	
turbidity	----	E121	0.10	NTU	<0.10	1.65	1.18	0.46	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0.0058	<0.0050	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.68	0.59	1.45	0.95	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.442	0.288	0.604	0.528	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0.074	<0.050	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.129	0.0663	0.0303	0.0521	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0024 <sup>HTD</sup>	0.0169	0.0020	0.0023	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0150 <sup>DLM</sup>	0.0066	0.0038	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	0.0144 <sup>DLM</sup>	0.0033	<0.0020	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	144	36.3	89.4	65.9	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.73 <sup>DTC,RRV</sup>	1.39 <sup>DTC,RRV</sup>	3.16	0.80 <sup>DTC,RRV</sup>	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_GV3GW_W G_2021_Q4_NP	EV_GV3GWS_ WG_2021_Q4_ NP	EV_MW_GV4A_ WG_2021_Q4_ NP	EV_MW_GV4B_ WG_2021_Q4_ NP	----
Client sampling date / time					17-Oct-2021 14:50	17-Oct-2021 13:05	17-Oct-2021 16:25	17-Oct-2021 16:15	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104994-001	CG2104994-002	CG2104994-003	CG2104994-004	-----	
					Result	Result	Result	Result	----	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50 <sup>DTC, RRV</sup>	0.68 <sup>DTC, RRV</sup>	3.30	<0.50 <sup>DTC, RRV</sup>	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	7.41	5.73	7.93	6.71	----	
cation sum	----	EC101	0.10	meq/L	7.39	6.08	7.74	6.78	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	99.7	106	97.6	101	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.135	2.96	1.21	0.519	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0015	0.0012	0.0014	0.0051	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0.00013	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00012	0.00070	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0191	0.0883	0.0560	0.0692	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.011	0.013	0.016	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0082	0.0074	<0.0050	0.0119	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	89.6	79.2	79.6	80.0	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00024	0.00015	<0.00010	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	0.27	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00137	0.00180	<0.00020	0.00026	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.021	<0.010	0.168	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	0.000072	<0.000050	0.000077	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0161	0.0080	0.0109	0.0099	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	33.3	24.1	32.8	31.9	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00039	0.00133	0.153	0.00085	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000917	0.00109	0.00261	0.00166	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00055	<0.00050	0.00075	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.08	1.28	1.56	1.29	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	4.24	2.51	4.90	4.05	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.28	3.71	4.71	4.68	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_GV3GW_W G_2021_Q4_NP	EV_GV3GWS_ WG_2021_Q4_ NP	EV_MW_GV4A_ WG_2021_Q4_ NP	EV_MW_GV4B_ WG_2021_Q4_ NP	----
Client sampling date / time					17-Oct-2021 14:50	17-Oct-2021 13:05	17-Oct-2021 16:25	17-Oct-2021 16:15	----	
Analyte	CAS Number	Method	LOR	Unit	CG2104994-001	CG2104994-002	CG2104994-003	CG2104994-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	3.48	2.54	23.4	3.05	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.609	0.215	0.373	0.295	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	47.6	12.0	32.4	23.0	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00180	0.00141	0.00575	0.00141	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0010	0.0020	<0.0010	<0.0010	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104994</b>	Page	: 1 of 18
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	:	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 19-Oct-2021 08:40
PO	: VPO00741597	Issue Date	: 21-Dec-2021 16:25
C-O-C number	: 20211017Q4GW		
Sampler	: J. Batstone/ C. Bracken		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GW_WG_2021_Q4_NP	E298	17-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q4_NP	E298	17-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q4_NP	E298	17-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q4_NP	E298	17-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_GV3GW_WG_2021_Q4_NP	E235.Br-L	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q4_NP	E235.Br-L	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q4_NP	E235.Br-L	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MW_GV4B_WG_2021_Q4_NP	E235.Br-L	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_GV3GW_WG_2021_Q4_NP	E235.Cl-L	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_GV3GWS_WG_2021_Q4_NP	E235.Cl-L	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_GV4A_WG_2021_Q4_NP	E235.Cl-L	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_GV4B_WG_2021_Q4_NP	E235.Cl-L	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_GV3GW_WG_2021_Q4_NP	E378-U	17-Oct-2021	----	----	----		19-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_GV3GWS_WG_2021_Q4_NP	E378-U	17-Oct-2021	----	----	----		19-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_GV4A_WG_2021_Q4_NP	E378-U	17-Oct-2021	----	----	----		19-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_GV4B_WG_2021_Q4_NP	E378-U	17-Oct-2021	----	----	----		19-Oct-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_GV3GW_WG_2021_Q4_NP	E235.F	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_GV3GWS_WG_2021_Q4_NP	E235.F	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q4_NP	E235.F	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q4_NP	E235.F	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_GV3GW_WG_2021_Q4_NP	E235.NO3-L	17-Oct-2021	----	----	----		19-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_GV3GWS_WG_2021_Q4_NP	E235.NO3-L	17-Oct-2021	----	----	----		19-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q4_NP	E235.NO3-L	17-Oct-2021	----	----	----		19-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q4_NP	E235.NO3-L	17-Oct-2021	----	----	----		19-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_GV3GW_WG_2021_Q4_NP	E235.NO2-L	17-Oct-2021	----	----	----		19-Oct-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q4_NP	E235.NO2-L	17-Oct-2021	----	----	----		19-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q4_NP	E235.NO2-L	17-Oct-2021	----	----	----		19-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q4_NP	E235.NO2-L	17-Oct-2021	----	----	----		19-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_GV3GW_WG_2021_Q4_NP	E235.SO4	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q4_NP	E235.SO4	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q4_NP	E235.SO4	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q4_NP	E235.SO4	17-Oct-2021	----	----	----		19-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_GV3GW_WG_2021_Q4_NP	E375-T	17-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q4_NP	E375-T	17-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	9 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q4_NP	E375-T	17-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q4_NP	E375-T	17-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GW_WG_2021_Q4_NP	E318	17-Oct-2021	21-Oct-2021	----	----		24-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q4_NP	E318	17-Oct-2021	21-Oct-2021	----	----		24-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q4_NP	E318	17-Oct-2021	21-Oct-2021	----	----		24-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q4_NP	E318	17-Oct-2021	21-Oct-2021	----	----		24-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GW_WG_2021_Q4_NP	E372-U	17-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q4_NP	E372-U	17-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q4_NP	E372-U	17-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	10 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q4_NP	E372-U	17-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	10 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_GV3GW_WG_2021_Q4_NP	E421.Cr-L	17-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_GV3GWS_WG_2021_Q4_NP	E421.Cr-L	17-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV4A_WG_2021_Q4_NP	E421.Cr-L	17-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV4B_WG_2021_Q4_NP	E421.Cr-L	17-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_GV3GW_WG_2021_Q4_NP	E509	17-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_GV3GWS_WG_2021_Q4_NP	E509	17-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GV4A_WG_2021_Q4_NP	E509	17-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GV4B_WG_2021_Q4_NP	E509	17-Oct-2021	25-Oct-2021	----	----		25-Oct-2021	28 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_GV3GW_WG_2021_Q4_NP	E421	17-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_GV3GWS_WG_2021_Q4_NP	E421	17-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV4A_WG_2021_Q4_NP	E421	17-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GV4B_WG_2021_Q4_NP	E421	17-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	180 days	8 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q4_NP	E358-L	17-Oct-2021	26-Oct-2021	----	----		28-Oct-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_GV3GW_WG_2021_Q4_NP	E358-L	17-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q4_NP	E358-L	17-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q4_NP	E358-L	17-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GWS_WG_2021_Q4_NP	E355-L	17-Oct-2021	26-Oct-2021	----	----		28-Oct-2021	28 days	11 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GV3GW_WG_2021_Q4_NP	E355-L	17-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4A_WG_2021_Q4_NP	E355-L	17-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GV4B_WG_2021_Q4_NP	E355-L	17-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	9 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_GV3GW_WG_2021_Q4_NP	E283	17-Oct-2021	----	----	----		24-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q4_NP	E283	17-Oct-2021	----	----	----		24-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_GV4A_WG_2021_Q4_NP	E283	17-Oct-2021	----	----	----		24-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_GV4B_WG_2021_Q4_NP	E283	17-Oct-2021	----	----	----		24-Oct-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_GV3GW_WG_2021_Q4_NP	E290	17-Oct-2021	----	----	----		21-Oct-2021	14 days	4 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_GV3GWS_WG_2021_Q4_NP	E290	17-Oct-2021	----	----	----		21-Oct-2021	14 days	4 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_GV4A_WG_2021_Q4_NP	E290	17-Oct-2021	----	----	----		21-Oct-2021	14 days	4 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_GV4B_WG_2021_Q4_NP	E290	17-Oct-2021	----	----	----		21-Oct-2021	14 days	4 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_GV3GW_WG_2021_Q4_NP	E100	17-Oct-2021	----	----	----		21-Oct-2021	28 days	4 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_GV3GWS_WG_2021_Q4_NP	E100	17-Oct-2021	----	----	----		21-Oct-2021	28 days	4 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_GV4A_WG_2021_Q4_NP	E100	17-Oct-2021	----	----	----		21-Oct-2021	28 days	4 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_GV4B_WG_2021_Q4_NP	E100	17-Oct-2021	----	----	----		21-Oct-2021	28 days	4 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_GV4A_WG_2021_Q4_NP	E125	17-Oct-2021	----	----	----		26-Oct-2021	0.25 hrs	213 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_GV4B_WG_2021_Q4_NP	E125	17-Oct-2021	----	----	----		26-Oct-2021	0.25 hrs	213 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_GV3GW_WG_2021_Q4_NP	E125	17-Oct-2021	----	----	----		26-Oct-2021	0.25 hrs	215 hrs	* EHTR-FM





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_GV3GWS_WG_2021_Q4_NP	E125	17-Oct-2021	----	----	----		26-Oct-2021	0.25 hrs	216 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_GV4A_WG_2021_Q4_NP	E108	17-Oct-2021	----	----	----		21-Oct-2021	0.25 hrs	95 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_GV4B_WG_2021_Q4_NP	E108	17-Oct-2021	----	----	----		21-Oct-2021	0.25 hrs	95 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_GV3GW_WG_2021_Q4_NP	E108	17-Oct-2021	----	----	----		21-Oct-2021	0.25 hrs	96 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_GV3GWS_WG_2021_Q4_NP	E108	17-Oct-2021	----	----	----		21-Oct-2021	0.25 hrs	98 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_GV3GW_WG_2021_Q4_NP	E162	17-Oct-2021	----	----	----		21-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_GV3GWS_WG_2021_Q4_NP	E162	17-Oct-2021	----	----	----		21-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_GV4A_WG_2021_Q4_NP	E162	17-Oct-2021	----	----	----		21-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_GV4B_WG_2021_Q4_NP	E162	17-Oct-2021	----	----	----		21-Oct-2021	7 days	4 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_GV3GW_WG_2021_Q4_NP	E160-L	17-Oct-2021	----	----	----		21-Oct-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_GV3GWS_WG_2021_Q4_NP	E160-L	17-Oct-2021	----	----	----		21-Oct-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_GV4A_WG_2021_Q4_NP	E160-L	17-Oct-2021	----	----	----		21-Oct-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_GV4B_WG_2021_Q4_NP	E160-L	17-Oct-2021	----	----	----		21-Oct-2021	7 days	4 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_GV3GW_WG_2021_Q4_NP	E121	17-Oct-2021	----	----	----		20-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_GV3GWS_WG_2021_Q4_NP	E121	17-Oct-2021	----	----	----		20-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MW_GV4A_WG_2021_Q4_NP	E121	17-Oct-2021	----	----	----		20-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MW_GV4B_WG_2021_Q4_NP	E121	17-Oct-2021	----	----	----		20-Oct-2021	3 days	3 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	328480	1	19	5.2	5.0	✔
Alkalinity Species by Titration	E290	326086	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	328984	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	323519	1	18	5.5	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	323520	1	18	5.5	5.0	✔
Conductivity in Water	E100	326085	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328742	1	14	7.1	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	328994	1	14	7.1	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	328741	1	14	7.1	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329655	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	323741	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	323517	1	18	5.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	323521	1	18	5.5	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	323522	1	18	5.5	5.0	✔
ORP by Electrode	E125	329713	1	20	5.0	5.0	✔
pH by Meter	E108	326084	0	20	0.0	5.0	✖
Sulfate in Water by IC	E235.SO4	323518	1	18	5.5	5.0	✔
TDS by Gravimetry	E162	325324	1	20	5.0	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	328100	1	11	9.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	326009	1	16	6.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	329658	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	325360	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	324416	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	328480	1	19	5.2	5.0	✔
Alkalinity Species by Titration	E290	326086	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	328984	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	323519	1	18	5.5	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	323520	1	18	5.5	5.0	✔
Conductivity in Water	E100	326085	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328742	1	14	7.1	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	328994	1	14	7.1	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	328741	1	14	7.1	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329655	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	323741	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	323517	1	18	5.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	323521	1	18	5.5	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	323522	1	18	5.5	5.0	✓
ORP by Electrode	E125	329713	1	20	5.0	5.0	✓
pH by Meter	E108	326084	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	323518	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	325324	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	328100	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	326009	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	329658	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	325360	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	325321	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	324416	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	328480	1	19	5.2	5.0	✓
Alkalinity Species by Titration	E290	326086	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	328984	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	323519	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	323520	1	18	5.5	5.0	✓
Conductivity in Water	E100	326085	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328742	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	328994	1	14	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	328741	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329655	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	323741	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	323517	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	323521	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	323522	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	323518	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	325324	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	328100	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	326009	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	329658	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	325360	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	325321	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	324416	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	328984	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	323519	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	323520	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328742	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	328994	1	14	7.1	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	328741	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329655	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	323741	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	323517	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	323521	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	323522	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	323518	1	18	5.5	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	328100	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	326009	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	329658	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	325360	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2104994**  
**Amendment** : **1**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** :  
 BC Canada  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211017Q4GW  
**Sampler** : J. Batstone/ C. Bracken  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 19-Oct-2021 08:40  
**Date Analysis Commenced** : 19-Oct-2021  
**Issue Date** : 21-Dec-2021 16:25

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 324416)</b>											
CG2104968-004	Anonymous	turbidity	----	E121	0.10	NTU	0.30	0.28	0.01	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 325324)</b>											
CG2104974-002	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1580	1540	2.82%	20%	----
<b>Physical Tests (QC Lot: 326085)</b>											
CG2104989-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2240	2260	0.889%	10%	----
<b>Physical Tests (QC Lot: 326086)</b>											
CG2104989-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	612	594	3.02%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	612	594	3.02%	20%	----
<b>Physical Tests (QC Lot: 328480)</b>											
CG2104974-002	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	13.8	12.5	1.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 329713)</b>											
CG2104989-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	436	436	0.0459%	15%	----
<b>Anions and Nutrients (QC Lot: 323517)</b>											
CG2104989-012	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.270	0.277	0.007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 323518)</b>											
CG2104989-012	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	771	783	1.47%	20%	----
<b>Anions and Nutrients (QC Lot: 323519)</b>											
CG2104989-012	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 323520)</b>											
CG2104989-012	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	6.63	6.75	1.81%	20%	----
<b>Anions and Nutrients (QC Lot: 323521)</b>											
CG2104989-012	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.468	0.489	4.43%	20%	----
<b>Anions and Nutrients (QC Lot: 323522)</b>											
CG2104989-012	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0266	0.0262	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 323741)</b>											
CG2104989-008	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0117	0.0118	0.638%	20%	----
<b>Anions and Nutrients (QC Lot: 325360)</b>											
CG2104989-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 326009)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 326009) - continued</b>											
CG2104956-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.151	0.160	0.008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 328100)</b>											
CG2104994-001	EV_GV3GW_WG_2021_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 328984)</b>											
CG2104989-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.240	0.266	10.4%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 329655)</b>											
CG2104989-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.85	0.85	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 329658)</b>											
CG2104989-009	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	5.80	5.62	3.17%	20%	----
<b>Dissolved Metals (QC Lot: 328741)</b>											
CG2104989-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0022	0.0013	0.0009	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00026	0.00028	0.00002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00043	0.00046	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0572	0.0554	3.20%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	0.015	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0286 µg/L	0.0000288	0.0000002	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	268	273	1.75%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.89 µg/L	0.00089	0.000004	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.174	0.174	0.231%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0307	0.0302	1.66%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	154	153	0.488%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0493	0.0486	1.58%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00151	0.00154	2.30%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00408	0.00408	0.000002	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.30	3.27	0.842%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	164 µg/L	0.165	1.01%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.77	3.71	1.68%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	4.02	3.92	2.57%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.260	0.262	0.767%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	293	290	0.873%	20%	----



Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 328741) - continued</b>											
CG2104989-008	Anonymous	thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00878	0.00865	1.43%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0028	0.0031	0.0003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 328742)</b>											
CG2104989-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00014	0.00013	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 328994)</b>											
CG2104994-001	EV_GV3GW_WG_2021_Q4_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 324416)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 325321)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 325324)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 326085)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 326086)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 328480)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 323517)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 323518)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 323519)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 323520)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 323521)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 323522)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 323741)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 325360)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 326009)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 328100)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 328100) - continued</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 328984)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 329655)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 329658)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 328741)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 328741) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 328742)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 328994)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 324416)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	103	85.0	115	----
<b>Physical Tests (QCLot: 325321)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	91.7	85.0	115	----
<b>Physical Tests (QCLot: 325324)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.0	85.0	115	----
<b>Physical Tests (QCLot: 326084)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 326085)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	----
<b>Physical Tests (QCLot: 326086)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	500 mg/L	109	85.0	115	----
<b>Physical Tests (QCLot: 328480)</b>									
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	50 mg/L	106	85.0	115	----
<b>Physical Tests (QCLot: 329713)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100.0	95.4	104	----
<b>Anions and Nutrients (QCLot: 323517)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.0	90.0	110	----
<b>Anions and Nutrients (QCLot: 323518)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 323519)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.4	85.0	115	----
<b>Anions and Nutrients (QCLot: 323520)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 323521)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.8	90.0	110	----
<b>Anions and Nutrients (QCLot: 323522)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 323741)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	97.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 325360)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	98.4	80.0	120	----
<b>Anions and Nutrients (QCLot: 326009)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 326009) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	92.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 328100)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	106	80.0	120	----
<b>Anions and Nutrients (QCLot: 328984)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.6	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 329655)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 329658)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	111	80.0	120	----
<b>Dissolved Metals (QCLot: 328741)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	108	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	116	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	92.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	89.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	111	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	107	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	110	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	100.0	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	112	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.1	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 328741) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	110	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 328742)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.1	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 323517)</b>										
CG2104989-013	Anonymous	fluoride	16984-48-8	E235.F	1.23 mg/L	1 mg/L	123	75.0	125	----
<b>Anions and Nutrients (QCLot: 323518)</b>										
CG2104989-013	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	112 mg/L	100 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 323519)</b>										
CG2104989-013	Anonymous	bromide	24959-67-9	E235.Br-L	0.557 mg/L	0.5 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 323520)</b>										
CG2104989-013	Anonymous	chloride	16887-00-6	E235.Cl-L	112 mg/L	100 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 323521)</b>										
CG2104989-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.80 mg/L	2.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 323522)</b>										
CG2104989-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.569 mg/L	0.5 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 323741)</b>										
CG2104989-009	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0614 mg/L	0.05 mg/L	123	70.0	130	----
<b>Anions and Nutrients (QCLot: 325360)</b>										
CG2104989-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0532 mg/L	0.0676 mg/L	78.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 326009)</b>										
CG2104956-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.45 mg/L	2.5 mg/L	98.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 328100)</b>										
CG2104994-002	EV_GV3GWS_WG_2021_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0632 mg/L	0.0676 mg/L	93.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 328984)</b>										
CG2104989-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 329655)</b>										
CG2104989-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.1 mg/L	23.9 mg/L	101	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 329658)</b>										
CG2104989-009	Anonymous	carbon, total organic [TOC]	----	E355-L	23.0 mg/L	23.9 mg/L	96.0	70.0	130	----
<b>Dissolved Metals (QCLot: 328741)</b>										
CG2104989-009	Anonymous	aluminum, dissolved	7429-90-5	E421	0.207 mg/L	0.2 mg/L	104	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 328741) - continued</b>										
CG2104989-009	Anonymous	antimony, dissolved	7440-36-0	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00827 mg/L	0.01 mg/L	82.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.094 mg/L	0.1 mg/L	93.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00398 mg/L	0.004 mg/L	99.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0180 mg/L	0.02 mg/L	90.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0182 mg/L	0.02 mg/L	90.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.03 mg/L	2 mg/L	101	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0445 mg/L	0.04 mg/L	111	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.52 mg/L	10 mg/L	95.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00389 mg/L	0.004 mg/L	97.2	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00369 mg/L	0.004 mg/L	92.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.385 mg/L	0.4 mg/L	96.2	70.0	130	----
<b>Dissolved Metals (QCLot: 328742)</b>										
CG2104989-009	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 328994)</b>										
CG2104994-002	EV_GV3GWS_WG_2021_Q4_NP	mercury, dissolved	7439-97-6	E509	0.0000993 mg/L	0.0001 mg/L	99.3	70.0	130	----



COC ID: 20211017Q4GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emslie@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
								Email 6:	Jennifer.Dane@teck.com	X	X	X
	Province	BC		City	Calgary		Province	AB				
	Country	Canada		Postal Code	T1Y 7B5		Country	Canada				
	5-5289			Phone Number	403-407-1800			PO number	VPO00741597			

Environmental Division  
Calgary  
Work Order Reference  
**CG2104994**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	No	Yes	Yes	No	No	No	No	Yes	Yes			
								PRESERV	Nitric		Sulphuric		Sulphuric		NO		Sodium Bisulphate	HCl	NaOH	
								ANALYSIS	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI
EV_MW_GV3GW_WG_2021_Q4_NP	EV_MW_GV3GW	WG		10/17/21	14:50	G	5		1	1	1	1					1			
EV_MW_GV3GWS_WG_2021_Q4_NP	EV_MW_GV3GWS	WG		10/17/21	13:05	G	5		1	1	1	1					1			
EV_MW_GV4A_WG_2021_Q4_NP	EV_MW_GV4A	WG		10/17/21	16:25	G	5		1	1	1	1					1			
EV_MW_GV4B_WG_2021_Q4_NP	EV_MW_GV4B	WG		10/17/21	16:15	G	5		1	1	1	1					1			
							Total	20												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	J. Batstone/ C. Bracken	October 17, 2021	<i>[Signature]</i>	10/19/2021
SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name	J. Batstone/ C. Bracken	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	October 17, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

6

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105059**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211019Q4GW  
**Sampler** : J. Batstone/ B. Clarke  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Oct-2021 08:50  
**Date Analysis Commenced** : 20-Oct-2021  
**Issue Date** : 29-Oct-2021 14:25

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID		EV_MW_SP1A_	EV_MW_SP1B_	EV_MW_SP1C_	----	----
(Matrix: Water)					WG_2021_Q4_	WG_2021_Q4_	WG_2021_Q4_				
					NP	NP	NP				
Client sampling date / time					19-Oct-2021 12:40	19-Oct-2021 12:35	19-Oct-2021 14:10			----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105059-001	CG2105059-002	CG2105059-003			-----	-----
					Result	Result	Result			----	----
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0			----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	289	172	185			----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	353	210	226			----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0			----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0			----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0			----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0			----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	289	172	185			----	----
conductivity	----	E100	2.0	µS/cm	566	462	447			----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	299	238	234			----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	419	442	451			----	----
pH	----	E108	0.10	pH units	8.22	8.16	8.19			----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	321	289	271			----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.1	<1.0	<1.0			----	----
turbidity	----	E121	0.10	NTU	5.45	<0.10	0.17			----	----
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.718	<0.0050	0.0088			----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050			----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.22	3.77	6.78			----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.302	0.109	0.108			----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.820	<0.050	<0.050			----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.352	0.197			----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010			----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	0.0028	0.0033			----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0099	<0.0020	0.0066 <sup>DLM</sup>			----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0077	<0.0020	0.0074 <sup>DLM</sup>			----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	32.5	80.8	54.3			----	----
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.66	0.76	1.20			----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID		EV_MW_SP1A_	EV_MW_SP1B_	EV_MW_SP1C_	----	----
(Matrix: Water)					WG_2021_Q4_	WG_2021_Q4_	WG_2021_Q4_				
					NP	NP	NP				
Client sampling date / time					19-Oct-2021	19-Oct-2021	19-Oct-2021	----	----		
					12:40	12:35	14:10				
Analyte	CAS Number	Method	LOR	Unit	CG2105059-001	CG2105059-002	CG2105059-003	-----	-----		
					Result	Result	Result	----	----		
<b>Organic / Inorganic Carbon</b>											
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.71	0.55	1.18	----	----		
<b>Ion Balance</b>											
anion sum	----	EC101	0.10	meq/L	6.59	5.26	5.04	----	----		
cation sum	----	EC101	0.10	meq/L	6.56	5.04	5.03	----	----		
ion balance (cations/anions ratio)	----	EC101	0.010	%	99.5	95.8	99.8	----	----		
ion balance (cation-anion difference)	----	EC101	0.010	%	0.228	2.14	0.099	----	----		
<b>Dissolved Metals</b>											
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0013	<0.0010	<0.0010	----	----		
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----		
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00011	<0.00010	----	----		
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.760	0.160	0.172	----	----		
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----		
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----		
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.027	0.010	<0.010	----	----		
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0060	0.0229	----	----		
calcium, dissolved	7440-70-2	E421	0.050	mg/L	76.7	64.3	64.6	----	----		
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00013	0.00014	----	----		
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	----	----		
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	----	----		
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.448	<0.010	<0.010	----	----		
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----		
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.101	0.0071	0.0090	----	----		
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	26.1	18.7	17.7	----	----		
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0612	<0.00010	0.00017	----	----		
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----		
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000293	0.000836	0.000886	----	----		
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----		
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.57	0.828	0.863	----	----		
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.167	3.74	2.05	----	----		
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.08	2.61	2.69	----	----		



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SP1A_ WG_2021_Q4_ NP	EV_MW_SP1B_ WG_2021_Q4_ NP	EV_MW_SP1C_ WG_2021_Q4_ NP	----	----
Client sampling date / time					19-Oct-2021 12:40	19-Oct-2021 12:35	19-Oct-2021 14:10	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105059-001 Result	CG2105059-002 Result	CG2105059-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	9.85	6.32	7.50	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.320	0.166	0.166	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	11.1	26.1	18.0	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000084	0.000783	0.000776	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2105059</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : <b>Jennifer Dane</b> <b>Address</b> : <b>RR#1 HIGHWAY #3</b> <b>Sparwood BC Canada V0B 2G1</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>ELKVIEW OPERATIONS</b> <b>PO</b> : <b>VPO00741597</b> <b>C-O-C number</b> : <b>20211019Q4GW</b> <b>Sampler</b> : <b>J. Batstone/ B. Clarke</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>Teck Coal Master Quote</b> <b>No. of samples received</b> : <b>3</b> <b>No. of samples analysed</b> : <b>3</b>	<b>Page</b> : <b>1 of 17</b>  <b>Laboratory</b> : <b>Calgary - Environmental</b> <b>Account Manager</b> : <b>Lyudmyla Shvets</b> <b>Address</b> : <b>2559 29th Street NE</b> <b>Calgary, Alberta Canada T1Y 7B5</b>  <b>Telephone</b> : <b>+1 403 407 1800</b> <b>Date Samples Received</b> : <b>20-Oct-2021 08:50</b> <b>Issue Date</b> : <b>29-Oct-2021 14:25</b>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

#### ***Outliers: Reference Material (RM) Samples***

- No Reference Material (RM) Sample outliers occur.

#### ***Outliers : Analysis Holding Time Compliance (Breaches)***

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	38.2 % TKND	20%	Duplicate RPD does not meet the DQO for this test.

**Result Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q4_NP	E298	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q4_NP	E298	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q4_NP	E298	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1A_WG_2021_Q4_NP	E235.Br-L	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1B_WG_2021_Q4_NP	E235.Br-L	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1C_WG_2021_Q4_NP	E235.Br-L	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SP1A_WG_2021_Q4_NP	E235.Cl-L	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1B_WG_2021_Q4_NP	E235.Cl-L	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1C_WG_2021_Q4_NP	E235.Cl-L	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_SP1A_WG_2021_Q4_NP	E378-U	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_SP1B_WG_2021_Q4_NP	E378-U	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_SP1C_WG_2021_Q4_NP	E378-U	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_SP1A_WG_2021_Q4_NP	E235.F	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_SP1B_WG_2021_Q4_NP	E235.F	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_SP1C_WG_2021_Q4_NP	E235.F	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_SP1A_WG_2021_Q4_NP	E235.NO3-L	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1B_WG_2021_Q4_NP	E235.NO3-L	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1C_WG_2021_Q4_NP	E235.NO3-L	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1A_WG_2021_Q4_NP	E235.NO2-L	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1B_WG_2021_Q4_NP	E235.NO2-L	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_SP1C_WG_2021_Q4_NP	E235.NO2-L	19-Oct-2021	----	----	----		21-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_SP1A_WG_2021_Q4_NP	E235.SO4	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_SP1B_WG_2021_Q4_NP	E235.SO4	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_SP1C_WG_2021_Q4_NP	E235.SO4	19-Oct-2021	----	----	----		21-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
Amber glass dissolved (sulfuric acid) EV_MW_SP1A_WG_2021_Q4_NP	E375-T	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q4_NP	E375-T	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q4_NP	E375-T	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q4_NP	E318	19-Oct-2021	24-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q4_NP	E318	19-Oct-2021	24-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q4_NP	E318	19-Oct-2021	24-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q4_NP	E372-U	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q4_NP	E372-U	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q4_NP	E372-U	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1A_WG_2021_Q4_NP	E421.Cr-L	19-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1B_WG_2021_Q4_NP	E421.Cr-L	19-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1C_WG_2021_Q4_NP	E421.Cr-L	19-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SP1A_WG_2021_Q4_NP	E509	19-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SP1B_WG_2021_Q4_NP	E509	19-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SP1C_WG_2021_Q4_NP	E509	19-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1A_WG_2021_Q4_NP	E421	19-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1B_WG_2021_Q4_NP	E421	19-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SP1C_WG_2021_Q4_NP	E421	19-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	180 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q4_NP	E358-L	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q4_NP	E358-L	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q4_NP	E358-L	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1A_WG_2021_Q4_NP	E355-L	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1B_WG_2021_Q4_NP	E355-L	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SP1C_WG_2021_Q4_NP	E355-L	19-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_SP1A_WG_2021_Q4_NP	E283	19-Oct-2021	----	----	----		25-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_SP1B_WG_2021_Q4_NP	E283	19-Oct-2021	----	----	----		25-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_SP1C_WG_2021_Q4_NP	E283	19-Oct-2021	----	----	----		25-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_SP1A_WG_2021_Q4_NP	E290	19-Oct-2021	----	----	----		25-Oct-2021	14 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_SP1B_WG_2021_Q4_NP	E290	19-Oct-2021	----	----	----		25-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_SP1C_WG_2021_Q4_NP	E290	19-Oct-2021	----	----	----		25-Oct-2021	14 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_SP1A_WG_2021_Q4_NP	E100	19-Oct-2021	----	----	----		25-Oct-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_SP1B_WG_2021_Q4_NP	E100	19-Oct-2021	----	----	----		25-Oct-2021	28 days	6 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_SP1C_WG_2021_Q4_NP	E100	19-Oct-2021	----	----	----		25-Oct-2021	28 days	6 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_SP1C_WG_2021_Q4_NP	E125	19-Oct-2021	----	----	----		27-Oct-2021	0.25 hrs	195 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_SP1A_WG_2021_Q4_NP	E125	19-Oct-2021	----	----	----		27-Oct-2021	0.25 hrs	197 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_SP1B_WG_2021_Q4_NP	E125	19-Oct-2021	----	----	----		27-Oct-2021	0.25 hrs	197 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_SP1C_WG_2021_Q4_NP	E108	19-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	143 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_SP1A_WG_2021_Q4_NP	E108	19-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	144 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_SP1B_WG_2021_Q4_NP	E108	19-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	144 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_SP1A_WG_2021_Q4_NP	E162	19-Oct-2021	----	----	----		23-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_SP1B_WG_2021_Q4_NP	E162	19-Oct-2021	----	----	----		23-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_SP1C_WG_2021_Q4_NP	E162	19-Oct-2021	----	----	----		23-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] EV_MW_SP1A_WG_2021_Q4_NP	E160-L	19-Oct-2021	----	----	----		23-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] EV_MW_SP1B_WG_2021_Q4_NP	E160-L	19-Oct-2021	----	----	----		23-Oct-2021	7 days	4 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] EV_MW_SP1C_WG_2021_Q4_NP	E160-L	19-Oct-2021	----	----	----		23-Oct-2021	7 days	4 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_MW_SP1A_WG_2021_Q4_NP	E121	19-Oct-2021	----	----	----		22-Oct-2021	3 days	3 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_SP1B_WG_2021_Q4_NP	E121	19-Oct-2021	----	----	----		22-Oct-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_SP1C_WG_2021_Q4_NP	E121	19-Oct-2021	----	----	----		22-Oct-2021	3 days	3 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	328848	1	19	5.2	5.0	✓
Alkalinity Species by Titration	E290	328881	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	330057	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	325339	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	325340	1	20	5.0	5.0	✓
Conductivity in Water	E100	328880	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	329786	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	330419	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	329785	2	19	10.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329847	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	326000	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	325337	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	325341	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	325342	1	20	5.0	5.0	✓
ORP by Electrode	E125	330181	1	19	5.2	5.0	✓
pH by Meter	E108	328879	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	325338	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	327235	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	328100	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	328387	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	329850	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	328521	1	11	9.0	5.0	✓
Turbidity by Nephelometry	E121	326997	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	328848	1	19	5.2	5.0	✓
Alkalinity Species by Titration	E290	328881	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	330057	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	325339	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	325340	1	20	5.0	5.0	✓
Conductivity in Water	E100	328880	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	329786	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	330419	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	329785	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329847	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	326000	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	325337	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	325341	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	325342	1	20	5.0	5.0	✓
ORP by Electrode	E125	330181	1	19	5.2	5.0	✓
pH by Meter	E108	328879	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	325338	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	327235	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	328100	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	328387	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	329850	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	328521	1	11	9.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	327231	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	326997	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	328848	1	19	5.2	5.0	✓
Alkalinity Species by Titration	E290	328881	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	330057	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	325339	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	325340	1	20	5.0	5.0	✓
Conductivity in Water	E100	328880	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	329786	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	330419	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	329785	2	19	10.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329847	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	326000	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	325337	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	325341	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	325342	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	325338	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	327235	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	328100	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	328387	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	329850	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	328521	1	11	9.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	327231	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	326997	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	330057	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	325339	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	325340	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	329786	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	330419	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	329785	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	329847	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	326000	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	325337	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	325341	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	325342	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	325338	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	328100	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	328387	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	329850	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	328521	1	11	9.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105059**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211019Q4GW  
**Sampler** : J. Batstone/ B. Clarke  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-Oct-2021 08:50  
**Date Analysis Commenced** : 20-Oct-2021  
**Issue Date** : 29-Oct-2021 14:25

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2105059  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 326997)</b>											
CG2105044-001	Anonymous	turbidity	----	E121	0.10	NTU	0.16	0.16	0.005	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 327235)</b>											
CG2105052-003	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	417	403	3.54%	20%	----
<b>Physical Tests (QC Lot: 328848)</b>											
CG2105058-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	13.4	12.3	1.1	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 328879)</b>											
CG2105051-006	Anonymous	pH	----	E108	0.10	pH units	7.51	7.53	0.266%	4%	----
<b>Physical Tests (QC Lot: 328880)</b>											
CG2105051-006	Anonymous	conductivity	----	E100	2.0	µS/cm	6060	6090	0.494%	10%	----
<b>Physical Tests (QC Lot: 328881)</b>											
CG2105051-006	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	407	406	0.345%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	407	406	0.345%	20%	----
<b>Physical Tests (QC Lot: 330181)</b>											
CG2105054-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	375	368	1.86%	15%	----
<b>Anions and Nutrients (QC Lot: 325337)</b>											
CG2105052-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.172	0.173	0.0008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325338)</b>											
CG2105052-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	218	218	0.250%	20%	----
<b>Anions and Nutrients (QC Lot: 325339)</b>											
CG2105052-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325340)</b>											
CG2105052-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.92	0.88	0.04	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325341)</b>											
CG2105052-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.697	0.692	0.619%	20%	----
<b>Anions and Nutrients (QC Lot: 325342)</b>											
CG2105052-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0013	0.0012	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 326000)</b>											
CG2105059-001	EV_MW_SP1A_WG_2021_Q4_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	0.0013	0.00005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 328100)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 328100) - continued</b>											
CG2104994-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 328387)</b>											
CG2105047-006	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.644	0.948	38.2%	20%	TKND
<b>Anions and Nutrients (QC Lot: 328521)</b>											
CG2105059-001	EV_MW_SP1A_WG_2021_Q4_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0099	0.0106	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330057)</b>											
CG2105057-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 329847)</b>											
CG2105056-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 329850)</b>											
CG2105058-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 329785)</b>											
CG2105059-001	EV_MW_SP1A_WG_2021_Q4_NP	copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
CG2105059-001	EV_MW_SP1A_WG_2021_Q4_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0013	0.0011	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.760	0.751	1.21%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.027	0.027	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	76.7	76.3	0.560%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.448	0.457	1.87%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.101	0.0993	1.35%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	26.1	25.8	1.28%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0612	0.0596	2.75%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000293	0.000302	0.000009	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.57	3.50	1.96%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.167 µg/L	0.000105	0.000062	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.08	3.08	0.0000858%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 329785) - continued</b>											
CG2105059-001	EV_MW_SP1A_WG_2021_Q4_NP	sodium, dissolved	17341-25-2	E421	0.050	mg/L	9.85	9.78	0.676%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.320	0.317	0.936%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	11.1	11.3	1.51%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000084	0.000083	0.000001	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 329786)</b>											
CG2105059-001	EV_MW_SP1A_WG_2021_Q4_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 330419)</b>											
CG2105059-001	EV_MW_SP1A_WG_2021_Q4_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 326997)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 327231)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 327235)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 328848)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 328880)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 328881)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 325337)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 325338)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 325339)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 325340)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 325341)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 325342)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 326000)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 328100)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 328387)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 328521)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 328521) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 330057)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 329847)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 329850)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 329785)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 329785) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	MBRR
<b>Dissolved Metals (QCLot: 329786)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 330419)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

**Qualifiers**

Qualifier	Description
MBRR	Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 326997)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.0	85.0	115	---
<b>Physical Tests (QCLot: 327231)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 327235)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 328848)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 328879)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 328880)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.9	90.0	110	---
<b>Physical Tests (QCLot: 328881)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	96.0	85.0	115	---
<b>Physical Tests (QCLot: 330181)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 325337)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 325338)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 325339)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 325340)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 325341)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 325342)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 326000)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	97.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 328100)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	106	80.0	120	---
<b>Anions and Nutrients (QCLot: 328387)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 328387) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 328521)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 330057)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.4	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 329847)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	92.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 329850)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	96.8	80.0	120	----
<b>Dissolved Metals (QCLot: 329785)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.7	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	112	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	93.7	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.7	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	87.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.7	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.0	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	94.8	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.6	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.0	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.0	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	90.2	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 329785) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.2	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.5	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	109	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 329786)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 325337)</b>										
CG2105052-002	Anonymous	fluoride	16984-48-8	E235.F	1.03 mg/L	1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 325338)</b>										
CG2105052-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	111 mg/L	100 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 325339)</b>										
CG2105052-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.561 mg/L	0.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 325340)</b>										
CG2105052-002	Anonymous	chloride	16887-00-6	E235.Cl-L	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 325341)</b>										
CG2105052-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.79 mg/L	2.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 325342)</b>										
CG2105052-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.536 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 326000)</b>										
CG2105059-002	EV_MW_SP1B_WG_2021_Q4_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0599 mg/L	0.05 mg/L	120	70.0	130	----
<b>Anions and Nutrients (QCLot: 328100)</b>										
CG2104994-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0632 mg/L	0.0676 mg/L	93.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 328387)</b>										
CG2105048-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.72 mg/L	2.5 mg/L	109	70.0	130	----
<b>Anions and Nutrients (QCLot: 328521)</b>										
CG2105059-001	EV_MW_SP1A_WG_2021_Q4_NP	phosphorus, total	7723-14-0	E372-U	0.0523 mg/L	0.0676 mg/L	77.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 330057)</b>										
CG2105057-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0996 mg/L	0.1 mg/L	99.6	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 329847)</b>										
CG2105056-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.4 mg/L	23.9 mg/L	93.6	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 329850)</b>										
CG2105058-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.9 mg/L	23.9 mg/L	95.7	70.0	130	----
<b>Dissolved Metals (QCLot: 329785)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 329785) - continued</b>										
CG2105059-002	EV_MW_SP1B_WG_2021_Q4_NP	aluminum, dissolved	7429-90-5	E421	0.192 mg/L	0.2 mg/L	96.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00742 mg/L	0.01 mg/L	74.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.089 mg/L	0.1 mg/L	89.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.93 mg/L	2 mg/L	96.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0950 mg/L	0.1 mg/L	95.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.12 mg/L	4 mg/L	103	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0443 mg/L	0.04 mg/L	111	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.17 mg/L	10 mg/L	91.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00439 mg/L	0.004 mg/L	110	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0998 mg/L	0.1 mg/L	99.8	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.410 mg/L	0.4 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 329786)</b>										
CG2105059-002	EV_MW_SP1B_WG_2021_Q4_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0399 mg/L	0.04 mg/L	99.9	70.0	130	----
<b>Dissolved Metals (QCLot: 330419)</b>										
CG2105059-002	EV_MW_SP1B_WG_2021_Q4_NP	mercury, dissolved	7439-97-6	E509	0.0000986 mg/L	0.0001 mg/L	98.6	70.0	130	----



<b>COC ID:</b>	20211019Q4GW	<b>TURNAROUND TIME:</b>		<b>RUSH:</b>								
<b>PROJECT/CLIENT INFO</b>			<b>LABORATORY</b>		<b>OTHER INFO</b>							
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD				
Job Description	Q4 Ground Water Sampling	Lab Contact	Lyudmyla Shvets		Email 1:	chris.emslic@teck.com	X	X	X			
Project Manager	Jennifer Dane	Email	lyudmyla.shvets@alsglobal.com		Email 2:	colby.bracken@teck.com	X	X	X			
Email	jennifer.dane@teck.com	Address	2559 29 Street NE		Email 3:	kenedy.allen@teck.com	X	X	X			
Address	RR#1 HWY# 3				Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X			
					Email 5:	teckcoal@equisonline.com			X			
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 6:	Jennifer.Dane@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289	Phone Number	403-407-1800		PO number	VPO00741597						

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PH	No		Yes		No		No		No		Yes		
									Nitric	Sulphuric	Sulphuric	NO	Sodium Bisulphate	HCl	NaOH						
EV_MW_SPIA_WG_2021_Q4_NP	EV-MW_SPIA	WG		10/19/21	12:40	G	5														
EV_MW_SPIB_WG_2021_Q4_NP	EV-MW_SPIB	WG		10/19/21	12:35	G	5														
EV_MW_SPIC_WG_2021_Q4_NP	EV-MW_SPIC	WG		10/19/21	14:10	G	5														
Total							15														

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
	J. Batstone/ B. Clarke	October 19, 2021	<i>[Signature]</i>	10/20 8:50 AM 6°C
<b>SERVICE REQUEST (rush - subject to availability)</b>	<b>Sampler's Name</b>	<b>Mobile #</b>	<b>Sampler's Signature</b>	<b>Date/Time</b>
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge Weekend - Contact ALS	J. Batstone/ B. Clarke			October 19, 2021

Environmental Division  
Calgary  
Work Order Reference  
**CG2105059**





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105189**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211024Q4GW  
**Sampler** : JB/CB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Oct-2021 09:05  
**Date Analysis Commenced** : 26-Oct-2021  
**Issue Date** : 05-Nov-2021 09:08

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					EV_GCGW_WG_2021_Q4_NP	EV_MW_GC1B_WG_2021_Q4_NP	EV_MC10A_WG_2021_Q4_NP	EV_MC10B_WG_2021_Q4_NP	EV_MC10C_WG_2021_Q4_NP
Client sampling date / time					24-Oct-2021 15:05	24-Oct-2021 13:39	24-Oct-2021 15:20	24-Oct-2021 15:25	24-Oct-2021 12:00
Analyte	CAS Number	Method	LOR	Unit	CG2105189-001	CG2105189-002	CG2105189-003	CG2105189-004	CG2105189-005
					Result	Result	Result	Result	Result
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	8.0	2.3	<2.0	<2.0
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	174	355	172	<2.0	<2.0
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	212	433	209	<2.0	<2.0
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	174	355	172	<2.0	<2.0
conductivity	----	E100	2.0	µS/cm	437	1110	431	<2.0	<2.0
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	232	622	226	<0.50	<0.50
oxidation-reduction potential [ORP]	----	E125	0.10	mV	441	429	443	530	537
pH	----	E108	0.10	pH units	8.22	8.12	8.20	5.67	5.54
solids, total dissolved [TDS]	----	E162	10	mg/L	260	727	257	<10	<10
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.3	<1.0	2.1	<1.0	<1.0
turbidity	----	E121	0.10	NTU	3.66	0.64	3.91	<0.10	<0.10
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0193	0.0656	0.0226	<0.0050	0.0107 <sup>RRV</sup>
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.250 <sup>DLDS</sup>	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.08	24.2	4.00	<0.10	<0.10
fluoride	16984-48-8	E235.F	0.020	mg/L	0.475	0.153	0.500	<0.020	<0.020
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.126	0.127	0.065	<0.050	<0.050
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.731	<0.0050	<0.0050	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.102	<0.0010	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0021	0.0013	<0.0010	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0042	0.0034	0.0046	<0.0020	<0.0020
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0027	0.0055	0.0023	<0.0020	<0.0020
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	62.0	291	60.1	<0.30	<0.30
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.09 <sup>DTC,RRV</sup>	1.76	0.85	<0.50	<0.50



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_GCGW_WG_2021_Q4_NP	EV_MW_GC1B_WG_2021_Q4_NP	EV_MC10A_WG_2021_Q4_NP	EV_MC10B_WG_2021_Q4_NP	EV_MC10C_WG_2021_Q4_NP
Client sampling date / time					24-Oct-2021 15:05	24-Oct-2021 13:39	24-Oct-2021 15:20	24-Oct-2021 15:25	24-Oct-2021 12:00	
Analyte	CAS Number	Method	LOR	Unit	CG2105189-001	CG2105189-002	CG2105189-003	CG2105189-004	CG2105189-005	
					Result	Result	Result	Result	Result	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50 <sup>DTC.RRV</sup>	1.60	0.66	<0.50	<0.50	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.91	13.9	4.83	<0.10	<0.10	
cation sum	----	EC101	0.10	meq/L	4.83	13.3	4.72	<0.10	<0.10	
ion balance (cations/anions ratio)	----	EC101	0.010	%	98.4	95.7	97.7	100	100	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.821	2.20	1.15	<0.010	<0.010	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0037	<0.0010	0.0028	<0.0010	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00012	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00254	0.00014	0.00256	<0.00010	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0734	0.101	0.0674	<0.00010	<0.00010	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	0.052	0.013	<0.010	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.103	<0.0050	<0.0050	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	62.7	135	60.8	<0.050	<0.050	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.19	0.49	0.18	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00046	0.00021	<0.00020	<0.00020	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.373	0.111	0.372	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0082	0.0399	0.0076	<0.0010	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.2	69.1	18.0	<0.0050	<0.0050	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0810	0.789	0.0808	<0.00010	<0.00010	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00237	0.00224	0.00229	<0.000050	<0.000050	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00052	0.00386	<0.00050	<0.00050	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.754	2.41	0.748	<0.050	<0.050	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	2.63	<0.050	<0.050	<0.050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.33	4.45	4.47	<0.050	<0.050	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_GCGW_WG_2021_Q4_NP	EV_MW_GC1B_WG_2021_Q4_NP	EV_MC10A_WG_2021_Q4_NP	EV_MC10B_WG_2021_Q4_NP	EV_MC10C_WG_2021_Q4_NP
Client sampling date / time					24-Oct-2021 15:05	24-Oct-2021 13:39	24-Oct-2021 15:20	24-Oct-2021 15:25	24-Oct-2021 12:00	
Analyte	CAS Number	Method	LOR	Unit	CG2105189-001	CG2105189-002	CG2105189-003	CG2105189-004	CG2105189-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.82	18.3	3.87	<0.050	<0.050	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.248	0.833	0.246	<0.00020	<0.00020	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	23.0	103	24.0	<0.50	<0.50	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000011	0.000061	0.000011	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00106	0.00164	0.00109	<0.000010	<0.000010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0019	0.0019	0.0015	<0.0010	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2105189</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : <b>Jennifer Dane</b> <b>Address</b> : <b>RR#1 HIGHWAY #3</b> <b>Sparwood BC Canada V0B 2G1</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>ELKVIEW OPERATIONS</b> <b>PO</b> : <b>VPO00741597</b> <b>C-O-C number</b> : <b>20211024Q4GW</b> <b>Sampler</b> : <b>JB/CB</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>Teck Coal Master Quote</b> <b>No. of samples received</b> : <b>5</b> <b>No. of samples analysed</b> : <b>5</b>	<b>Page</b> : <b>1 of 21</b>  <b>Laboratory</b> : <b>Calgary - Environmental</b> <b>Account Manager</b> : <b>Lyudmyla Shvets</b> <b>Address</b> : <b>2559 29th Street NE</b> <b>Calgary, Alberta Canada T1Y 7B5</b>  <b>Telephone</b> : <b>+1 403 407 1800</b> <b>Date Samples Received</b> : <b>26-Oct-2021 09:05</b> <b>Issue Date</b> : <b>05-Nov-2021 09:08</b>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### ***Outliers: Reference Material (RM) Samples***

- No Reference Material (RM) Sample outliers occur.

#### ***Outliers : Analysis Holding Time Compliance (Breaches)***

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_GCGW_WG_2021_Q4_NP	E298	24-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	28 days	8 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MC10A_WG_2021_Q4_NP	E298	24-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	28 days	8 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MC10B_WG_2021_Q4_NP	E298	24-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	28 days	8 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MC10C_WG_2021_Q4_NP	E298	24-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	28 days	8 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q4_NP	E298	24-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	28 days	8 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_GCGW_WG_2021_Q4_NP	E235.Br-L	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MC10A_WG_2021_Q4_NP	E235.Br-L	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MC10B_WG_2021_Q4_NP	E235.Br-L	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MC10C_WG_2021_Q4_NP	E235.Br-L	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE EV_MW_GC1B_WG_2021_Q4_NP	E235.Br-L	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_GCGW_WG_2021_Q4_NP	E235.Cl-L	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MC10A_WG_2021_Q4_NP	E235.Cl-L	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MC10B_WG_2021_Q4_NP	E235.Cl-L	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MC10C_WG_2021_Q4_NP	E235.Cl-L	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_GC1B_WG_2021_Q4_NP	E235.Cl-L	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_GCGW_WG_2021_Q4_NP	E378-U	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MC10A_WG_2021_Q4_NP	E378-U	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MC10B_WG_2021_Q4_NP	E378-U	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MC10C_WG_2021_Q4_NP	E378-U	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_GC1B_WG_2021_Q4_NP	E378-U	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_GCGW_WG_2021_Q4_NP	E235.F	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MC10A_WG_2021_Q4_NP	E235.F	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MC10B_WG_2021_Q4_NP	E235.F	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MC10C_WG_2021_Q4_NP	E235.F	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_GC1B_WG_2021_Q4_NP	E235.F	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_GCGW_WG_2021_Q4_NP	E235.NO3-L	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC10A_WG_2021_Q4_NP	E235.NO3-L	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC10B_WG_2021_Q4_NP	E235.NO3-L	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC10C_WG_2021_Q4_NP	E235.NO3-L	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_GC1B_WG_2021_Q4_NP	E235.NO3-L	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_GCGW_WG_2021_Q4_NP	E235.NO2-L	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC10A_WG_2021_Q4_NP	E235.NO2-L	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC10B_WG_2021_Q4_NP	E235.NO2-L	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC10C_WG_2021_Q4_NP	E235.NO2-L	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_GC1B_WG_2021_Q4_NP	E235.NO2-L	24-Oct-2021	----	----	----		26-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_GCGW_WG_2021_Q4_NP	E235.SO4	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MC10A_WG_2021_Q4_NP	E235.SO4	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MC10B_WG_2021_Q4_NP	E235.SO4	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MC10C_WG_2021_Q4_NP	E235.SO4	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_GC1B_WG_2021_Q4_NP	E235.SO4	24-Oct-2021	----	----	----		26-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_GCGW_WG_2021_Q4_NP	E375-T	24-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	9 days	✓
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC10A_WG_2021_Q4_NP	E375-T	24-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	9 days	✓
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC10B_WG_2021_Q4_NP	E375-T	24-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	9 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC10C_WG_2021_Q4_NP	E375-T	24-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q4_NP	E375-T	24-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GCGW_WG_2021_Q4_NP	E318	24-Oct-2021	30-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC10A_WG_2021_Q4_NP	E318	24-Oct-2021	30-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC10B_WG_2021_Q4_NP	E318	24-Oct-2021	30-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC10C_WG_2021_Q4_NP	E318	24-Oct-2021	30-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q4_NP	E318	24-Oct-2021	30-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GCGW_WG_2021_Q4_NP	E372-U	24-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC10A_WG_2021_Q4_NP	E372-U	24-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	10 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC10B_WG_2021_Q4_NP	E372-U	24-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC10C_WG_2021_Q4_NP	E372-U	24-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q4_NP	E372-U	24-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	10 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_GCGW_WG_2021_Q4_NP	E421.Cr-L	24-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC10A_WG_2021_Q4_NP	E421.Cr-L	24-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC10B_WG_2021_Q4_NP	E421.Cr-L	24-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC10C_WG_2021_Q4_NP	E421.Cr-L	24-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GC1B_WG_2021_Q4_NP	E421.Cr-L	24-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_GCGW_WG_2021_Q4_NP	E509	24-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MC10A_WG_2021_Q4_NP	E509	24-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MC10B_WG_2021_Q4_NP	E509	24-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MC10C_WG_2021_Q4_NP	E509	24-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	9 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GC1B_WG_2021_Q4_NP	E509	24-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	9 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_GCGW_WG_2021_Q4_NP	E421	24-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	180 days	9 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC10A_WG_2021_Q4_NP	E421	24-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	180 days	9 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC10B_WG_2021_Q4_NP	E421	24-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	180 days	9 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC10C_WG_2021_Q4_NP	E421	24-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	180 days	9 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GC1B_WG_2021_Q4_NP	E421	24-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	180 days	9 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_GCGW_WG_2021_Q4_NP	E358-L	24-Oct-2021	31-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC10A_WG_2021_Q4_NP	E358-L	24-Oct-2021	31-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC10B_WG_2021_Q4_NP	E358-L	24-Oct-2021	31-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC10C_WG_2021_Q4_NP	E358-L	24-Oct-2021	31-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q4_NP	E358-L	24-Oct-2021	31-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_GCGW_WG_2021_Q4_NP	E355-L	24-Oct-2021	31-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC10A_WG_2021_Q4_NP	E355-L	24-Oct-2021	31-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC10B_WG_2021_Q4_NP	E355-L	24-Oct-2021	31-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC10C_WG_2021_Q4_NP	E355-L	24-Oct-2021	31-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_GC1B_WG_2021_Q4_NP	E355-L	24-Oct-2021	31-Oct-2021	----	----		02-Nov-2021	28 days	9 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> EV_GCGW_WG_2021_Q4_NP	E283	24-Oct-2021	----	----	----		30-Oct-2021	14 days	6 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> EV_MC10A_WG_2021_Q4_NP	E283	24-Oct-2021	----	----	----		30-Oct-2021	14 days	6 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> EV_MC10B_WG_2021_Q4_NP	E283	24-Oct-2021	----	----	----		30-Oct-2021	14 days	6 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> EV_MC10C_WG_2021_Q4_NP	E283	24-Oct-2021	----	----	----		30-Oct-2021	14 days	6 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> EV_MW_GC1B_WG_2021_Q4_NP	E283	24-Oct-2021	----	----	----		30-Oct-2021	14 days	6 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> EV_GCGW_WG_2021_Q4_NP	E290	24-Oct-2021	----	----	----		31-Oct-2021	14 days	7 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> EV_MC10A_WG_2021_Q4_NP	E290	24-Oct-2021	----	----	----		31-Oct-2021	14 days	7 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> EV_MC10B_WG_2021_Q4_NP	E290	24-Oct-2021	----	----	----		31-Oct-2021	14 days	7 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MC10C_WG_2021_Q4_NP	E290	24-Oct-2021	----	----	----		31-Oct-2021	14 days	7 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_GC1B_WG_2021_Q4_NP	E290	24-Oct-2021	----	----	----		31-Oct-2021	14 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_GCGW_WG_2021_Q4_NP	E100	24-Oct-2021	----	----	----		31-Oct-2021	28 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MC10A_WG_2021_Q4_NP	E100	24-Oct-2021	----	----	----		31-Oct-2021	28 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MC10B_WG_2021_Q4_NP	E100	24-Oct-2021	----	----	----		31-Oct-2021	28 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MC10C_WG_2021_Q4_NP	E100	24-Oct-2021	----	----	----		31-Oct-2021	28 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_GC1B_WG_2021_Q4_NP	E100	24-Oct-2021	----	----	----		31-Oct-2021	28 days	7 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_GCGW_WG_2021_Q4_NP	E125	24-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	210 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MC10A_WG_2021_Q4_NP	E125	24-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	210 hrs	* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MC10B_WG_2021_Q4_NP	E125	24-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	210 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_GC1B_WG_2021_Q4_NP	E125	24-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	212 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MC10C_WG_2021_Q4_NP	E125	24-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	213 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MC10A_WG_2021_Q4_NP	E108	24-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	160 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MC10B_WG_2021_Q4_NP	E108	24-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	160 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_GCGW_WG_2021_Q4_NP	E108	24-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	161 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_GC1B_WG_2021_Q4_NP	E108	24-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	162 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MC10C_WG_2021_Q4_NP	E108	24-Oct-2021	----	----	----		31-Oct-2021	0.25 hrs	164 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_GCGW_WG_2021_Q4_NP	E162	24-Oct-2021	----	----	----		28-Oct-2021	7 days	4 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MC10A_WG_2021_Q4_NP	E162	24-Oct-2021	----	----	----		28-Oct-2021	7 days	4 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MC10B_WG_2021_Q4_NP	E162	24-Oct-2021	----	----	----		28-Oct-2021	7 days	4 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MC10C_WG_2021_Q4_NP	E162	24-Oct-2021	----	----	----		28-Oct-2021	7 days	4 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_GC1B_WG_2021_Q4_NP	E162	24-Oct-2021	----	----	----		28-Oct-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_GCGW_WG_2021_Q4_NP	E160-L	24-Oct-2021	----	----	----		28-Oct-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MC10A_WG_2021_Q4_NP	E160-L	24-Oct-2021	----	----	----		28-Oct-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MC10B_WG_2021_Q4_NP	E160-L	24-Oct-2021	----	----	----		28-Oct-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MC10C_WG_2021_Q4_NP	E160-L	24-Oct-2021	----	----	----		28-Oct-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_GC1B_WG_2021_Q4_NP	E160-L	24-Oct-2021	----	----	----		28-Oct-2021	7 days	4 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_GCGW_WG_2021_Q4_NP	E121	24-Oct-2021	----	----	----		27-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MC10A_WG_2021_Q4_NP	E121	24-Oct-2021	----	----	----		27-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MC10B_WG_2021_Q4_NP	E121	24-Oct-2021	----	----	----		27-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MC10C_WG_2021_Q4_NP	E121	24-Oct-2021	----	----	----		27-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MW_GC1B_WG_2021_Q4_NP	E121	24-Oct-2021	----	----	----		27-Oct-2021	3 days	3 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	334078	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334127	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	335158	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	329912	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	329913	1	20	5.0	5.0	✓
Conductivity in Water	E100	334128	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334371	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	335309	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334370	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334440	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330133	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	329911	2	26	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	329914	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	329915	1	20	5.0	5.0	✓
ORP by Electrode	E125	335554	1	20	5.0	5.0	✓
pH by Meter	E108	334126	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	329909	2	26	7.6	5.0	✓
TDS by Gravimetry	E162	331634	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	333846	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334445	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334631	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	330646	1	10	10.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	334078	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334127	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	335158	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	329912	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	329913	1	20	5.0	5.0	✓
Conductivity in Water	E100	334128	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334371	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	335309	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334370	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334440	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330133	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	329911	2	26	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	329914	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	329915	1	20	5.0	5.0	✓
ORP by Electrode	E125	335554	1	20	5.0	5.0	✓
pH by Meter	E108	334126	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	329909	2	26	7.6	5.0	✓
TDS by Gravimetry	E162	331634	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	333846	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334445	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334631	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	331629	2	21	9.5	5.0	✓
Turbidity by Nephelometry	E121	330646	1	10	10.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	334078	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334127	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	335158	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	329912	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	329913	1	20	5.0	5.0	✓
Conductivity in Water	E100	334128	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334371	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	335309	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334370	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334440	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330133	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	329911	2	26	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	329914	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	329915	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	329909	2	26	7.6	5.0	✓
TDS by Gravimetry	E162	331634	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	333846	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334445	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334631	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	331629	2	21	9.5	5.0	✓
Turbidity by Nephelometry	E121	330646	1	10	10.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	335158	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	329912	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	329913	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334371	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	335309	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	334370	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334440	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330133	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	329911	2	26	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	329914	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	329915	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	329909	2	26	7.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	333846	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334445	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334631	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105189**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211024Q4GW  
**Sampler** : JB/CB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Oct-2021 09:05  
**Date Analysis Commenced** : 26-Oct-2021  
**Issue Date** : 05-Nov-2021 09:08

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2105189  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 330646)</b>											
CG2105189-001	EV_GCGW_WG_2021_Q4_NP	turbidity	----	E121	0.10	NTU	3.66	4.16	12.8%	15%	----
<b>Physical Tests (QC Lot: 331634)</b>											
CG2105166-002	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1540	1500	2.63%	20%	----
<b>Physical Tests (QC Lot: 331635)</b>											
CG2105189-004	EV_MC10B_WG_2021_Q4_NP	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 334078)</b>											
CG2105187-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.3	<2.0	0.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 334126)</b>											
CG2105187-001	Anonymous	pH	----	E108	0.10	pH units	8.27	8.28	0.121%	4%	----
<b>Physical Tests (QC Lot: 334127)</b>											
CG2105187-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	127	122	4.08%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	127	122	4.08%	20%	----
<b>Physical Tests (QC Lot: 334128)</b>											
CG2105187-001	Anonymous	conductivity	----	E100	2.0	µS/cm	348	348	0.00%	10%	----
<b>Physical Tests (QC Lot: 335554)</b>											
CG2105187-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	461	466	1.04%	15%	----
<b>Anions and Nutrients (QC Lot: 329909)</b>											
CG2105169-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	3.00	mg/L	1320	1390	4.84%	20%	----
<b>Anions and Nutrients (QC Lot: 329911)</b>											
CG2105169-001	Anonymous	fluoride	16984-48-8	E235.F	0.200	mg/L	0.792	0.788	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 329912)</b>											
CG2105186-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 329913)</b>											
CG2105186-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	6.77	6.92	2.28%	20%	----
<b>Anions and Nutrients (QC Lot: 329914)</b>											
CG2105186-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	14.1	14.1	0.272%	20%	----
<b>Anions and Nutrients (QC Lot: 329915)</b>											
CG2105186-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 329916)</b>											
CG2105190-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.082	0.082	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 329917)</b>											
CG2105190-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	74.5	74.5	0.0351%	20%	----
<b>Anions and Nutrients (QC Lot: 330133)</b>											
CG2105189-001	EV_GCGW_WG_2021_Q4_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 333846)</b>											
CG2105180-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.061	0.064	0.003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 334618)</b>											
CG2105189-001	EV_GCGW_WG_2021_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0027	0.0023	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 334631)</b>											
CG2105187-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0027	0.0025	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 335158)</b>											
CG2105187-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334440)</b>											
CG2105187-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.02	0.77	0.24	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334445)</b>											
CG2105180-002	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.40	1.49	0.08	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 334370)</b>											
CG2105182-009	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0013	0.0011	0.0002	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00060	0.00054	0.00006	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00064	0.00066	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0117	0.0124	5.89%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.032	0.033	0.00010	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.248 µg/L	0.000250	0.647%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	264	288	8.39%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	16.1 µg/L	0.0173	6.78%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00020	0.00021	0.00001	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.026	0.027	0.001	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0559	0.0573	2.54%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	162	173	6.52%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.383	0.410	6.76%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 334370) - continued</b>											
CG2105182-009	Anonymous	molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0198	0.0207	4.55%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0586	0.0623	6.08%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.93	5.51	11.0%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	18.7 µg/L	0.0196	4.34%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.09	3.21	3.97%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.44	7.17	10.7%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.360	0.384	6.51%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	306	288	5.99%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000096	0.000092	0.000004	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0126	0.0130	2.46%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0231	0.0247	6.64%	20%	----
<b>Dissolved Metals (QC Lot: 334371)</b>											
CG2105182-009	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 335309)</b>											
CG2105182-008	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 330646)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 331629)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 331630)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 331634)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 331635)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 334078)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 334127)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 334128)</b>						
conductivity	----	E100	1	µS/cm	1.1	----
<b>Anions and Nutrients (QCLot: 329909)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 329911)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 329912)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 329913)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 329914)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 329915)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 329916)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 329917)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 329917) - continued</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 330133)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 333846)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 334618)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 334631)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 335158)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 334440)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 334445)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 334370)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 334370) - continued</b>						
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 334371)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 335309)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 330646)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.4	85.0	115	---
<b>Physical Tests (QCLot: 331629)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	92.6	85.0	115	---
<b>Physical Tests (QCLot: 331630)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	91.0	85.0	115	---
<b>Physical Tests (QCLot: 331634)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	98.7	85.0	115	---
<b>Physical Tests (QCLot: 331635)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	98.0	85.0	115	---
<b>Physical Tests (QCLot: 334078)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	99.9	85.0	115	---
<b>Physical Tests (QCLot: 334126)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 334127)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 334128)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	---
<b>Physical Tests (QCLot: 335554)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 329909)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	108	90.0	110	---
<b>Anions and Nutrients (QCLot: 329911)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 329912)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 329913)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 329914)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 329915)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 329916)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 329916) - continued</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.1	90.0	110	----
<b>Anions and Nutrients (QCLot: 329917)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 330133)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 333846)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 334618)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	98.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 334631)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	96.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 335158)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.0	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 334440)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 334445)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 334370)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100.0	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.4	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	91.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	91.2	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.3	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	96.3	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 334370) - continued</b>									
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.8	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	109	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	103	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	85.7	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	97.4	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	95.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.4	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	93.5	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.6	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 334371)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	105	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 329909)</b>										
CG2105186-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 329911)</b>										
CG2105186-001	Anonymous	fluoride	16984-48-8	E235.F	0.893 mg/L	1 mg/L	89.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 329912)</b>										
CG2105187-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.523 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 329913)</b>										
CG2105187-005	Anonymous	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 329914)</b>										
CG2105187-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.65 mg/L	2.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 329915)</b>										
CG2105187-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.515 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 329916)</b>										
CG2105190-005	Anonymous	fluoride	16984-48-8	E235.F	0.936 mg/L	1 mg/L	93.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 329917)</b>										
CG2105190-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 330133)</b>										
CG2105189-002	EV_MW_GC1B_WG_2021_Q4_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0517 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 333846)</b>										
CG2105180-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.42 mg/L	2.5 mg/L	96.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 334618)</b>										
CG2105189-002	EV_MW_GC1B_WG_2021_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0626 mg/L	0.0676 mg/L	92.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 334631)</b>										
CG2105187-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0617 mg/L	0.0676 mg/L	91.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 335158)</b>										
CG2105187-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0986 mg/L	0.1 mg/L	98.6	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 334440)</b>										
CG2105187-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.4 mg/L	23.9 mg/L	93.7	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Organic / Inorganic Carbon (QCLot: 334445)</b>										
CG2105180-002	Anonymous	carbon, total organic [TOC]	----	E355-L	25.4 mg/L	23.9 mg/L	106	70.0	130	----
<b>Dissolved Metals (QCLot: 334370)</b>										
CG2105182-014	Anonymous	aluminum, dissolved	7429-90-5	E421	0.193 mg/L	0.2 mg/L	96.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00793 mg/L	0.01 mg/L	79.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	88.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00419 mg/L	0.004 mg/L	105	70.0	130	----
		calcium, dissolved	7440-70-2	E421	3.95 mg/L	4 mg/L	98.8	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.09 mg/L	2 mg/L	104	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0963 mg/L	0.1 mg/L	96.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	0.979 mg/L	1 mg/L	97.9	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.97 mg/L	4 mg/L	99.3	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0470 mg/L	0.04 mg/L	118	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.37 mg/L	10 mg/L	93.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00402 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.98 mg/L	2 mg/L	99.0	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.1 mg/L	20 mg/L	101	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00380 mg/L	0.004 mg/L	95.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0366 mg/L	0.04 mg/L	91.5	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00391 mg/L	0.004 mg/L	97.7	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.437 mg/L	0.4 mg/L	109	70.0	130	----
<b>Dissolved Metals (QCLot: 334371)</b>										
CG2105182-014	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 335309)</b>										

Page : 14 of 14  
 Work Order : CG2105189  
 Client : Teck Coal Limited  
 Project : ELKVIEW OPERATIONS



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 335309) - continued</b>										
CG2105182-009	Anonymous	mercury, dissolved	7439-97-6	E509	0.000105 mg/L	0.0001 mg/L	105	70.0	130	----

COC ID: 20211024Q4GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emslie@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
City	Sparwood		Province	BC		City	Calgary		Province	AB		
Postal Code			Country	Canada		Postal Code	T1Y 7B5		Country	Canada		
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

SAMPLE DETAILS								ANALYSIS REQUESTED																								
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ELEM.	PRESERV.		Nitric		Sulphuric		Sulphuric		NO		Sodium Bisulphate		HCl		NaOH									
									TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Disolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI												
EV_GCGW_WG_2021_Q4_NP	EV_GCGW	WG		10/24/21	15:05	G	5																									
EV_MW_GCIB_WG_2021_Q4_NP	EV_MW_GCIB	WG		10/24/21	13:39	G	5																									
EV_MC10A_WG_2021_Q4_NP	EV_MC10A	WG		10/24/21	15:20	G	5																									
EV_MC10B_WG_2021_Q4_NP	EV_MC10B	WG		10/24/21	15:25	G	5																									
EV_MC10C_WG_2021_Q4_NP	EV_MC10C	WG		10/24/21	12:00	G	5																									
							Total	25																								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	J. Batstone/ C. Bracken	October 24, 2021	<i>[Signature]</i>	10/26 2021, 9:05am 8°C
SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name	J. Batstone/ C. Bracken	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	October 24, 2021
Emergency (1 Business Day) - 100% surcharge				
Weekend - Contact ALS				

Environmental Division  
Calgary

Work Order Reference  
**CG2105189**





## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105261**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HWY#3  
Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211026Q4GW  
**Sampler** : J.B/B.C  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-Oct-2021 08:50  
**Date Analysis Commenced** : 28-Oct-2021  
**Issue Date** : 05-Nov-2021 12:07

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).





## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_ECGW_WG _2021_Q4_NP	EV_BCGW_WG _2021_Q4_NP	----	----	----
(Matrix: Water)					Client sampling date / time	26-Oct-2021 12:13	26-Oct-2021 14:42	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105261-001 Result	CG2105261-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	2.1	3.4	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	214	186	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	261	226	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	214	186	----	----	----	
conductivity	----	E100	2.0	µS/cm	416	652	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	156	344	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	412	481	----	----	----	
pH	----	E108	0.10	pH units	8.15	8.06	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	268	433	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	59.8	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	68.7	<0.10	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0537	0.0094	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	0.053	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.69	4.51	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.834	0.159	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.140	0.232	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.164	1.97	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0199	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0115	0.0041	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0691	0.0043 <sup>DLM</sup>	----	----	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0131	0.0036	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	28.6	171	----	----	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.324	2.20	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.56	<0.50	----	----	----	



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_ECGW_WG _2021_Q4_NP	EV_BCGW_WG _2021_Q4_NP	---	---	---
(Matrix: Water)					Client sampling date / time	26-Oct-2021 12:13	26-Oct-2021 14:42	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2105261-001	CG2105261-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	0.55	<0.50	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	4.95	7.55	---	---	---	
cation sum	---	EC101	0.10	meq/L	4.52	7.08	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	91.3	93.8	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	4.54	3.21	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0037	0.0025	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00011	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00042	0.00012	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0536	0.0384	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.110	0.015	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0279	0.0300	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	34.8	82.7	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00014	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.21	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00133	0.00132	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0123	0.0190	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	16.8	33.4	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.126	0.00064	---	---	---	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0144	0.00108	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00200	<0.00050	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.12	1.03	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.122	20.2	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.24	2.72	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_ECGW_WG _2021_Q4_NP	EV_BCGW_WG _2021_Q4_NP	----	----	----
Client sampling date / time					26-Oct-2021 12:13	26-Oct-2021 14:42	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105261-001	CG2105261-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	31.3	4.21	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.387	0.162	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	8.35	54.9	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000041	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00164	0.00140	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0029	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2105261</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Jennifer Dane <b>Address</b> : RR#1 HWY#3 Sparwood BC Canada V0B 2G1 <b>Telephone</b> : ---- <b>Project</b> : ELKVIEW OPERATIONS <b>PO</b> : VPO00741597 <b>C-O-C number</b> : 20211026Q4GW <b>Sampler</b> : J.B/B.C <b>Site</b> : ---- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 2 <b>No. of samples analysed</b> : 2	<b>Page</b> : 1 of 13 <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Lyudmyla Shvets <b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5 <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 27-Oct-2021 08:50 <b>Issue Date</b> : 05-Nov-2021 12:07
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### ***Outliers: Reference Material (RM) Samples***

- No Reference Material (RM) Sample outliers occur.

#### ***Outliers : Analysis Holding Time Compliance (Breaches)***

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_BCGW_WG_2021_Q4_NP	E298	26-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_ECGW_WG_2021_Q4_NP	E298	26-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_BCGW_WG_2021_Q4_NP	E235.Br-L	26-Oct-2021	----	----	----		28-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ECGW_WG_2021_Q4_NP	E235.Br-L	26-Oct-2021	----	----	----		28-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_BCGW_WG_2021_Q4_NP	E235.Cl-L	26-Oct-2021	----	----	----		28-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ECGW_WG_2021_Q4_NP	E235.Cl-L	26-Oct-2021	----	----	----		28-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> EV_BCGW_WG_2021_Q4_NP	E378-U	26-Oct-2021	----	----	----		28-Oct-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_ECGW_WG_2021_Q4_NP	E378-U	26-Oct-2021	----	----	----		28-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_BCGW_WG_2021_Q4_NP	E235.F	26-Oct-2021	----	----	----		28-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_ECGW_WG_2021_Q4_NP	E235.F	26-Oct-2021	----	----	----		28-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_BCGW_WG_2021_Q4_NP	E235.NO3-L	26-Oct-2021	----	----	----		28-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_ECGW_WG_2021_Q4_NP	E235.NO3-L	26-Oct-2021	----	----	----		28-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_BCGW_WG_2021_Q4_NP	E235.NO2-L	26-Oct-2021	----	----	----		28-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_ECGW_WG_2021_Q4_NP	E235.NO2-L	26-Oct-2021	----	----	----		28-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_BCGW_WG_2021_Q4_NP	E235.SO4	26-Oct-2021	----	----	----		28-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_ECGW_WG_2021_Q4_NP	E235.SO4	26-Oct-2021	----	----	----		28-Oct-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_BCGW_WG_2021_Q4_NP	E375-T	26-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ECGW_WG_2021_Q4_NP	E375-T	26-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BCGW_WG_2021_Q4_NP	E318	26-Oct-2021	01-Nov-2021	----	----		04-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ECGW_WG_2021_Q4_NP	E318	26-Oct-2021	01-Nov-2021	----	----		04-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BCGW_WG_2021_Q4_NP	E372-U	26-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ECGW_WG_2021_Q4_NP	E372-U	26-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_BCGW_WG_2021_Q4_NP	E421.Cr-L	26-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ECGW_WG_2021_Q4_NP	E421.Cr-L	26-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_BCGW_WG_2021_Q4_NP	E509	26-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	7 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_ECGW_WG_2021_Q4_NP	E509	26-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_BCGW_WG_2021_Q4_NP	E421	26-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ECGW_WG_2021_Q4_NP	E421	26-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	8 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_BCGW_WG_2021_Q4_NP	E358-L	26-Oct-2021	01-Nov-2021	----	----		03-Nov-2021	28 days	8 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ECGW_WG_2021_Q4_NP	E358-L	26-Oct-2021	01-Nov-2021	----	----		03-Nov-2021	28 days	8 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BCGW_WG_2021_Q4_NP	E355-L	26-Oct-2021	01-Nov-2021	----	----		03-Nov-2021	28 days	8 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ECGW_WG_2021_Q4_NP	E355-L	26-Oct-2021	01-Nov-2021	----	----		03-Nov-2021	28 days	8 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_BCGW_WG_2021_Q4_NP	E283	26-Oct-2021	----	----	----		01-Nov-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_ECGW_WG_2021_Q4_NP	E283	26-Oct-2021	----	----	----		01-Nov-2021	14 days	6 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_BCGW_WG_2021_Q4_NP	E290	26-Oct-2021	----	----	----		01-Nov-2021	14 days	6 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_ECGW_WG_2021_Q4_NP	E290	26-Oct-2021	----	----	----		01-Nov-2021	14 days	6 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_BCGW_WG_2021_Q4_NP	E100	26-Oct-2021	----	----	----		01-Nov-2021	28 days	6 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_ECGW_WG_2021_Q4_NP	E100	26-Oct-2021	----	----	----		01-Nov-2021	28 days	6 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_BCGW_WG_2021_Q4_NP	E125	26-Oct-2021	----	----	----		03-Nov-2021	0.25 hrs	190 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_ECGW_WG_2021_Q4_NP	E125	26-Oct-2021	----	----	----		03-Nov-2021	0.25 hrs	192 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_BCGW_WG_2021_Q4_NP	E108	26-Oct-2021	----	----	----		01-Nov-2021	0.25 hrs	140 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_ECGW_WG_2021_Q4_NP	E108	26-Oct-2021	----	----	----		01-Nov-2021	0.25 hrs	142 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_BCGW_WG_2021_Q4_NP	E162	26-Oct-2021	----	----	----		02-Nov-2021	7 days	7 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> EV_ECGW_WG_2021_Q4_NP	E162	26-Oct-2021	----	----	----		02-Nov-2021	7 days	7 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_BCGW_WG_2021_Q4_NP	E160-L	26-Oct-2021	----	----	----		01-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_ECGW_WG_2021_Q4_NP	E160-L	26-Oct-2021	----	----	----		01-Nov-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_BCGW_WG_2021_Q4_NP	E121	26-Oct-2021	----	----	----		28-Oct-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_ECGW_WG_2021_Q4_NP	E121	26-Oct-2021	----	----	----		28-Oct-2021	3 days	2 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	334640	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334629	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	335753	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332002	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332003	1	20	5.0	5.0	✓
Conductivity in Water	E100	334628	1	10	10.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335278	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336098	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	335277	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334970	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	332279	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	332000	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	332004	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	332005	1	20	5.0	5.0	✓
ORP by Electrode	E125	335914	1	6	16.6	5.0	✓
pH by Meter	E108	334627	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	332001	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	335394	1	16	6.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335110	1	6	16.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334975	2	22	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336487	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	332056	1	11	9.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	334640	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334629	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	335753	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332002	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332003	1	20	5.0	5.0	✓
Conductivity in Water	E100	334628	1	10	10.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335278	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336098	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	335277	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334970	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	332279	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	332000	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	332004	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	332005	1	20	5.0	5.0	✓
ORP by Electrode	E125	335914	1	6	16.6	5.0	✓
pH by Meter	E108	334627	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	332001	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	335394	1	16	6.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335110	1	6	16.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334975	2	22	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336487	1	16	6.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	334585	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	332056	1	11	9.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	334640	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334629	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	335753	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332002	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332003	1	20	5.0	5.0	✓
Conductivity in Water	E100	334628	1	10	10.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335278	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336098	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	335277	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334970	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	332279	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	332000	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	332004	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	332005	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	332001	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	335394	1	16	6.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335110	1	6	16.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334975	2	22	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336487	1	16	6.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	334585	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	332056	1	11	9.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	335753	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332002	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332003	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335278	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336098	1	15	6.6	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	335277	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334970	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	332279	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	332000	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	332004	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	332005	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	332001	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335110	1	6	16.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334975	2	22	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336487	1	16	6.2	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2105261**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HWY#3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211026Q4GW  
**Sampler** : J.B/B.C  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-Oct-2021 08:50  
**Date Analysis Commenced** : 28-Oct-2021  
**Issue Date** : 05-Nov-2021 12:07

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2105261  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 332056)</b>											
CG2105240-002	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 334627)</b>											
CG2105260-005	Anonymous	pH	----	E108	0.10	pH units	8.14	8.20	0.734%	4%	----
<b>Physical Tests (QC Lot: 334628)</b>											
CG2105260-007	Anonymous	conductivity	----	E100	2.0	µS/cm	870	861	1.04%	10%	----
<b>Physical Tests (QC Lot: 334629)</b>											
CG2105260-007	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	203	202	0.692%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	6.8	7.4	0.6	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	210	209	0.382%	20%	----
<b>Physical Tests (QC Lot: 334640)</b>											
CG2105260-006	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.7	2.5	0.2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 335394)</b>											
CG2105261-001	EV_ECGW_WG_2021_Q4_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	268	256	4.39%	20%	----
<b>Physical Tests (QC Lot: 335914)</b>											
CG2105260-006	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	496	488	1.60%	15%	----
<b>Anions and Nutrients (QC Lot: 332000)</b>											
CG2105258-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.426	0.405	0.021	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332001)</b>											
CG2105258-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	482	464	3.81%	20%	----
<b>Anions and Nutrients (QC Lot: 332002)</b>											
CG2105258-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332003)</b>											
CG2105258-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.94	1.98	0.04	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332004)</b>											
CG2105258-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	81.5	78.6	3.66%	20%	----
<b>Anions and Nutrients (QC Lot: 332005)</b>											
CG2105258-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0052	0.0051	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332279)</b>											
CG2105260-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0012	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 334618)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 334618) - continued</b>											
CG2105189-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0027	0.0023	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 335110)</b>											
CG2105261-001	EV_ECGW_WG_2021_Q4_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.140	0.143	0.003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 335753)</b>											
CG2105258-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.125	mg/L	3.14	3.14	0.188%	20%	----
<b>Anions and Nutrients (QC Lot: 336487)</b>											
CG2105259-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334970)</b>											
CG2105259-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.68	0.71	0.03	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334975)</b>											
CG2105245-007	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334976)</b>											
CG2105261-002	EV_BCGW_WG_2021_Q4_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 335277)</b>											
CG2105219-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0044	0.0052	0.0008	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00118	0.00121	0.00003	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	0.00021	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0731	0.0737	0.911%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.045	0.050	0.005	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.0233 µg/L	0.0000254	0.0000021	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	231	253	9.28%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.154	0.174	12.3%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	190	190	0.0979%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.00596	0.00584	2.12%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00711	0.00740	3.99%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.0295	0.0297	0.489%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	6.85	6.90	0.635%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	309 µg/L	0.312	0.894%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 335277) - continued</b>											
CG2105219-001	Anonymous	silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.33	2.40	2.83%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	8.27	8.47	2.40%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	1.22	1.24	2.40%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	346	347	0.292%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000028	0.000032	0.000003	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0102	0.0105	2.62%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0045	0.0057	0.0012	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 335278)</b>											
CG2105219-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 336098)</b>											
CG2105259-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 332056)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 334585)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 334628)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 334629)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 334640)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 335394)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 332000)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 332001)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 332002)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 332003)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 332004)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 332005)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 332279)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 334618)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 335110)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 335753)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 335753) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 336487)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 334970)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 334975)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 334976)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 335277)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 335277) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 335278)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 336098)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 332056)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.2	85.0	115	----
<b>Physical Tests (QCLot: 334585)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	91.8	85.0	115	----
<b>Physical Tests (QCLot: 334627)</b>									
pH	---	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 334628)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	105	90.0	110	----
<b>Physical Tests (QCLot: 334629)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	98.1	85.0	115	----
<b>Physical Tests (QCLot: 334640)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	95.8	85.0	115	----
<b>Physical Tests (QCLot: 335394)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	98.8	85.0	115	----
<b>Physical Tests (QCLot: 335914)</b>									
oxidation-reduction potential [ORP]	---	E125	----	mV	220 mV	102	95.4	104	----
<b>Anions and Nutrients (QCLot: 332000)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	110	90.0	110	----
<b>Anions and Nutrients (QCLot: 332001)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	107	90.0	110	----
<b>Anions and Nutrients (QCLot: 332002)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	106	85.0	115	----
<b>Anions and Nutrients (QCLot: 332003)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 332004)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	110	90.0	110	----
<b>Anions and Nutrients (QCLot: 332005)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	107	90.0	110	----
<b>Anions and Nutrients (QCLot: 332279)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	108	80.0	120	----
<b>Anions and Nutrients (QCLot: 334618)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	98.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 335110)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 335110) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 335753)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	88.8	85.0	115	----
<b>Anions and Nutrients (QCLot: 336487)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	117	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 334970)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	107	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 334975)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	107	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 334976)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 335277)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	94.1	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	93.5	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	89.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.7	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.3	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	111	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	105	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	94.7	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	96.7	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 335277) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.9	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	89.4	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.4	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 335278)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.7	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 332000)</b>										
CG2105260-006	Anonymous	fluoride	16984-48-8	E235.F	1.03 mg/L	1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 332001)</b>										
CG2105260-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 332002)</b>										
CG2105260-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.501 mg/L	0.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 332003)</b>										
CG2105260-006	Anonymous	chloride	16887-00-6	E235.Cl-L	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 332004)</b>										
CG2105260-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 332005)</b>										
CG2105260-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.519 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 332279)</b>										
CG2105260-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0570 mg/L	0.05 mg/L	114	70.0	130	----
<b>Anions and Nutrients (QCLot: 334618)</b>										
CG2105189-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0626 mg/L	0.0676 mg/L	92.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 335110)</b>										
CG2105261-002	EV_BCGW_WG_2021_Q4_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.34 mg/L	2.5 mg/L	93.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 335753)</b>										
CG2105259-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0953 mg/L	0.1 mg/L	95.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 336487)</b>										
CG2105259-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0531 mg/L	0.0676 mg/L	78.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 334970)</b>										
CG2105259-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.9 mg/L	23.9 mg/L	108	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 334975)</b>										
CG2105245-007	Anonymous	carbon, total organic [TOC]	----	E355-L	25.6 mg/L	23.9 mg/L	107	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 334976)</b>										
CG2105261-002	EV_BCGW_WG_2021_Q4_NP	carbon, total organic [TOC]	----	E355-L	25.2 mg/L	23.9 mg/L	106	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 335277)</b>										
CG2105219-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.393 mg/L	0.4 mg/L	98.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0733 mg/L	0.08 mg/L	91.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0180 mg/L	0.02 mg/L	90.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.172 mg/L	0.2 mg/L	86.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00795 mg/L	0.008 mg/L	99.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.95 mg/L	4 mg/L	98.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0366 mg/L	0.04 mg/L	91.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.175 mg/L	0.2 mg/L	87.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0736 mg/L	0.08 mg/L	92.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	7.79 mg/L	8 mg/L	97.3	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.2 mg/L	20 mg/L	90.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00772 mg/L	0.008 mg/L	96.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00766 mg/L	0.008 mg/L	95.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0773 mg/L	0.08 mg/L	96.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.209 mg/L	0.2 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.754 mg/L	0.8 mg/L	94.2	70.0	130	----
<b>Dissolved Metals (QCLot: 335278)</b>										
CG2105219-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0803 mg/L	0.08 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 336098)</b>										
CG2105259-004	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000977 mg/L	0.0001 mg/L	97.7	70.0	130	----



COC ID: 20211026Q4GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emslie@teck.com		X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com		X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com		X	X	X
								Email 5:	teckcoal@equisonline.com				X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 6:	Jennifer.Dane@teck.com		X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597				

SAMPLE DETAILS							ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_ECGW_WG_2021_Q4_NP	EV_ECGW	WG		10/26/21	12:13	G	5	1	1	1	1							1		
EV_BCGW_WG_2021_Q4_NP	EV_BCGW	WG		10/26/21	14:42	G	5	1	1	1	1							1		
<b>Total</b>							<b>10</b>													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	J. Batstone/ B. Clarke	October 26, 2021	<i>[Signature]</i>	27/10 2:50
SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name	J. Batstone/ B. Clarke	Mobile #		
Sampler's Signature		Date/Time	October 26, 2021	

Environmental Division  
Calgary  
Work Order Reference  
**CG2105261**





## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105270**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HWY#3  
Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211027Q4GW  
**Sampler** : JB/BC  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Page** : 1 of 9  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 28-Oct-2021 09:00  
**Date Analysis Commenced** : 28-Oct-2021  
**Issue Date** : 10-Nov-2021 08:38

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_LSGW_WG_2021_Q4_NP	EV_MW_GT1A_WG_2021_Q4_NP	EV_MW_GT1B_WG_2021_Q4_NP	EV_MW_BC10A_WG_2021_Q4_NP	EV_MW_BC10B_WG_2021_Q4_NP
Client sampling date / time					27-Oct-2021 14:18	27-Oct-2021 10:42	27-Oct-2021 11:49	27-Oct-2021 10:47	27-Oct-2021 10:49	
Analyte	CAS Number	Method	LOR	Unit	CG2105270-001	CG2105270-002	CG2105270-003	CG2105270-004	CG2105270-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	9.0	<2.0	4.5	<2.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	543	174	213	176	<2.0	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	663	212	260	214	<2.0	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	543	174	213	176	<2.0	
conductivity	----	E100	2.0	µS/cm	1040	517	1600	516	<2.0	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	614	284	996	275	<0.50	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	430	474	474	442	514	
pH	----	E108	0.10	pH units	7.83	8.08	7.99	8.09	5.58	
solids, total dissolved [TDS]	----	E162	10	mg/L	562	318	1300	319	<10	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	7.0	<1.0	3.3	1.4	<1.0	
turbidity	----	E121	0.10	NTU	33.2	0.79	1.20	0.92	<0.10	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.182	0.0777	<0.0050	0.110	<0.0050	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.050	<0.250 <sup>DLDS</sup>	<0.050	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	8.06	2.25	12.8	2.34	<0.10	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.279	0.153	0.255	0.153	<0.020	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.271	0.113	0.479 <sup>TKNI</sup>	0.102	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.129	<0.0050	16.1	<0.0050	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0042	0.0092	0.0046	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0179	0.0094 <sup>DLM</sup>	0.0078	0.0088 <sup>DLM</sup>	<0.0020	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0205	0.0090	0.0081	0.0085	<0.0020	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	55.4	109	703	111	<0.30	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.400	0.113	16.6	0.102	<0.050	
<b>Organic / Inorganic Carbon</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_LSGW_WG_2021_Q4_NP	EV_MW_GT1A_WG_2021_Q4_NP	EV_MW_GT1B_WG_2021_Q4_NP	EV_MW_BC10A_WG_2021_Q4_NP	EV_MW_BC10B_WG_2021_Q4_NP
Client sampling date / time					27-Oct-2021 14:18	27-Oct-2021 10:42	27-Oct-2021 11:49	27-Oct-2021 10:47	27-Oct-2021 10:49	
Analyte	CAS Number	Method	LOR	Unit	CG2105270-001	CG2105270-002	CG2105270-003	CG2105270-004	CG2105270-005	
					Result	Result	Result	Result	Result	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.24	<0.50	1.22	0.76	<0.50	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.45	<0.50	1.16	0.71	<0.50	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	12.2	5.82	20.4	5.90	<0.10	
cation sum	----	EC101	0.10	meq/L	13.0	5.82	20.2	5.65	<0.10	
ion balance (cations/anions ratio)	----	EC101	0.010	%	106	100	99.0	95.8	100	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.17	<0.010	0.493	2.16	<0.010	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0019	0.0011	0.0018	0.0012	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0.00096	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00202	0.00017	0.00021	0.00015	<0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.260	0.0686	0.0486	0.0674	<0.00010	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.047	0.012	0.028	<0.010	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	0.111	<0.0050	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	124	76.1	181	72.8	<0.050	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00025	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	1.60	<0.10	<0.10	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0.00036	<0.00020	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	2.99	0.136	<0.010	0.133	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0739	0.0110	0.102	0.0106	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	73.8	22.7	132	22.6	<0.0050	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.20	0.0794	0.00026	0.0780	<0.00010	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00237	0.00157	0.00574	0.00149	<0.000050	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00464	<0.00050	0.0134	<0.00050	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.45	0.783	4.24	0.773	<0.050	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.154	0.265	194	0.311	<0.050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_LSGW_WG_2021_Q4_NP	EV_MW_GT1A_WG_2021_Q4_NP	EV_MW_GT1B_WG_2021_Q4_NP	EV_MW_BC10A_WG_2021_Q4_NP	EV_MW_BC10B_WG_2021_Q4_NP
Client sampling date / time					27-Oct-2021 14:18	27-Oct-2021 10:42	27-Oct-2021 11:49	27-Oct-2021 10:47	27-Oct-2021 10:49	
Analyte	CAS Number	Method	LOR	Unit	CG2105270-001	CG2105270-002	CG2105270-003	CG2105270-004	CG2105270-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.33	2.81	2.51	2.79	<0.050	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	9.73	2.90	5.69	2.92	<0.050	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.492	0.129	0.676	0.129	<0.00020	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	19.7	37.8	254	37.6	<0.50	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000036	<0.000010	0.000012	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00171	0.000415	0.00732	0.000430	<0.000010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0014	<0.0010	0.0036	<0.0010	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_BC10C	---	---	---	---
					_WG_2021_Q4					
					_NP					
Client sampling date / time					27-Oct-2021 12:00	---	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2105270-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	2.0	mg/L	<2.0	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	<2.0	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	<0.50	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	499	---	---	---	---	---
pH	---	E108	0.10	pH units	5.51	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	<10	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	---	---	---	---	---
turbidity	---	E121	0.10	NTU	<0.10	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0068 <sup>RRV</sup>	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	<0.050	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	---	---	---	---	---
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	---	---	---	---	---
nitrogen, total	7727-37-9	EC368	0.050	mg/L	<0.050	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	<0.50	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_MW_BC10C	----	----	----	----
(Matrix: Water)						_WG_2021_Q4				
						_NP				
					Client sampling date / time	27-Oct-2021	----	----	----	----
						12:00				
Analyte	CAS Number	Method	LOR	Unit	CG2105270-006	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	<0.10	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	----	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	----	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	----	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	----	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	----	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	----	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_BC10C _WG_2021_Q4 _NP	----	----	----	----
Client sampling date / time					27-Oct-2021 12:00	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105270-006	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105270</b>	Page	: 1 of 24
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HWY#3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 28-Oct-2021 09:00
PO	: VPO00741597	Issue Date	: 10-Nov-2021 08:38
C-O-C number	: 20211027Q4GW		
Sampler	: JB/BC		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_LSGW_WG_2021_Q4_NP	E298	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q4_NP	E298	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q4_NP	E298	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q4_NP	E298	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q4_NP	E298	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q4_NP	E298	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_LSGW_WG_2021_Q4_NP	E235.Br-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_BC10A_WG_2021_Q4_NP	E235.Br-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q4_NP	E235.Br-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_BC10C_WG_2021_Q4_NP	E235.Br-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q4_NP	E235.Br-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_GT1B_WG_2021_Q4_NP	E235.Br-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_LSGW_WG_2021_Q4_NP	E235.Cl-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_BC10A_WG_2021_Q4_NP	E235.Cl-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q4_NP	E235.Cl-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_BC10C_WG_2021_Q4_NP	E235.Cl-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_GT1A_WG_2021_Q4_NP	E235.Cl-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_GT1B_WG_2021_Q4_NP	E235.Cl-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_LSGW_WG_2021_Q4_NP	E378-U	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_BC10A_WG_2021_Q4_NP	E378-U	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_BC10B_WG_2021_Q4_NP	E378-U	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_BC10C_WG_2021_Q4_NP	E378-U	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_GT1A_WG_2021_Q4_NP	E378-U	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_GT1B_WG_2021_Q4_NP	E378-U	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_LSGW_WG_2021_Q4_NP	E235.F	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_MW_BC10A_WG_2021_Q4_NP	E235.F	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q4_NP	E235.F	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_MW_BC10C_WG_2021_Q4_NP	E235.F	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q4_NP	E235.F	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_MW_GT1B_WG_2021_Q4_NP	E235.F	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_LSGW_WG_2021_Q4_NP	E235.NO3-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_BC10A_WG_2021_Q4_NP	E235.NO3-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q4_NP	E235.NO3-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_BC10C_WG_2021_Q4_NP	E235.NO3-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_GT1A_WG_2021_Q4_NP	E235.NO3-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_GT1B_WG_2021_Q4_NP	E235.NO3-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_LSGW_WG_2021_Q4_NP	E235.NO2-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_BC10A_WG_2021_Q4_NP	E235.NO2-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_BC10B_WG_2021_Q4_NP	E235.NO2-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_BC10C_WG_2021_Q4_NP	E235.NO2-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_GT1A_WG_2021_Q4_NP	E235.NO2-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_GT1B_WG_2021_Q4_NP	E235.NO2-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_LSGW_WG_2021_Q4_NP	E235.SO4	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_BC10A_WG_2021_Q4_NP	E235.SO4	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q4_NP	E235.SO4	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_BC10C_WG_2021_Q4_NP	E235.SO4	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q4_NP	E235.SO4	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_GT1B_WG_2021_Q4_NP	E235.SO4	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_LSGW_WG_2021_Q4_NP	E375-T	27-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	6 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q4_NP	E375-T	27-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	6 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q4_NP	E375-T	27-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	6 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q4_NP	E375-T	27-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	6 days	✔





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q4_NP	E375-T	27-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q4_NP	E375-T	27-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_LSGW_WG_2021_Q4_NP	E318	27-Oct-2021	02-Nov-2021	----	----		07-Nov-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q4_NP	E318	27-Oct-2021	02-Nov-2021	----	----		07-Nov-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q4_NP	E318	27-Oct-2021	02-Nov-2021	----	----		07-Nov-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q4_NP	E318	27-Oct-2021	02-Nov-2021	----	----		07-Nov-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q4_NP	E318	27-Oct-2021	02-Nov-2021	----	----		07-Nov-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q4_NP	E318	27-Oct-2021	02-Nov-2021	----	----		07-Nov-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_LSGW_WG_2021_Q4_NP	E372-U	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q4_NP	E372-U	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q4_NP	E372-U	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q4_NP	E372-U	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q4_NP	E372-U	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q4_NP	E372-U	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_LSGW_WG_2021_Q4_NP	E421.Cr-L	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10A_WG_2021_Q4_NP	E421.Cr-L	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10B_WG_2021_Q4_NP	E421.Cr-L	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10C_WG_2021_Q4_NP	E421.Cr-L	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GT1A_WG_2021_Q4_NP	E421.Cr-L	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_GT1B_WG_2021_Q4_NP	E421.Cr-L	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_LSGW_WG_2021_Q4_NP	E509	27-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_BC10A_WG_2021_Q4_NP	E509	27-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_BC10B_WG_2021_Q4_NP	E509	27-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_BC10C_WG_2021_Q4_NP	E509	27-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GT1A_WG_2021_Q4_NP	E509	27-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_GT1B_WG_2021_Q4_NP	E509	27-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_LSGW_WG_2021_Q4_NP	E421	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10A_WG_2021_Q4_NP	E421	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10B_WG_2021_Q4_NP	E421	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC10C_WG_2021_Q4_NP	E421	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MW_GT1A_WG_2021_Q4_NP	E421	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MW_GT1B_WG_2021_Q4_NP	E421	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_LSGW_WG_2021_Q4_NP	E358-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q4_NP	E358-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q4_NP	E358-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q4_NP	E358-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q4_NP	E358-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q4_NP	E358-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_LSGW_WG_2021_Q4_NP	E355-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10A_WG_2021_Q4_NP	E355-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10B_WG_2021_Q4_NP	E355-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC10C_WG_2021_Q4_NP	E355-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1A_WG_2021_Q4_NP	E355-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_GT1B_WG_2021_Q4_NP	E355-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_LSGW_WG_2021_Q4_NP	E283	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_MW_BC10A_WG_2021_Q4_NP	E283	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✔
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_MW_BC10B_WG_2021_Q4_NP	E283	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✔
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_MW_BC10C_WG_2021_Q4_NP	E283	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✔
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_MW_GT1A_WG_2021_Q4_NP	E283	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✔
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_MW_GT1B_WG_2021_Q4_NP	E283	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_LSGW_WG_2021_Q4_NP	E290	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_BC10A_WG_2021_Q4_NP	E290	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_BC10B_WG_2021_Q4_NP	E290	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✔
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_BC10C_WG_2021_Q4_NP	E290	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_GT1A_WG_2021_Q4_NP	E290	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_GT1B_WG_2021_Q4_NP	E290	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_LSGW_WG_2021_Q4_NP	E100	27-Oct-2021	----	----	----		01-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_BC10A_WG_2021_Q4_NP	E100	27-Oct-2021	----	----	----		01-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_BC10B_WG_2021_Q4_NP	E100	27-Oct-2021	----	----	----		01-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_BC10C_WG_2021_Q4_NP	E100	27-Oct-2021	----	----	----		01-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_GT1A_WG_2021_Q4_NP	E100	27-Oct-2021	----	----	----		01-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_GT1B_WG_2021_Q4_NP	E100	27-Oct-2021	----	----	----		01-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_LSGW_WG_2021_Q4_NP	E125	27-Oct-2021	----	----	----		04-Nov-2021	0.25 hrs	189 hrs	* EHTR-FM	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_BC10C_WG_2021_Q4_NP	E125	27-Oct-2021	----	----	----		04-Nov-2021	0.25 hrs	192 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_GT1B_WG_2021_Q4_NP	E125	27-Oct-2021	----	----	----		04-Nov-2021	0.25 hrs	192 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_BC10A_WG_2021_Q4_NP	E125	27-Oct-2021	----	----	----		04-Nov-2021	0.25 hrs	193 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_BC10B_WG_2021_Q4_NP	E125	27-Oct-2021	----	----	----		04-Nov-2021	0.25 hrs	193 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_GT1A_WG_2021_Q4_NP	E125	27-Oct-2021	----	----	----		04-Nov-2021	0.25 hrs	193 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_LSGW_WG_2021_Q4_NP	E108	27-Oct-2021	----	----	----		01-Nov-2021	0.25 hrs	121 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_BC10C_WG_2021_Q4_NP	E108	27-Oct-2021	----	----	----		01-Nov-2021	0.25 hrs	123 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_GT1B_WG_2021_Q4_NP	E108	27-Oct-2021	----	----	----		01-Nov-2021	0.25 hrs	124 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_BC10A_WG_2021_Q4_NP	E108	27-Oct-2021	----	----	----		01-Nov-2021	0.25 hrs	125 hrs	* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_BC10B_WG_2021_Q4_NP	E108	27-Oct-2021	----	----	----		01-Nov-2021	0.25 hrs	125 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_GT1A_WG_2021_Q4_NP	E108	27-Oct-2021	----	----	----		01-Nov-2021	0.25 hrs	125 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_LSGW_WG_2021_Q4_NP	E162	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_BC10A_WG_2021_Q4_NP	E162	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_BC10B_WG_2021_Q4_NP	E162	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_BC10C_WG_2021_Q4_NP	E162	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_GT1A_WG_2021_Q4_NP	E162	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_GT1B_WG_2021_Q4_NP	E162	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] EV_LSGW_WG_2021_Q4_NP	E160-L	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_BC10A_WG_2021_Q4_NP	E160-L	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_BC10B_WG_2021_Q4_NP	E160-L	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_BC10C_WG_2021_Q4_NP	E160-L	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_GT1A_WG_2021_Q4_NP	E160-L	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_GT1B_WG_2021_Q4_NP	E160-L	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_LSGW_WG_2021_Q4_NP	E121	27-Oct-2021	----	----	----		30-Oct-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_BC10A_WG_2021_Q4_NP	E121	27-Oct-2021	----	----	----		30-Oct-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_BC10B_WG_2021_Q4_NP	E121	27-Oct-2021	----	----	----		30-Oct-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_BC10C_WG_2021_Q4_NP	E121	27-Oct-2021	----	----	----		30-Oct-2021	3 days	3 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_GT1A_WG_2021_Q4_NP	E121	27-Oct-2021	----	----	----		30-Oct-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_GT1B_WG_2021_Q4_NP	E121	27-Oct-2021	----	----	----		30-Oct-2021	3 days	3 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	334965	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334961	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	337890	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332007	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332008	1	20	5.0	5.0	✓
Conductivity in Water	E100	334959	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335935	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336466	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	335936	2	19	10.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	336041	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	332279	2	40	5.0	5.0	✓
Fluoride in Water by IC	E235.F	332011	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	332009	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	332010	1	20	5.0	5.0	✓
ORP by Electrode	E125	336155	1	20	5.0	5.0	✓
pH by Meter	E108	334960	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	332006	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	335402	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335931	1	14	7.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	336046	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336748	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	333691	2	40	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	334965	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334961	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	337890	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332007	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332008	1	20	5.0	5.0	✓
Conductivity in Water	E100	334959	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335935	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336466	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	335936	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	336041	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	332279	2	40	5.0	5.0	✓
Fluoride in Water by IC	E235.F	332011	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	332009	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	332010	1	20	5.0	5.0	✓
ORP by Electrode	E125	336155	1	20	5.0	5.0	✓
pH by Meter	E108	334960	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	332006	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	335402	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335931	1	14	7.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	336046	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336748	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	335398	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	333691	2	40	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	334965	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334961	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	337890	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332007	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332008	1	20	5.0	5.0	✓
Conductivity in Water	E100	334959	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335935	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336466	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	335936	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	336041	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	332279	2	40	5.0	5.0	✓
Fluoride in Water by IC	E235.F	332011	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	332009	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	332010	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	332006	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	335402	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335931	1	14	7.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	336046	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336748	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	335398	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	333691	2	40	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	337890	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332007	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332008	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335935	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336466	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	335936	2	19	10.5	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	336041	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	332279	2	40	5.0	5.0	✔
Fluoride in Water by IC	E235.F	332011	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	332009	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	332010	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	332006	1	20	5.0	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335931	1	14	7.1	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	336046	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336748	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2105270**

**Page** : 1 of 15

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HWY#3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211027Q4GW  
**Sampler** : JB/BC  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 28-Oct-2021 09:00  
**Date Analysis Commenced** : 28-Oct-2021  
**Issue Date** : 10-Nov-2021 08:38

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



Page : 3 of 15  
Work Order : CG2105270  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 333691)</b>											
CG2105267-001	Anonymous	turbidity	----	E121	0.10	NTU	1.17	1.14	0.02	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 333701)</b>											
CG2105264-001	Anonymous	turbidity	----	E121	0.10	NTU	1.57	1.59	1.52%	15%	----
<b>Physical Tests (QC Lot: 334959)</b>											
CG2105242-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1890	1910	1.21%	10%	----
<b>Physical Tests (QC Lot: 334960)</b>											
CG2105242-001	Anonymous	pH	----	E108	0.10	pH units	8.11	8.12	0.123%	4%	----
<b>Physical Tests (QC Lot: 334961)</b>											
CG2105242-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	207	228	9.66%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	207	228	9.66%	20%	----
<b>Physical Tests (QC Lot: 334965)</b>											
CG2105242-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	7.4	7.4	0.04	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 335402)</b>											
CG2105267-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	750	765	1.91%	20%	----
<b>Physical Tests (QC Lot: 336155)</b>											
CG2105242-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	470	472	0.212%	15%	----
<b>Anions and Nutrients (QC Lot: 332006)</b>											
CG2105263-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	420	421	0.416%	20%	----
<b>Anions and Nutrients (QC Lot: 332007)</b>											
CG2105263-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332008)</b>											
CG2105263-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	3.30	3.28	0.02	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332009)</b>											
CG2105263-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	4.92	4.94	0.284%	20%	----
<b>Anions and Nutrients (QC Lot: 332010)</b>											
CG2105263-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332011)</b>											
CG2105263-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.195	0.196	0.001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332279)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 332279) - continued</b>											
CG2105260-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0012	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332280)</b>											
CG2105270-003	EV_MW_GT1B_WG_2021_Q4_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0092	0.0095	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 334618)</b>											
CG2105189-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0027	0.0023	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 335931)</b>											
CG2105264-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.187	0.196	0.009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 336748)</b>											
CG2105242-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0021	<0.0020	0.00008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337890)</b>											
CG2105242-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0067	0.0076	0.0009	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 336041)</b>											
CG2105242-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.14	1.13	0.01	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 336046)</b>											
CG2105242-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.37	1.40	0.03	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 335935)</b>											
CG2105246-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 335936)</b>											
CG2105246-001	Anonymous	selenium, dissolved	7782-49-2	E421	0.050	mg/L	3.50 µg/L	0.00366	4.57%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.82	2.88	0.06	Diff <2x LOR	----
CG2105246-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0134	0.0141	5.56%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00793	0.00826	4.09%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00120	0.00122	1.45%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	4.99	5.12	2.62%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.130	0.132	1.61%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0350	mg/L	<0.0350 µg/L	<0.0000350	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	39.4	38.5	2.36%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	1.88 µg/L	0.00188	0.0303%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	2.42	2.41	0.484%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	16.9	18.0	6.50%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 335936) - continued</b>											
CG2105246-001	Anonymous	manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0604	0.0617	2.03%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0644	0.0667	3.47%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0154	0.0155	0.104%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	10.5	10.9	2.97%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.72	4.79	1.46%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	314	318	1.23%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.167	0.173	3.60%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000083	0.000084	0.000001	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00039	0.00040	0.00001	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000649	0.000651	0.312%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00068	0.00071	0.00003	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0034	0.0036	0.0001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 336466)</b>											
CG2105270-001	EV_LSGW_WG_2021_Q4_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 333691)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 333701)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 334959)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 334961)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 334965)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 335398)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 335402)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 332006)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 332007)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 332008)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 332009)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 332010)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 332011)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 332279)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 332280)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 334618)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 334618) - continued</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 335931)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 336748)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 337890)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 336041)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 336046)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 335935)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	MBRR
<b>Dissolved Metals (QCLot: 335936)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 335936) - continued</b>						
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 336466)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

**Qualifiers**

Qualifier	Description
MBRR	Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 333691)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 333701)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	102	85.0	115	---
<b>Physical Tests (QCLot: 334959)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 334960)</b>									
pH	---	E108	---	pH units	7 pH units	99.8	98.6	101	---
<b>Physical Tests (QCLot: 334961)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	95.3	85.0	115	---
<b>Physical Tests (QCLot: 334965)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	93.5	85.0	115	---
<b>Physical Tests (QCLot: 335398)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	98.4	85.0	115	---
<b>Physical Tests (QCLot: 335402)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	97.4	85.0	115	---
<b>Physical Tests (QCLot: 336155)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 332006)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 332007)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.2	85.0	115	---
<b>Anions and Nutrients (QCLot: 332008)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 332009)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 332010)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 332011)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 332279)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	108	80.0	120	---
<b>Anions and Nutrients (QCLot: 332280)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 332280) - continued</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	106	80.0	120	----
<b>Anions and Nutrients (QCLot: 334618)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	98.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 335931)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 336748)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	111	80.0	120	----
<b>Anions and Nutrients (QCLot: 337890)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.4	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 336041)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 336046)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 335935)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
<b>Dissolved Metals (QCLot: 335936)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.7	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.2	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.5	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	113	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.9	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 335936) - continued</b>									
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	107	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	108	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.7	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	108	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.4	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.6	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 332006)</b>										
CG2105275-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	93.8 mg/L	100 mg/L	93.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 332007)</b>										
CG2105275-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.441 mg/L	0.5 mg/L	88.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 332008)</b>										
CG2105275-004	Anonymous	chloride	16887-00-6	E235.Cl-L	92.3 mg/L	100 mg/L	92.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 332009)</b>										
CG2105275-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.30 mg/L	2.5 mg/L	91.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 332010)</b>										
CG2105275-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.467 mg/L	0.5 mg/L	93.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 332011)</b>										
CG2105275-004	Anonymous	fluoride	16984-48-8	E235.F	0.903 mg/L	1 mg/L	90.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 332279)</b>										
CG2105260-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0570 mg/L	0.05 mg/L	114	70.0	130	----
<b>Anions and Nutrients (QCLot: 332280)</b>										
CG2105270-004	EV_MW_BC10A_WG_2021_Q4_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0531 mg/L	0.05 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 334618)</b>										
CG2105189-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0626 mg/L	0.0676 mg/L	92.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 335931)</b>										
CG2105264-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.73 mg/L	2.5 mg/L	109	70.0	130	----
<b>Anions and Nutrients (QCLot: 336748)</b>										
CG2105264-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0552 mg/L	0.0676 mg/L	81.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 337890)</b>										
CG2105264-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.100 mg/L	0.1 mg/L	100	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 336041)</b>										
CG2105242-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	27.2 mg/L	23.9 mg/L	114	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 336046)</b>										
CG2105242-001	Anonymous	carbon, total organic [TOC]	----	E355-L	28.8 mg/L	23.9 mg/L	120	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 335935)</b>										
CG2105246-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 335936)</b>										
CG2105246-002	Anonymous	selenium, dissolved	7782-49-2	E421	0.0431 mg/L	0.04 mg/L	108	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	23.1 mg/L	20 mg/L	116	70.0	130	----
CG2105246-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.207 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0429 mg/L	0.04 mg/L	107	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00750 mg/L	0.01 mg/L	75.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00386 mg/L	0.004 mg/L	96.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.98 mg/L	2 mg/L	98.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0175 mg/L	0.02 mg/L	87.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0370 mg/L	0.04 mg/L	92.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.43 mg/L	10 mg/L	94.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00379 mg/L	0.004 mg/L	94.7	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00359 mg/L	0.004 mg/L	89.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0381 mg/L	0.04 mg/L	95.4	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.390 mg/L	0.4 mg/L	97.5	70.0	130	----
<b>Dissolved Metals (QCLot: 336466)</b>										
CG2105270-002	EV_MW_GT1A_WG_2021_Q4_NP	mercury, dissolved	7439-97-6	E509	0.0000995 mg/L	0.0001 mg/L	99.5	70.0	130	----



# Teck

COC ID: 20211027Q4GW      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution :		Excel	PDF	EDD
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emslie@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood		Province	BC		City	Calgary		Province	AB		
Postal Code			Country	Canada		Postal Code	T1Y 7B5		Country	Canada		
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Filteret: F: Field; L: Lab; FL: Field & Lab; N: None													
								Nitric		Sulphuric		Sulphuric		NO		Sodium Bisulphate		HCl		NaOH	
								TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL, Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CVI		
EV_LSGW_WG_2021_Q4_NP	EV_LSGW	WG		10/27/21	14:18	G	5	1	1	1	1						1				
EV_MW_GT1A_WG_2021_Q4_NP	EV_MW_GT1A	WG		10/27/21	10:42	G	5	1	1	1	1						1				
EV_MW_GT1B_WG_2021_Q4_NP	EV_MW_GT1B	WG		10/27/21	11:49	G	5	1	1	1	1						1				
EV_MW_BC10A_WG_2021_Q4_NP	EV_MW_BC10A	WG		10/28/21	10:47	G	5	1	1	1	1						1				
EV_MW_BC10B_WG_2021_Q4_NP	EV_MW_BC10B	WG		10/29/21	10:49	G	5	1	1	1	1						1				
EV_MW_BC10C_WG_2021_Q4_NP	EV_MW_BC10C	WG		10/30/21	12:00	G	5	1	1	1	1						1				
							Total	30													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	J. Batstone/ B. Clarke	October 27, 2021		10/28 900
SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name	J. Batstone/ B. Clarke	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	October 27, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2105270**





## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105331**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211028Q4GW  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-Oct-2021 08:50  
**Date Analysis Commenced** : 29-Oct-2021  
**Issue Date** : 10-Nov-2021 08:48

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_MW_AQ1_	EV_MW_AQ2_	---	---	---
(Matrix: Water)						WG_2021_Q4_	WG_2021_Q4_			
						NP	NP			
					Client sampling date / time	28-Oct-2021	28-Oct-2021	---	---	---
						11:16	13:37			
Analyte	CAS Number	Method	LOR	Unit	CG2105331-001	CG2105331-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	27.5	21.1	---	---	---	
alkalinity, bicarbonate (as CaCO3)	---	E290	2.0	mg/L	399	516	---	---	---	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	486	630	---	---	---	
alkalinity, carbonate (as CaCO3)	---	E290	2.0	mg/L	<2.0	<2.0	---	---	---	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	---	---	---	
alkalinity, hydroxide (as CaCO3)	---	E290	2.0	mg/L	<2.0	<2.0	---	---	---	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	---	---	---	
alkalinity, total (as CaCO3)	---	E290	2.0	mg/L	399	516	---	---	---	
conductivity	---	E100	2.0	µS/cm	890	1110	---	---	---	
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	486	588	---	---	---	
oxidation-reduction potential [ORP]	---	E125	0.10	mV	450	469	---	---	---	
pH	---	E108	0.10	pH units	7.58	7.79	---	---	---	
solids, total dissolved [TDS]	---	E162	10	mg/L	527	708	---	---	---	
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	4.0	10.3	---	---	---	
turbidity	---	E121	0.10	NTU	5.32	6.65	---	---	---	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0103	0.0574	---	---	---	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	---	---	---	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	42.8	16.2	---	---	---	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.218	0.169	---	---	---	
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.070	0.129	---	---	---	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.207	<0.0250 <sup>DLDS</sup>	---	---	---	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0089	<0.0050 <sup>DLDS</sup>	---	---	---	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0150	<0.0010	---	---	---	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0201	0.0073	---	---	---	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0139	<0.0020	---	---	---	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	75.9	152	---	---	---	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.286	0.129	---	---	---	
<b>Organic / Inorganic Carbon</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_AQ1_ WG_2021_Q4_ NP	EV_MW_AQ2_ WG_2021_Q4_ NP	----	----	----
Client sampling date / time					28-Oct-2021 11:16	28-Oct-2021 13:37	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105331-001 Result	CG2105331-002 Result	-----	-----	-----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.32 <sup>DTC.RRV</sup>	0.64	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.87 <sup>DTC.RRV</sup>	0.73	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	10.8	13.9	----	----	----	
cation sum	----	EC101	0.10	meq/L	9.97	12.6	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.3	90.6	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.00	4.90	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.172	0.0183	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.024	0.090	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0352	<0.0050	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	113	141	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00012	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00039	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.450	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0224	0.0563	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	49.6	57.4	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00019	0.0719	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000316	0.000201	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00072	0.00071	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.69	2.02	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	2.02	<0.050	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_AQ1_ WG_2021_Q4_ NP	EV_MW_AQ2_ WG_2021_Q4_ NP	----	----	----
Client sampling date / time					28-Oct-2021 11:16	28-Oct-2021 13:37	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105331-001 Result	CG2105331-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.96	6.66	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.79	18.6	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.376	1.07	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	28.9	56.6	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000463	0.000122	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0026	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105331</b>	Page	: 1 of 14
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 29-Oct-2021 08:50
PO	: VPO00741597	Issue Date	: 10-Nov-2021 08:48
C-O-C number	: 20211028Q4GW		
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Method Blank (MB) Values</b>								
Dissolved Metals	QC-MRG2-3383190 01	----	magnesium, dissolved	7439-95-4	E421	0.0050 <sup>B</sup> mg/L	0.005 mg/L	Blank result exceeds permitted value

**Result Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ1_WG_2021_Q4_NP	E298	28-Oct-2021	07-Nov-2021	----	----		07-Nov-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ2_WG_2021_Q4_NP	E298	28-Oct-2021	07-Nov-2021	----	----		07-Nov-2021	28 days	10 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_AQ1_WG_2021_Q4_NP	E235.Br-L	28-Oct-2021	----	----	----		29-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_AQ2_WG_2021_Q4_NP	E235.Br-L	28-Oct-2021	----	----	----		29-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_AQ1_WG_2021_Q4_NP	E235.Cl-L	28-Oct-2021	----	----	----		29-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_AQ2_WG_2021_Q4_NP	E235.Cl-L	28-Oct-2021	----	----	----		29-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> EV_MW_AQ1_WG_2021_Q4_NP	E378-U	28-Oct-2021	----	----	----		29-Oct-2021	3 days	1 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_AQ2_WG_2021_Q4_NP	E378-U	28-Oct-2021	----	----	----		29-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_AQ1_WG_2021_Q4_NP	E235.F	28-Oct-2021	----	----	----		29-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_AQ2_WG_2021_Q4_NP	E235.F	28-Oct-2021	----	----	----		29-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_AQ1_WG_2021_Q4_NP	E235.NO3-L	28-Oct-2021	----	----	----		29-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_AQ2_WG_2021_Q4_NP	E235.NO3-L	28-Oct-2021	----	----	----		29-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_AQ1_WG_2021_Q4_NP	E235.NO2-L	28-Oct-2021	----	----	----		29-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_AQ2_WG_2021_Q4_NP	E235.NO2-L	28-Oct-2021	----	----	----		29-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_AQ1_WG_2021_Q4_NP	E235.SO4	28-Oct-2021	----	----	----		29-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MW_AQ2_WG_2021_Q4_NP	E235.SO4	28-Oct-2021	----	----	----		29-Oct-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_AQ1_WG_2021_Q4_NP	E375-T	28-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_AQ2_WG_2021_Q4_NP	E375-T	28-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ1_WG_2021_Q4_NP	E318	28-Oct-2021	03-Nov-2021	----	----		08-Nov-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ2_WG_2021_Q4_NP	E318	28-Oct-2021	03-Nov-2021	----	----		08-Nov-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ1_WG_2021_Q4_NP	E372-U	28-Oct-2021	05-Nov-2021	----	----		05-Nov-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ2_WG_2021_Q4_NP	E372-U	28-Oct-2021	05-Nov-2021	----	----		05-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_AQ1_WG_2021_Q4_NP	E421.Cr-L	28-Oct-2021	05-Nov-2021	----	----		05-Nov-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_AQ2_WG_2021_Q4_NP	E421.Cr-L	28-Oct-2021	05-Nov-2021	----	----		05-Nov-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_AQ1_WG_2021_Q4_NP	E509	28-Oct-2021	05-Nov-2021	----	----		05-Nov-2021	28 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_AQ2_WG_2021_Q4_NP	E509	28-Oct-2021	05-Nov-2021	----	----		05-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_AQ1_WG_2021_Q4_NP	E421	28-Oct-2021	05-Nov-2021	----	----		05-Nov-2021	180 days	9 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_AQ2_WG_2021_Q4_NP	E421	28-Oct-2021	05-Nov-2021	----	----		05-Nov-2021	180 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_AQ1_WG_2021_Q4_NP	E358-L	28-Oct-2021	03-Nov-2021	----	----		05-Nov-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_AQ2_WG_2021_Q4_NP	E358-L	28-Oct-2021	03-Nov-2021	----	----		05-Nov-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ1_WG_2021_Q4_NP	E355-L	28-Oct-2021	03-Nov-2021	----	----		05-Nov-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_AQ2_WG_2021_Q4_NP	E355-L	28-Oct-2021	03-Nov-2021	----	----		05-Nov-2021	28 days	8 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_AQ1_WG_2021_Q4_NP	E283	28-Oct-2021	----	----	----		03-Nov-2021	14 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_AQ2_WG_2021_Q4_NP	E283	28-Oct-2021	----	----	----		03-Nov-2021	14 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_AQ1_WG_2021_Q4_NP	E290	28-Oct-2021	----	----	----		02-Nov-2021	14 days	5 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_AQ2_WG_2021_Q4_NP	E290	28-Oct-2021	----	----	----		02-Nov-2021	14 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_AQ1_WG_2021_Q4_NP	E100	28-Oct-2021	----	----	----		02-Nov-2021	28 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_AQ2_WG_2021_Q4_NP	E100	28-Oct-2021	----	----	----		02-Nov-2021	28 days	5 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_AQ2_WG_2021_Q4_NP	E125	28-Oct-2021	----	----	----		04-Nov-2021	0.25 hrs	165 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_AQ1_WG_2021_Q4_NP	E125	28-Oct-2021	----	----	----		04-Nov-2021	0.25 hrs	168 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_AQ2_WG_2021_Q4_NP	E108	28-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	123 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_AQ1_WG_2021_Q4_NP	E108	28-Oct-2021	----	----	----		02-Nov-2021	0.25 hrs	126 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_AQ1_WG_2021_Q4_NP	E162	28-Oct-2021	----	----	----		03-Nov-2021	7 days	6 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> EV_MW_AQ2_WG_2021_Q4_NP	E162	28-Oct-2021	----	----	----		03-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_AQ1_WG_2021_Q4_NP	E160-L	28-Oct-2021	----	----	----		03-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_AQ2_WG_2021_Q4_NP	E160-L	28-Oct-2021	----	----	----		03-Nov-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_AQ1_WG_2021_Q4_NP	E121	28-Oct-2021	----	----	----		31-Oct-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_AQ2_WG_2021_Q4_NP	E121	28-Oct-2021	----	----	----		31-Oct-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	336743	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	336128	1	3	33.3	5.0	✓
Ammonia by Fluorescence	E298	340021	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	333423	2	21	9.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	333424	2	21	9.5	5.0	✓
Conductivity in Water	E100	336127	1	3	33.3	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	338319	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	338339	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	338320	2	19	10.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	337109	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	334055	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	333432	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	333430	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	333431	1	2	50.0	5.0	✓
ORP by Electrode	E125	337759	1	2	50.0	5.0	✓
pH by Meter	E108	336126	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	333422	2	21	9.5	5.0	✓
TDS by Gravimetry	E162	336453	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	337194	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	337111	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	337517	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	334216	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	336743	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	336128	1	3	33.3	5.0	✓
Ammonia by Fluorescence	E298	340021	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	333423	2	21	9.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	333424	2	21	9.5	5.0	✓
Conductivity in Water	E100	336127	1	3	33.3	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	338319	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	338339	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	338320	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	337109	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	334055	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	333432	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	333430	1	2	50.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	333431	1	2	50.0	5.0	✓
ORP by Electrode	E125	337759	1	2	50.0	5.0	✓
pH by Meter	E108	336126	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	333422	2	21	9.5	5.0	✓
TDS by Gravimetry	E162	336453	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	337194	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	337111	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	337517	1	9	11.1	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	336449	2	31	6.4	5.0	✓
Turbidity by Nephelometry	E121	334216	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	336743	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	336128	1	3	33.3	5.0	✓
Ammonia by Fluorescence	E298	340021	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	333423	2	21	9.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	333424	2	21	9.5	5.0	✓
Conductivity in Water	E100	336127	1	3	33.3	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	338319	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	338339	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	338320	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	337109	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	334055	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	333432	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	333430	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	333431	1	2	50.0	5.0	✓
Sulfate in Water by IC	E235.SO4	333422	2	21	9.5	5.0	✓
TDS by Gravimetry	E162	336453	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	337194	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	337111	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	337517	1	9	11.1	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	336449	2	31	6.4	5.0	✓
Turbidity by Nephelometry	E121	334216	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	340021	1	3	33.3	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	333423	1	21	4.7	5.0	✗
Chloride in Water by IC (Low Level)	E235.Cl-L	333424	1	21	4.7	5.0	✗
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	338319	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	338339	2	40	5.0	5.0	✓





Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	338320	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	337109	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	334055	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	333432	1	2	50.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	333430	1	2	50.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	333431	1	2	50.0	5.0	✔
Sulfate in Water by IC	E235.SO4	333422	1	21	4.7	5.0	✖
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	334618	1	18	5.5	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	337194	1	19	5.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	337111	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	337517	1	9	11.1	5.0	✔





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105331**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211028Q4GW  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-Oct-2021 08:50  
**Date Analysis Commenced** : 29-Oct-2021  
**Issue Date** : 10-Nov-2021 08:48

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

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Page : 2 of 14  
Work Order : CG2105331  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 334216)</b>											
CG2105317-001	Anonymous	turbidity	----	E121	0.10	NTU	0.52	0.55	0.03	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 336126)</b>											
CG2105326-001	Anonymous	pH	----	E108	0.10	pH units	8.10	8.11	0.123%	4%	----
<b>Physical Tests (QC Lot: 336127)</b>											
CG2105326-001	Anonymous	conductivity	----	E100	2.0	µS/cm	466	469	0.642%	10%	----
<b>Physical Tests (QC Lot: 336128)</b>											
CG2105326-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	240	243	1.16%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	240	243	1.16%	20%	----
<b>Physical Tests (QC Lot: 336453)</b>											
CG2105316-002	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2970	2840	4.40%	20%	----
<b>Physical Tests (QC Lot: 336454)</b>											
CG2105331-002	EV_MW_AQ2_WG_2021_Q4_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	708	711	0.423%	20%	----
<b>Physical Tests (QC Lot: 336743)</b>											
CG2105331-001	EV_MW_AQ1_WG_2021_Q4_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	27.5	29.5	6.80%	20%	----
<b>Physical Tests (QC Lot: 337759)</b>											
CG2105331-001	EV_MW_AQ1_WG_2021_Q4_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	450	448	0.356%	15%	----
<b>Anions and Nutrients (QC Lot: 333422)</b>											
CG2105316-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	647	638	1.34%	20%	----
<b>Anions and Nutrients (QC Lot: 333423)</b>											
CG2105316-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 333424)</b>											
CG2105316-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	3.38	3.28	0.10	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 333430)</b>											
CG2105331-002	EV_MW_AQ2_WG_2021_Q4_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	<0.0250	0.0268	0.0018	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 333431)</b>											
CG2105331-002	EV_MW_AQ2_WG_2021_Q4_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 333432)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 333432) - continued</b>											
CG2105331-002	EV_MW_AQ2_WG_2021_Q4_NP	fluoride	16984-48-8	E235.F	0.100	mg/L	0.169	0.219	0.050	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 333433)</b>											
CG2105331-002	EV_MW_AQ2_WG_2021_Q4_NP	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	152	171	12.0%	20%	----
<b>Anions and Nutrients (QC Lot: 333434)</b>											
CG2105331-002	EV_MW_AQ2_WG_2021_Q4_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 333435)</b>											
CG2105331-002	EV_MW_AQ2_WG_2021_Q4_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	16.2	15.0	7.62%	20%	----
<b>Anions and Nutrients (QC Lot: 334055)</b>											
CG2105294-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0025	0.0027	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 334618)</b>											
CG2105189-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0027	0.0023	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337194)</b>											
CG2105323-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	3.67	3.57	2.59%	20%	----
<b>Anions and Nutrients (QC Lot: 337517)</b>											
CG2105330-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.100	mg/L	3.34	3.65	8.79%	20%	----
<b>Anions and Nutrients (QC Lot: 340021)</b>											
CG2105325-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.556	0.556	0.0360%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 337109)</b>											
CG2105316-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 337111)</b>											
CG2105331-001	EV_MW_AQ1_WG_2021_Q4_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.87	0.90	0.03	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 338319)</b>											
CG2105305-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 338320)</b>											
CG2105305-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0084	0.0092	0.0008	Diff <2x LOR	----
CG2105305-001	Anonymous	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00050	0.00050	0.000006	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.123	0.122	0.431%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	71.6	74.1	3.48%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 338320) - continued</b>											
CG2105305-001	Anonymous	cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.16 µg/L	0.00017	0.00001	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.179	0.178	0.727%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0042	0.0043	0.00003	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	21.3	21.7	1.69%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0741	0.0749	1.09%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00191	0.00199	4.38%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.822	0.843	2.42%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.78	3.84	1.68%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.40	5.20	3.94%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.136	0.142	4.10%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	6.27	6.60	5.06%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000012	0.000013	0.0000008	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00107	0.00107	0.171%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0026	0.0024	0.00010	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 338339)</b>											
CG2105310-008	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 338340)</b>											
CG2105331-002	EV_MW_AQ2_WG_2021_Q4_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 334216)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 336127)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 336128)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 336449)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 336450)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 336453)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 336454)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 336743)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 333422)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 333423)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 333424)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 333430)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 333431)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 333432)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 333433)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 333434)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 333434) - continued</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 333435)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 334055)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 334618)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 337194)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 337517)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 340021)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 337109)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 337111)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 338319)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 338320)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	# 0.0050	B
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 338320) - continued</b>						
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 338339)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 338340)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

**Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 334216)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	104	85.0	115	----
<b>Physical Tests (QCLot: 336126)</b>									
pH	----	E108	----	pH units	7 pH units	99.7	98.6	101	----
<b>Physical Tests (QCLot: 336127)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	----
<b>Physical Tests (QCLot: 336128)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	500 mg/L	99.2	85.0	115	----
<b>Physical Tests (QCLot: 336449)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	94.7	85.0	115	----
<b>Physical Tests (QCLot: 336450)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	96.3	85.0	115	----
<b>Physical Tests (QCLot: 336453)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	97.7	85.0	115	----
<b>Physical Tests (QCLot: 336454)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	100	85.0	115	----
<b>Physical Tests (QCLot: 336743)</b>									
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	50 mg/L	106	85.0	115	----
<b>Physical Tests (QCLot: 337759)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----
<b>Anions and Nutrients (QCLot: 333422)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	107	90.0	110	----
<b>Anions and Nutrients (QCLot: 333423)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	----
<b>Anions and Nutrients (QCLot: 333424)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	105	90.0	110	----
<b>Anions and Nutrients (QCLot: 333430)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 333431)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	105	90.0	110	----
<b>Anions and Nutrients (QCLot: 333432)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 333433)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 333433) - continued</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 333434)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 333435)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 334055)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	105	80.0	120	----
<b>Anions and Nutrients (QCLot: 334618)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	98.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 337194)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 337517)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	99.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 340021)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	94.8	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 337109)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	98.9	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 337111)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 338319)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 338320)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.1	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.3	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.9	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	89.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.5	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.5	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 338320) - continued</b>									
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.8	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	94.3	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.7	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.5	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----





## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 333422)</b>										
CG2105316-007	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	94.7 mg/L	100 mg/L	94.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 333423)</b>										
CG2105316-007	Anonymous	bromide	24959-67-9	E235.Br-L	0.468 mg/L	0.5 mg/L	93.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 333424)</b>										
CG2105316-007	Anonymous	chloride	16887-00-6	E235.Cl-L	94.8 mg/L	100 mg/L	94.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 333430)</b>										
CG2105331-002	EV_MW_AQ2_WG_2021_Q4_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.25 mg/L	2.5 mg/L	90.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 333431)</b>										
CG2105331-002	EV_MW_AQ2_WG_2021_Q4_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.460 mg/L	0.5 mg/L	92.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 333432)</b>										
CG2105331-002	EV_MW_AQ2_WG_2021_Q4_NP	fluoride	16984-48-8	E235.F	0.842 mg/L	1 mg/L	84.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 334055)</b>										
CG2105294-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0517 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 334618)</b>										
CG2105189-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0626 mg/L	0.0676 mg/L	92.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 337194)</b>										
CG2105325-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.58 mg/L	2.5 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 337517)</b>										
CG2105331-001	EV_MW_AQ1_WG_2021_Q4_NP	phosphorus, total	7723-14-0	E372-U	0.0591 mg/L	0.0676 mg/L	87.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 340021)</b>										
CG2105331-001	EV_MW_AQ1_WG_2021_Q4_NP	ammonia, total (as N)	7664-41-7	E298	0.0932 mg/L	0.1 mg/L	93.2	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 337109)</b>										
CG2105316-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.7 mg/L	23.9 mg/L	107	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 337111)</b>										
CG2105331-001	EV_MW_AQ1_WG_2021_Q4_NP	carbon, total organic [TOC]	----	E355-L	25.2 mg/L	23.9 mg/L	105	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 338319)</b>										
CG2105317-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0369 mg/L	0.04 mg/L	92.2	70.0	130	----
<b>Dissolved Metals (QCLot: 338320)</b>										
CG2105317-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.180 mg/L	0.2 mg/L	90.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0183 mg/L	0.02 mg/L	91.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0358 mg/L	0.04 mg/L	89.4	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00848 mg/L	0.01 mg/L	84.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.079 mg/L	0.1 mg/L	78.9	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00364 mg/L	0.004 mg/L	91.1	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0174 mg/L	0.02 mg/L	87.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0173 mg/L	0.02 mg/L	86.5	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.85 mg/L	2 mg/L	92.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0177 mg/L	0.02 mg/L	88.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0903 mg/L	0.1 mg/L	90.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0182 mg/L	0.02 mg/L	90.8	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0186 mg/L	0.02 mg/L	93.2	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0348 mg/L	0.04 mg/L	86.9	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.78 mg/L	4 mg/L	94.6	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0376 mg/L	0.04 mg/L	94.0	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.06 mg/L	10 mg/L	80.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00362 mg/L	0.004 mg/L	90.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00349 mg/L	0.004 mg/L	87.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0186 mg/L	0.02 mg/L	93.2	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00388 mg/L	0.004 mg/L	97.1	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0935 mg/L	0.1 mg/L	93.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.358 mg/L	0.4 mg/L	89.6	70.0	130	----
<b>Dissolved Metals (QCLot: 338339)</b>										
CG2105310-009	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000986 mg/L	0.0001 mg/L	98.6	70.0	130	----
<b>Dissolved Metals (QCLot: 338340)</b>										



Page : 14 of 14  
 Work Order : CG2105331  
 Client : Teck Coal Limited  
 Project : ELKVIEW OPERATIONS



Sub-Matrix: **Water**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 338340) - continued</b>										
CG2105342-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0001000 mg/L	0.0001 mg/L	100.0	70.0	130	----

COC ID: 20211028Q4GW		TURNAROUND TIME:		RUSH:				
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO		
Facility Name / Job# Elkview Operations		Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Job Description Q4 Ground Water Sampling		Lab Contact Lyudmyla Shvets		Email 1:	chris.emsle@teck.com	X	X	X
Project Manager Jennifer Dane		Email lyudmyla.shvets@alsglobal.com		Email 2:	colby.bracken@teck.com	X	X	X
Email jennifer.dane@teck.com		Address 2559 29 Street NE		Email 3:	kennedy.allen@teck.com	X	X	X
Address RR#1 HWY# 3				Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
				Email 5:	teckcoal@equisonline.com			X
City Sparwood	Province BC	City Calgary	Province AB	Email 6:	Jennifer.Dane@teck.com	X	X	X
Postal Code	Country Canada	Postal Code T1Y 7B5	Country Canada	PO number		VPO00741597		
Phone Number 1-250-865-5289		Phone Number 403-407-1800						

Environmental Division  
Calgary

Work Order Reference  
**CG2105331**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MW_AQ1-WG_2021_Q4_NP	EV_MW_AQ1	WG		10/28/21	11:16	G	5	1	1	1	1	1	1					1		
EV_MW_AQ2-WG_2021_Q4_NP	EV_MW_AQ2	WG		10/28/21	13:27	G	5	1	1	1	1	1	1					1		
Total							10													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
		S.Hansen		October 28, 2021		<i>[Signature]</i>		29/10/21 8:50	
SERVICE REQUEST (rush - subject to availability)		Sampler's Name		Mobile #		Sampler's Signature		Date/Time	
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS		S.Hansen		250-425-8957		<i>[Signature]</i>		October 28, 2021	

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105523**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HWY#3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211105Q4GW  
**Sampler** : S.Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 06-Nov-2021 08:55  
**Date Analysis Commenced** : 06-Nov-2021  
**Issue Date** : 22-Nov-2021 09:18

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_BC1A_ WG_2021_Q4_ NP	EV_MW_BC1B_ WG_2021_Q4_ NP	----	----	----
Client sampling date / time					05-Nov-2021 12:26	05-Nov-2021 13:18	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105523-001	CG2105523-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	6.8	6.9	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	272	263	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	332	321	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	272	263	----	----	----	
conductivity	----	E100	2.0	µS/cm	1950	2190	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1230	1420	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	390	351	----	----	----	
pH	----	E108	0.10	pH units	7.70	7.60	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	1630	1870	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	0.60	0.12	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0069	0.0169	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	0.262	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	40.0	47.5	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.260	0.327	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	31.4	32.0	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0207	0.0260	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0208 <sup>DLM</sup>	0.0257 <sup>DLM</sup>	----	----	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0202 <sup>DLM</sup>	0.0250 <sup>DLM</sup>	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	858	1010	----	----	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	31.4	32.0	----	----	----	
<b>Organic / Inorganic Carbon</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_BC1A_WG_2021_Q4_NP	EV_MW_BC1B_WG_2021_Q4_NP	----	----	----
Client sampling date / time					05-Nov-2021 12:26	05-Nov-2021 13:18	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105523-001 Result	CG2105523-002 Result	-----	-----	-----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.82	2.01 <small>DTC.RRV</small>	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.88	0.58 <small>DTC.RRV</small>	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	26.7	29.9	----	----	----	
cation sum	----	EC101	0.10	meq/L	25.2	29.0	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	94.4	97.0	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.89	1.53	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0010	0.0011	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00077	0.00140	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00018	0.00023	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0551	0.0371	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.055	0.045	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.208	0.307	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	249	271	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00013	<0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.18	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00059	0.00035	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.168	0.180	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	148	180	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00327	0.00034	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00546	0.00908	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00176	0.00323	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	6.58	7.10	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	196	265	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_BC1A_ WG_2021_Q4_ NP	EV_MW_BC1B_ WG_2021_Q4_ NP	----	----	----
Client sampling date / time					05-Nov-2021 12:26	05-Nov-2021 13:18	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105523-001 Result	CG2105523-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.50	2.75	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	11.0	10.3	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.13	1.28	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	282	343	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000024	0.000039	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00706	0.0110	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0053	0.0061	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105523</b>	Page	: 1 of 14
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HWY#3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 06-Nov-2021 08:55
PO	: VPO00741597	Issue Date	: 22-Nov-2021 09:19
C-O-C number	: 20211105Q4GW		
Sampler	: S.Hansen		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Duplicate outliers occur - please see following pages for full details.
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.





**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	191 % TKND	20%	Duplicate RPD does not meet the DQO for this test.

**Result Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.

<b>Matrix Spike (MS) Recoveries</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	247 % MSTN	70.0-130%	Recovery greater than upper data quality objective

**Result Qualifiers**

Qualifier	Description
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q4_NP	E298	05-Nov-2021	19-Nov-2021	----	----		19-Nov-2021	28 days	14 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q4_NP	E298	05-Nov-2021	19-Nov-2021	----	----		19-Nov-2021	28 days	14 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q4_NP	E235.Br-L	05-Nov-2021	----	----	----		06-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q4_NP	E235.Br-L	05-Nov-2021	----	----	----		06-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q4_NP	E235.Cl-L	05-Nov-2021	----	----	----		06-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q4_NP	E235.Cl-L	05-Nov-2021	----	----	----		06-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q4_NP	E378-U	05-Nov-2021	----	----	----		06-Nov-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_BC1B_WG_2021_Q4_NP	E378-U	05-Nov-2021	----	----	----		06-Nov-2021	3 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_BC1A_WG_2021_Q4_NP	E235.F	05-Nov-2021	----	----	----		06-Nov-2021	28 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_BC1B_WG_2021_Q4_NP	E235.F	05-Nov-2021	----	----	----		06-Nov-2021	28 days	1 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_BC1A_WG_2021_Q4_NP	E235.NO3-L	05-Nov-2021	----	----	----		06-Nov-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_BC1B_WG_2021_Q4_NP	E235.NO3-L	05-Nov-2021	----	----	----		06-Nov-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_BC1A_WG_2021_Q4_NP	E235.NO2-L	05-Nov-2021	----	----	----		06-Nov-2021	3 days	1 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE EV_MW_BC1B_WG_2021_Q4_NP	E235.NO2-L	05-Nov-2021	----	----	----		06-Nov-2021	3 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE EV_MW_BC1A_WG_2021_Q4_NP	E235.SO4	05-Nov-2021	----	----	----		06-Nov-2021	28 days	1 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE EV_MW_BC1B_WG_2021_Q4_NP	E235.SO4	05-Nov-2021	----	----	----		06-Nov-2021	28 days	1 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q4_NP	E375-T	05-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q4_NP	E375-T	05-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q4_NP	E318	05-Nov-2021	13-Nov-2021	----	----		18-Nov-2021	28 days	13 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q4_NP	E318	05-Nov-2021	13-Nov-2021	----	----		18-Nov-2021	28 days	13 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q4_NP	E372-U	05-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q4_NP	E372-U	05-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC1A_WG_2021_Q4_NP	E421.Cr-L	05-Nov-2021	10-Nov-2021	----	----		11-Nov-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC1B_WG_2021_Q4_NP	E421.Cr-L	05-Nov-2021	10-Nov-2021	----	----		11-Nov-2021	180 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_BC1A_WG_2021_Q4_NP	E509	05-Nov-2021	13-Nov-2021	----	----		13-Nov-2021	28 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_BC1B_WG_2021_Q4_NP	E509	05-Nov-2021	13-Nov-2021	----	----		13-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC1A_WG_2021_Q4_NP	E421	05-Nov-2021	10-Nov-2021	----	----		11-Nov-2021	180 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_BC1B_WG_2021_Q4_NP	E421	05-Nov-2021	10-Nov-2021	----	----		11-Nov-2021	180 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q4_NP	E358-L	05-Nov-2021	15-Nov-2021	----	----		16-Nov-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q4_NP	E358-L	05-Nov-2021	15-Nov-2021	----	----		16-Nov-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1A_WG_2021_Q4_NP	E355-L	05-Nov-2021	15-Nov-2021	----	----		16-Nov-2021	28 days	11 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_BC1B_WG_2021_Q4_NP	E355-L	05-Nov-2021	15-Nov-2021	----	----		16-Nov-2021	28 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q4_NP	E283	05-Nov-2021	----	----	----		10-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q4_NP	E283	05-Nov-2021	----	----	----		10-Nov-2021	14 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_BC1A_WG_2021_Q4_NP	E290	05-Nov-2021	----	----	----		10-Nov-2021	14 days	5 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_BC1B_WG_2021_Q4_NP	E290	05-Nov-2021	----	----	----		10-Nov-2021	14 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_BC1A_WG_2021_Q4_NP	E100	05-Nov-2021	----	----	----		10-Nov-2021	28 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_BC1B_WG_2021_Q4_NP	E100	05-Nov-2021	----	----	----		10-Nov-2021	28 days	5 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_BC1B_WG_2021_Q4_NP	E125	05-Nov-2021	----	----	----		15-Nov-2021	0.25 hrs	238 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_BC1A_WG_2021_Q4_NP	E125	05-Nov-2021	----	----	----		15-Nov-2021	0.25 hrs	239 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_BC1B_WG_2021_Q4_NP	E108	05-Nov-2021	----	----	----		10-Nov-2021	0.25 hrs	117 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_BC1A_WG_2021_Q4_NP	E108	05-Nov-2021	----	----	----		10-Nov-2021	0.25 hrs	118 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_BC1A_WG_2021_Q4_NP	E162	05-Nov-2021	----	----	----		11-Nov-2021	7 days	6 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q4_NP	E162	05-Nov-2021	----	----	----		11-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_BC1A_WG_2021_Q4_NP	E160-L	05-Nov-2021	----	----	----		11-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_MW_BC1B_WG_2021_Q4_NP	E160-L	05-Nov-2021	----	----	----		11-Nov-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_BC1A_WG_2021_Q4_NP	E121	05-Nov-2021	----	----	----		07-Nov-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_BC1B_WG_2021_Q4_NP	E121	05-Nov-2021	----	----	----		07-Nov-2021	3 days	2 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	342128	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	342136	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	348346	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	339693	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	339692	1	8	12.5	5.0	✓
Conductivity in Water	E100	342134	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	341988	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	344065	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	341987	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	342472	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	339661	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	339695	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	339697	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	339696	1	8	12.5	5.0	✓
ORP by Electrode	E125	344875	1	20	5.0	5.0	✓
pH by Meter	E108	342135	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	339694	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	342930	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	339743	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	344270	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	342482	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339746	1	2	50.0	5.0	✓
Turbidity by Nephelometry	E121	339906	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	342128	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	342136	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	348346	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	339693	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	339692	1	8	12.5	5.0	✓
Conductivity in Water	E100	342134	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	341988	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	344065	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	341987	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	342472	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	339661	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	339695	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	339697	1	8	12.5	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	339696	1	8	12.5	5.0	✓
ORP by Electrode	E125	344875	1	20	5.0	5.0	✓
pH by Meter	E108	342135	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	339694	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	342930	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	339743	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	344270	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	342482	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339746	1	2	50.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	342927	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	339906	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	342128	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	342136	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	348346	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	339693	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	339692	1	8	12.5	5.0	✓
Conductivity in Water	E100	342134	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	341988	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	344065	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	341987	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	342472	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	339661	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	339695	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	339697	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	339696	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	339694	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	342930	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	339743	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	344270	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	342482	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339746	1	2	50.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	342927	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	339906	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	348346	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	339693	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	339692	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	341988	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	344065	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	341987	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	342472	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	339661	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	339695	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	339697	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	339696	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	339694	1	8	12.5	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	339743	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	344270	1	15	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	342482	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339746	1	2	50.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368  Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105523**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HWY#3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211105Q4GW  
**Sampler** : S.Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 06-Nov-2021 08:55  
**Date Analysis Commenced** : 06-Nov-2021  
**Issue Date** : 22-Nov-2021 09:18

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
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Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
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Page : 2 of 14  
Work Order : CG2105523  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 339906)</b>											
CG2105520-003	Anonymous	turbidity	----	E121	0.10	NTU	6.11	6.08	0.394%	15%	----
<b>Physical Tests (QC Lot: 342128)</b>											
CG2105522-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	39.9	40.1	0.500%	20%	----
<b>Physical Tests (QC Lot: 342134)</b>											
CG2105521-002	Anonymous	conductivity	----	E100	2.0	µS/cm	4290	4280	0.233%	10%	----
<b>Physical Tests (QC Lot: 342135)</b>											
CG2105521-002	Anonymous	pH	----	E108	0.10	pH units	7.32	7.37	0.681%	4%	----
<b>Physical Tests (QC Lot: 342136)</b>											
CG2105521-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	528	531	0.472%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	528	531	0.472%	20%	----
<b>Physical Tests (QC Lot: 342930)</b>											
CG2105520-003	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1580	1580	0.411%	20%	----
<b>Physical Tests (QC Lot: 344875)</b>											
CG2105521-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	388	378	2.35%	15%	----
<b>Anions and Nutrients (QC Lot: 339661)</b>											
CG2105521-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 339692)</b>											
CG2105522-003	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 339693)</b>											
CG2105522-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 339694)</b>											
CG2105522-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 339695)</b>											
CG2105522-003	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 339696)</b>											
CG2105522-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 339697)</b>											
CG2105522-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 339743)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 339743) - continued</b>											
CG2105523-001	EV_MW_BC1A_WG_2021_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0040	mg/L	0.0202	0.0190	0.0012	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 339746)</b>											
CG2105523-001	EV_MW_BC1A_WG_2021_Q4_NP	phosphorus, total	7723-14-0	E372-U	0.0040	mg/L	0.0208	0.0209	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 344270)</b>											
CG2105522-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	2.18	<0.050	191%	20%	TKND
<b>Anions and Nutrients (QC Lot: 348346)</b>											
CG2105520-019	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0119	0.0127	0.0008	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 342472)</b>											
CG2105521-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.56	0.61	0.04	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 342482)</b>											
CG2105521-003	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.20	1.00	0.20	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 341987)</b>											
CG2105489-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0016	0.0013	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00069	0.00070	0.000008	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0298	0.0307	2.93%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.028	0.028	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.332 µg/L	0.000326	1.88%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	297	290	2.40%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.15 µg/L	0.00014	0.00001	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00030	0.00029	0.00001	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.369	0.351	5.13%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	149	147	1.56%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00122	0.00118	3.22%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00318	0.00309	2.99%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0543	0.0537	1.12%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	6.64	6.82	2.68%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	198 µg/L	0.202	2.00%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.57	1.54	2.00%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 341987) - continued</b>											
CG2105489-001	Anonymous	sodium, dissolved	17341-25-2	E421	0.050	mg/L	9.25	9.31	0.688%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.449	0.452	0.713%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	266	251	5.93%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000041	0.000040	0.000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0159	0.0153	3.64%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0205	0.0204	0.609%	20%	----
<b>Dissolved Metals (QC Lot: 341988)</b>											
CG2105489-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00014	0.00012	0.00001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 344065)</b>											
CG2105520-018	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 339906)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 342128)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 342134)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 342136)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 342927)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 342930)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 339661)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 339692)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 339693)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 339694)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 339695)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 339696)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 339697)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 339743)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 339746)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 344270)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 344270) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 348346)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 342472)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 342482)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 341987)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 341987) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 341988)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 344065)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 339906)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	104	85.0	115	---
<b>Physical Tests (QCLot: 342128)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 342134)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	---
<b>Physical Tests (QCLot: 342135)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 342136)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 342927)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 342930)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	91.9	85.0	115	---
<b>Physical Tests (QCLot: 344875)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Anions and Nutrients (QCLot: 339661)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 339692)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 339693)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 339694)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 339695)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	108	90.0	110	---
<b>Anions and Nutrients (QCLot: 339696)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 339697)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 339743)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	101	80.0	120	---
<b>Anions and Nutrients (QCLot: 339746)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 339746) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	105	80.0	120	----
<b>Anions and Nutrients (QCLot: 344270)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 348346)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 342472)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	99.0	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 342482)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 341987)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.8	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.4	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	107	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	86.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.6	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	91.1	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.7	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.9	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	92.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	85.6	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	110	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.5	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.9	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 341987) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	108	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	92.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.0	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.0	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.6	80.0	120	----
<b>Dissolved Metals (QCLot: 341988)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	96.5	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	93.9	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 339661)</b>										
CG2105521-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0518 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 339692)</b>										
CG2105522-003	Anonymous	chloride	16887-00-6	E235.Cl-L	99.4 mg/L	100 mg/L	99.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 339693)</b>										
CG2105522-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.464 mg/L	0.5 mg/L	92.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 339694)</b>										
CG2105522-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	124 mg/L	100 mg/L	124	75.0	125	----
<b>Anions and Nutrients (QCLot: 339695)</b>										
CG2105522-003	Anonymous	fluoride	16984-48-8	E235.F	1.06 mg/L	1 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 339696)</b>										
CG2105522-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.453 mg/L	0.5 mg/L	90.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 339697)</b>										
CG2105522-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.49 mg/L	2.5 mg/L	99.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 339743)</b>										
CG2105523-002	EV_MW_BC1B_WG_2021_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0620 mg/L	0.0676 mg/L	91.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 339746)</b>										
CG2105523-002	EV_MW_BC1B_WG_2021_Q4_NP	phosphorus, total	7723-14-0	E372-U	0.0617 mg/L	0.0676 mg/L	91.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 344270)</b>										
CG2105522-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	6.18 mg/L	2.5 mg/L	247	70.0	130	MSTN
<b>Anions and Nutrients (QCLot: 348346)</b>										
CG2105521-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 342472)</b>										
CG2105521-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.3 mg/L	23.9 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 342482)</b>										
CG2105521-003	Anonymous	carbon, total organic [TOC]	----	E355-L	24.2 mg/L	23.9 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 341987)</b>										
CG2105489-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.370 mg/L	0.4 mg/L	92.6	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 341987) - continued</b>										
CG2105489-002	Anonymous	antimony, dissolved	7440-36-0	E421	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0775 mg/L	0.08 mg/L	96.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0158 mg/L	0.02 mg/L	79.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.183 mg/L	0.2 mg/L	91.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00808 mg/L	0.008 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0354 mg/L	0.04 mg/L	88.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.69 mg/L	4 mg/L	92.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0355 mg/L	0.04 mg/L	88.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0376 mg/L	0.04 mg/L	94.1	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	17.6 mg/L	20 mg/L	88.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00727 mg/L	0.008 mg/L	90.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00718 mg/L	0.008 mg/L	89.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0379 mg/L	0.04 mg/L	94.7	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0784 mg/L	0.08 mg/L	97.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.196 mg/L	0.2 mg/L	98.1	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.718 mg/L	0.8 mg/L	89.8	70.0	130	----
<b>Dissolved Metals (QCLot: 341988)</b>										
CG2105489-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0761 mg/L	0.08 mg/L	95.1	70.0	130	----
<b>Dissolved Metals (QCLot: 344065)</b>										
CG2105520-019	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000945 mg/L	0.0001 mg/L	94.5	70.0	130	----



## Qualifiers

<i>Qualifier</i>	<i>Description</i>
MSTN	<i>TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.</i>

---

COC ID:	20211105Q4GW	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF FDD
Job Description	Q4 Ground Water Sampling	Lab Contact	Lyudnyla Shvets	Email 1:	chris.emsle@teck.com X X X
Project Manager	Jennifer Dane	Email	lyudnyla.shvets@alsglobal.com	Email 2:	celby.bracken@teck.com X X X
Email	jennifer.dane@teck.com	Address	2559 29 Street NE	Email 3:	jennifer.dane@teck.com X X X
Address	RR#1 HWY# 3			Email 4:	Teck.Lab.Results@sharepoint.teck.X X X
				Email 5:	teckcoal@equisonline.com X
City	Sparwood	Province	BC	City	Calgary
Postal Code		Country	Canada	Province	AB
Phone Number	1-250-865-5289	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403-407-1800	PO number	VPO00741597

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	Filtered: F: Field, L: Lab, FL: Field & Lab, N: None												
									No	Yes	Yes	No	No	No	No	Yes	Yes				
EV_MW_BC1A_WG_2021_Q4_NP	EV_MW_BC1A	WG	N	11/05/21	12:26	G	5	TECKCOAL-ROUTINE-VA (E305.1) Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	1	1	1	1									
EV_MW_BC1B_WG_2021_Q4_NP	EV_MW_BC1B	WG	N	11/05/21	13:18	G	5	TECKCOAL-MET-D-VA (SW6020) DOC (APHA 5310) Dissolved Phosphorus TKN/TOC (APHA 4500-NORG) Total Nitrogen for BC (NO2 and NO3) T-ULTRA MERCURY (SW6020) D-ULTRA MERCURY (SW6020) EPH (C10-C32) D-Mercury D-CVI	1	1	1	1									
Total							10														

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	S.Hansen	November 5, 2021	<i>WA</i>	6-Nov - 8:55 AM
SERVICE REQUEST (rush - subject to availability)	Sampler's Name	S.Hansen	Mobile #	
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <= 1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	<i>S.Hansen</i>	Date/Time	November 5, 2021

Environmental Division  
Calgary  
Work Order Reference  
**CG2105523**



*60C*

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105564**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211107Q4GW  
**Sampler** : SH/CB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Nov-2021 08:52  
**Date Analysis Commenced** : 10-Nov-2021  
**Issue Date** : 22-Nov-2021 09:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_RCSgw_WG _2021_Q4_NP	EV_HW1_WG_2 021_Q4_NP	----	----	----
(Matrix: Water)					Client sampling date / time	07-Nov-2021 11:16	07-Nov-2021 16:57	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105564-001	CG2105564-002	-----	-----	-----	
					Result	Result	----	----	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	39.6	15.8	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	261	212	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	319	259	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	319	259	----	----	----	
conductivity	----	E100	2.0	µS/cm	2360	1140	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1550	614	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	477	469	----	----	----	
pH	----	E108	0.10	pH units	7.00	7.62	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	2130	869	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.6	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	1.06	<0.10	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0196	0.0077	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	0.294	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	11.5	28.8	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.173	0.145	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.464 <sup>TKN</sup>	0.376 <sup>TKN</sup>	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	28.2	8.53	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.107	0.0056	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0011	0.0026	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0039	0.0022	----	----	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0030	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1240	410	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.73	0.92	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.49	1.05	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_RCSgw_WG _2021_Q4_NP	EV_HW1_WG_2 021_Q4_NP	----	----	----
Client sampling date / time					07-Nov-2021 11:16	07-Nov-2021 16:57	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2105564-001	CG2105564-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	34.5	15.1	---	---	---	
cation sum	----	EC101	0.10	meq/L	31.3	12.8	---	---	---	
ion balance (cations/anions ratio)	----	EC101	0.010	%	90.7	84.8	---	---	---	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.86	8.24	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0020 <sup>DLA</sup>	0.0012	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00023	0.00013	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0385	0.0544	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.020	0.022	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.224	0.0715	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	334	147	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00015	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.10	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0954	0.965	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.087	<0.010	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000264	0.000152	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0719	0.0529	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	174	59.9	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0118	0.00028	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00108	0.000683	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00363	0.00116	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.76	2.23	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	222	58.5	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.75	3.45	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	---	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.83	10.9	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.425	0.327	---	---	---	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_RCSgw_WG _2021_Q4_NP	EV_HW1_WG_2 021_Q4_NP	----	----	----
Client sampling date / time					07-Nov-2021 11:16	07-Nov-2021 16:57	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105564-001	CG2105564-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	437	131	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	0.000018	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00677	0.00173	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.148	0.0159	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105564</b>	Page	: 1 of 14
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 09-Nov-2021 08:52
PO	: VPO00741597	Issue Date	: 22-Nov-2021 09:26
C-O-C number	: 20211107Q4GW		
Sampler	: SH/CB		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.142 % TKND	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

**Result Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_HW1_WG_2021_Q4_NP	E298	07-Nov-2021	20-Nov-2021	----	----		20-Nov-2021	28 days	13 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_RCSgw_WG_2021_Q4_NP	E298	07-Nov-2021	20-Nov-2021	----	----		20-Nov-2021	28 days	13 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_HW1_WG_2021_Q4_NP	E235.Br-L	07-Nov-2021	----	----	----		10-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_RCSgw_WG_2021_Q4_NP	E235.Br-L	07-Nov-2021	----	----	----		10-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_HW1_WG_2021_Q4_NP	E235.Cl-L	07-Nov-2021	----	----	----		10-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_RCSgw_WG_2021_Q4_NP	E235.Cl-L	07-Nov-2021	----	----	----		10-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> EV_HW1_WG_2021_Q4_NP	E378-U	07-Nov-2021	----	----	----		10-Nov-2021	3 days	3 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_RCSgw_WG_2021_Q4_NP	E378-U	07-Nov-2021	----	----	----		10-Nov-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_HW1_WG_2021_Q4_NP	E235.F	07-Nov-2021	----	----	----		10-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_RCSgw_WG_2021_Q4_NP	E235.F	07-Nov-2021	----	----	----		10-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_HW1_WG_2021_Q4_NP	E235.NO3-L	07-Nov-2021	----	----	----		10-Nov-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_RCSgw_WG_2021_Q4_NP	E235.NO3-L	07-Nov-2021	----	----	----		10-Nov-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_HW1_WG_2021_Q4_NP	E235.NO2-L	07-Nov-2021	----	----	----		10-Nov-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_RCSgw_WG_2021_Q4_NP	E235.NO2-L	07-Nov-2021	----	----	----		10-Nov-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_HW1_WG_2021_Q4_NP	E235.SO4	07-Nov-2021	----	----	----		10-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_RCSgw_WG_2021_Q4_NP	E235.SO4	07-Nov-2021	----	----	----		10-Nov-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_HW1_WG_2021_Q4_NP	E375-T	07-Nov-2021	12-Nov-2021	----	----		12-Nov-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_RCSgw_WG_2021_Q4_NP	E375-T	07-Nov-2021	12-Nov-2021	----	----		12-Nov-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_HW1_WG_2021_Q4_NP	E318	07-Nov-2021	16-Nov-2021	----	----		18-Nov-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_RCSgw_WG_2021_Q4_NP	E318	07-Nov-2021	16-Nov-2021	----	----		18-Nov-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_HW1_WG_2021_Q4_NP	E372-U	07-Nov-2021	13-Nov-2021	----	----		13-Nov-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_RCSgw_WG_2021_Q4_NP	E372-U	07-Nov-2021	13-Nov-2021	----	----		13-Nov-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_HW1_WG_2021_Q4_NP	E421.Cr-L	07-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_RCSgw_WG_2021_Q4_NP	E421.Cr-L	07-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	180 days	9 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_HW1_WG_2021_Q4_NP	E509	07-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	28 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_RCSgw_WG_2021_Q4_NP	E509	07-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	28 days	9 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_HW1_WG_2021_Q4_NP	E421	07-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	180 days	9 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_RCSgw_WG_2021_Q4_NP	E421	07-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	180 days	9 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_HW1_WG_2021_Q4_NP	E358-L	07-Nov-2021	14-Nov-2021	----	----		17-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_RCSgw_WG_2021_Q4_NP	E358-L	07-Nov-2021	14-Nov-2021	----	----		17-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_HW1_WG_2021_Q4_NP	E355-L	07-Nov-2021	14-Nov-2021	----	----		17-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_RCSgw_WG_2021_Q4_NP	E355-L	07-Nov-2021	14-Nov-2021	----	----		17-Nov-2021	28 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_HW1_WG_2021_Q4_NP	E283	07-Nov-2021	----	----	----		11-Nov-2021	14 days	4 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_RCSgw_WG_2021_Q4_NP	E283	07-Nov-2021	----	----	----		11-Nov-2021	14 days	4 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_HW1_WG_2021_Q4_NP	E290	07-Nov-2021	----	----	----		11-Nov-2021	14 days	4 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_RCSgw_WG_2021_Q4_NP	E290	07-Nov-2021	----	----	----		11-Nov-2021	14 days	4 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_HW1_WG_2021_Q4_NP	E100	07-Nov-2021	----	----	----		11-Nov-2021	28 days	4 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_RCSgw_WG_2021_Q4_NP	E100	07-Nov-2021	----	----	----		11-Nov-2021	28 days	4 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_HW1_WG_2021_Q4_NP	E125	07-Nov-2021	----	----	----		16-Nov-2021	0.25 hrs	209 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_RCSgw_WG_2021_Q4_NP	E125	07-Nov-2021	----	----	----		16-Nov-2021	0.25 hrs	214 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_HW1_WG_2021_Q4_NP	E108	07-Nov-2021	----	----	----		11-Nov-2021	0.25 hrs	88 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_RCSgw_WG_2021_Q4_NP	E108	07-Nov-2021	----	----	----		11-Nov-2021	0.25 hrs	93 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_HW1_WG_2021_Q4_NP	E162	07-Nov-2021	----	----	----		12-Nov-2021	7 days	5 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_RCSgw_WG_2021_Q4_NP	E162	07-Nov-2021	----	----	----		12-Nov-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE EV_HW1_WG_2021_Q4_NP	E160-L	07-Nov-2021	----	----	----		12-Nov-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE EV_RCSgw_WG_2021_Q4_NP	E160-L	07-Nov-2021	----	----	----		12-Nov-2021	7 days	5 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_HW1_WG_2021_Q4_NP	E121	07-Nov-2021	----	----	----		10-Nov-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_RCSgw_WG_2021_Q4_NP	E121	07-Nov-2021	----	----	----		10-Nov-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	342952	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	342942	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	349206	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	342011	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	342012	1	20	5.0	5.0	✓
Conductivity in Water	E100	342940	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	345699	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	345421	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	345700	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	344538	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	342317	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	342015	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	342013	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	342014	1	20	5.0	5.0	✓
ORP by Electrode	E125	345619	1	20	5.0	5.0	✓
pH by Meter	E108	342941	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	342010	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	343194	1	16	6.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	343035	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	345884	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	344543	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	343258	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	342116	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	342952	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	342942	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	349206	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	342011	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	342012	1	20	5.0	5.0	✓
Conductivity in Water	E100	342940	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	345699	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	345421	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	345700	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	344538	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	342317	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	342015	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	342013	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	342014	1	20	5.0	5.0	✓
ORP by Electrode	E125	345619	1	20	5.0	5.0	✓
pH by Meter	E108	342941	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	342010	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	343194	1	16	6.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	343035	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	345884	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	344543	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	343258	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	343192	1	17	5.8	5.0	✓
Turbidity by Nephelometry	E121	342116	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	342952	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	342942	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	349206	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	342011	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	342012	1	20	5.0	5.0	✓
Conductivity in Water	E100	342940	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	345699	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	345421	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	345700	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	344538	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	342317	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	342015	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	342013	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	342014	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	342010	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	343194	1	16	6.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	343035	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	345884	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	344543	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	343258	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	343192	1	17	5.8	5.0	✓
Turbidity by Nephelometry	E121	342116	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	349206	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	342011	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	342012	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	345699	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	345421	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	345700	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	344538	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	342317	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	342015	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	342013	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	342014	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	342010	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	343035	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	345884	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	344543	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	343258	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105564**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211107Q4GW  
**Sampler** : SH/CB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Nov-2021 08:52  
**Date Analysis Commenced** : 10-Nov-2021  
**Issue Date** : 22-Nov-2021 09:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta



Page : 2 of 14  
Work Order : CG2105564  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 342116)</b>											
CG2105558-003	Anonymous	turbidity	----	E121	0.10	NTU	0.13	0.13	0.008	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 342940)</b>											
CG2105561-004	Anonymous	conductivity	----	E100	2.0	µS/cm	1180	1190	0.337%	10%	----
<b>Physical Tests (QC Lot: 342941)</b>											
CG2105561-004	Anonymous	pH	----	E108	0.10	pH units	8.15	8.14	0.123%	4%	----
<b>Physical Tests (QC Lot: 342942)</b>											
CG2105561-004	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	207	213	2.58%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	253	259	2.58%	20%	----
<b>Physical Tests (QC Lot: 342952)</b>											
CG2105561-004	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	5.3	5.4	0.1	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 343194)</b>											
CG2105540-007	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1570	1570	0.0638%	20%	----
<b>Physical Tests (QC Lot: 345619)</b>											
CG2105561-004	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	444	447	0.696%	15%	----
<b>Anions and Nutrients (QC Lot: 342010)</b>											
CG2105560-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	417	417	0.0196%	20%	----
<b>Anions and Nutrients (QC Lot: 342011)</b>											
CG2105560-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 342012)</b>											
CG2105560-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.32	1.23	0.09	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 342013)</b>											
CG2105560-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	2.13	2.12	0.479%	20%	----
<b>Anions and Nutrients (QC Lot: 342014)</b>											
CG2105560-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0053	<0.0050	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 342015)</b>											
CG2105560-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.387	0.379	0.008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 342317)</b>											
CG2105564-001	EV_RCSgw_WG_2021_Q4_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0011	0.0011	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 343035)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 343035) - continued</b>											
CG2105542-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0397	0.0383	3.72%	20%	----
<b>Anions and Nutrients (QC Lot: 343258)</b>											
CG2105560-009	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0100	mg/L	0.432	0.431	0.0422%	20%	----
<b>Anions and Nutrients (QC Lot: 345884)</b>											
CG2105561-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.278	# 0.419	0.142	Diff <2x LOR	TKND
<b>Anions and Nutrients (QC Lot: 349206)</b>											
CG2105558-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 344538)</b>											
CG2105561-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.81	4.03	0.22	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 344543)</b>											
CG2105560-004	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	7.56	7.61	0.653%	20%	----
<b>Dissolved Metals (QC Lot: 345421)</b>											
CG2105560-008	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 345699)</b>											
CG2105561-001	Anonymous	chromium, dissolved	7440-47-3	E421-Cr-L	0.00010	mg/L	<0.00010	0.00012	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 345700)</b>											
CG2105561-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0034	0.0029	0.0005	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00050	0.00049	0.000005	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00041	0.00042	0.000007	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0795	0.0804	1.14%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.010	<0.010	0.00008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0108 µg/L	0.0000105	0.0000002	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	146	146	0.00602%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.15 µg/L	0.00016	0.000003	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00037	0.00038	0.000010	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0068	0.0068	0.00004	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	87.2	87.9	0.687%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00509	0.00525	3.02%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00352	0.00348	1.10%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00319	0.00313	0.00005	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.63	2.66	1.15%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 345700) - continued</b>											
CG2105561-001	Anonymous	selenium, dissolved	7782-49-2	E421	0.050	mg/L	63.3 µg/L	0.0655	3.39%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.70	3.64	1.78%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.50	1.52	1.50%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.134	0.132	1.24%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	192	183	4.31%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00322	0.00321	0.137%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00062	0.00060	0.00001	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0132	0.0129	2.43%	20%	----

**Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 342116)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 342940)</b>						
conductivity	----	E100	1	µS/cm	1.1	----
<b>Physical Tests (QCLot: 342942)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 342952)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 343192)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 343194)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 342010)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 342011)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 342012)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 342013)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 342014)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 342015)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 342317)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 343035)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 343258)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 345884)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 345884) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 349206)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 344538)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 344543)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 345421)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 345699)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 345700)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 345700) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 342116)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	92.0	85.0	115	---
<b>Physical Tests (QCLot: 342940)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	---
<b>Physical Tests (QCLot: 342941)</b>									
pH	---	E108	---	pH units	7 pH units	99.7	98.6	101	---
<b>Physical Tests (QCLot: 342942)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 342952)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	113	85.0	115	---
<b>Physical Tests (QCLot: 343192)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	96.6	85.0	115	---
<b>Physical Tests (QCLot: 343194)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	95.8	85.0	115	---
<b>Physical Tests (QCLot: 345619)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 342010)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 342011)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 342012)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 342013)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 342014)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 342015)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 342317)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	103	80.0	120	---
<b>Anions and Nutrients (QCLot: 343035)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	98.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 343258)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 343258) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	95.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 345884)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	93.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 349206)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 344538)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 344543)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	117	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.8	80.0	120	----
<b>Dissolved Metals (QCLot: 345699)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
<b>Dissolved Metals (QCLot: 345700)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.6	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.2	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.5	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.1	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.7	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 345700) - continued</b>									
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.3	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	104	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.4	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.2	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 342010)</b>										
CG2105566-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	121 mg/L	100 mg/L	121	75.0	125	----
<b>Anions and Nutrients (QCLot: 342011)</b>										
CG2105566-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.551 mg/L	0.5 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 342012)</b>										
CG2105566-006	Anonymous	chloride	16887-00-6	E235.Cl-L	120 mg/L	100 mg/L	120	75.0	125	----
<b>Anions and Nutrients (QCLot: 342013)</b>										
CG2105566-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.97 mg/L	2.5 mg/L	119	75.0	125	----
<b>Anions and Nutrients (QCLot: 342014)</b>										
CG2105566-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.577 mg/L	0.5 mg/L	115	75.0	125	----
<b>Anions and Nutrients (QCLot: 342015)</b>										
CG2105566-006	Anonymous	fluoride	16984-48-8	E235.F	1.17 mg/L	1 mg/L	117	75.0	125	----
<b>Anions and Nutrients (QCLot: 342317)</b>										
CG2105564-002	EV_HW1_WG_2021_Q4_N P	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0530 mg/L	0.05 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 343035)</b>										
CG2105542-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0571 mg/L	0.0676 mg/L	84.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 343258)</b>										
CG2105561-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0616 mg/L	0.0676 mg/L	91.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 345884)</b>										
CG2105569-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.40 mg/L	2.5 mg/L	95.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 349206)</b>										
CG2105558-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.116 mg/L	0.1 mg/L	116	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 344538)</b>										
CG2105561-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	27.7 mg/L	23.9 mg/L	116	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 344543)</b>										
CG2105560-004	Anonymous	carbon, total organic [TOC]	----	E355-L	27.3 mg/L	23.9 mg/L	114	70.0	130	----
<b>Dissolved Metals (QCLot: 345421)</b>										
CG2105560-009	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000984 mg/L	0.0001 mg/L	98.4	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 345699)</b>										
CG2105561-003	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0392 mg/L	0.04 mg/L	98.1	70.0	130	----
<b>Dissolved Metals (QCLot: 345700)</b>										
CG2105561-003	Anonymous	aluminum, dissolved	7429-90-5	E421	0.196 mg/L	0.2 mg/L	98.0	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0209 mg/L	0.02 mg/L	105	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00902 mg/L	0.01 mg/L	90.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.097 mg/L	0.1 mg/L	97.4	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00371 mg/L	0.004 mg/L	92.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0186 mg/L	0.02 mg/L	93.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.95 mg/L	2 mg/L	97.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0370 mg/L	0.04 mg/L	92.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.02 mg/L	10 mg/L	90.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00320 mg/L	0.004 mg/L	80.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00377 mg/L	0.004 mg/L	94.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.364 mg/L	0.4 mg/L	90.9	70.0	130	----



COC ID: 20211107Q4GW      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Address	RR#1 HWY# 3							Email 4:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
								Email 5:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 6:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada				
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597		

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	No	Yes	Yes	No	No	No	No	Yes	Yes
EV_RCSgw_WG_2021_Q4_NP	EV_RCSgw	WG		11/07/21	11:16	G	5	TECKCOAL-ROUTINE-VA (E305.1)			Nitric						
EV_HW1_WG_2021_Q4_NP	EV_HW1	WG		11/07/21	16:57	G	5	TECKCOAL-MET-D-VA (SW6020)			Sulphuric						
								DOC (APHA 5310)									
								Dissolved Phosphorus									
								TKN/TOC (APHA 4500-NORG)									
								Total Nitrogen for BC (NO2 and NO3)									
								T-ULTRA MERCURY (SW6020)									
								D-ULTRA MERCURY (SW6020)									
								EPH (C10-C32)									
								D-Mercury									
								D-CrVI									
Total							10										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	S.Hansen/C.Bracken	November 7, 2021	<i>[Signature]</i>	NOV 9 2021 8:52 AM <i>[Signature]</i>
SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	S.Hansen/C.Bracken	Mobile #	250.425.1227
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	November 7, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

Environmental Division  
Calgary  
Work Order Reference  
**CG2105564**



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105607**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211109Q4GW  
**Sampler** : C. Bracken/J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 10-Nov-2021 08:40  
**Date Analysis Commenced** : 10-Nov-2021  
**Issue Date** : 23-Nov-2021 14:42

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.





## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_BALGW_W	----	----	----	----
(Matrix: Water)					G_2021_Q4_NP					
Client sampling date / time					09-Nov-2021 15:07	----	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105607-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	10.2	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	320	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	390	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	390	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	788	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	381	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	451	----	----	----	----	----
pH	----	E108	0.10	pH units	7.40	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	480	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	20.8	----	----	----	----	----
turbidity	----	E121	0.10	NTU	7.78	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0129	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.76	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.263	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.051	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0327	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0011	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0021	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0089	----	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	96.9	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_BALGW_W G_2021_Q4_NP	----	----	----	----
Client sampling date / time					09-Nov-2021 15:07	---	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2105607-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.88	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	9.51	----	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.2	----	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.91	----	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00016	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0375	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.171	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	94.7	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00116	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.041	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.121	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	35.2	----	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0105	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000306	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00182	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.09	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.096	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.64	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	41.5	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	2.64	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_BALGW_W G_2021_Q4_NP	----	----	----	----
Client sampling date / time					09-Nov-2021 15:07	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105607-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	35.4	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000122	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0061	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105607</b>	Page	: 1 of 10
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 10-Nov-2021 08:40
PO	: VPO00741597	Issue Date	: 23-Nov-2021 14:42
C-O-C number	: 20211109Q4GW		
Sampler	: C. Bracken/J. Batstone		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_BALGW_WG_2021_Q4_NP	E298	09-Nov-2021	21-Nov-2021	----	----		21-Nov-2021	28 days	12 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_BALGW_WG_2021_Q4_NP	E235.Br-L	09-Nov-2021	----	----	----		11-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_BALGW_WG_2021_Q4_NP	E235.Cl-L	09-Nov-2021	----	----	----		11-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> EV_BALGW_WG_2021_Q4_NP	E378-U	09-Nov-2021	----	----	----		10-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_BALGW_WG_2021_Q4_NP	E235.F	09-Nov-2021	----	----	----		11-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_BALGW_WG_2021_Q4_NP	E235.NO3-L	09-Nov-2021	----	----	----		11-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_BALGW_WG_2021_Q4_NP	E235.NO2-L	09-Nov-2021	----	----	----		11-Nov-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_BALGW_WG_2021_Q4_NP	E235.SO4	09-Nov-2021	----	----	----		11-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_BALGW_WG_2021_Q4_NP	E375-T	09-Nov-2021	12-Nov-2021	----	----		12-Nov-2021	28 days	3 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> EV_BALGW_WG_2021_Q4_NP	E318	09-Nov-2021	16-Nov-2021	----	----		19-Nov-2021	28 days	10 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> EV_BALGW_WG_2021_Q4_NP	E372-U	09-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	28 days	7 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> EV_BALGW_WG_2021_Q4_NP	E421.Cr-L	09-Nov-2021	17-Nov-2021	----	----		19-Nov-2021	180 days	10 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> EV_BALGW_WG_2021_Q4_NP	E509	09-Nov-2021	17-Nov-2021	----	----		17-Nov-2021	28 days	8 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_BALGW_WG_2021_Q4_NP	E421	09-Nov-2021	17-Nov-2021	----	----		19-Nov-2021	180 days	10 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_BALGW_WG_2021_Q4_NP	E358-L	09-Nov-2021	16-Nov-2021	----	----		18-Nov-2021	28 days	9 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> EV_BALGW_WG_2021_Q4_NP	E355-L	09-Nov-2021	16-Nov-2021	----	----		18-Nov-2021	28 days	9 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Acidity by Titration</b>										
HDPE EV_BALGW_WG_2021_Q4_NP	E283	09-Nov-2021	----	----	----		12-Nov-2021	14 days	3 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_BALGW_WG_2021_Q4_NP	E290	09-Nov-2021	----	----	----		12-Nov-2021	14 days	3 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_BALGW_WG_2021_Q4_NP	E100	09-Nov-2021	----	----	----		12-Nov-2021	28 days	3 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_BALGW_WG_2021_Q4_NP	E125	09-Nov-2021	----	----	----		16-Nov-2021	0.25 hrs	164 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_BALGW_WG_2021_Q4_NP	E108	09-Nov-2021	----	----	----		12-Nov-2021	0.25 hrs	66 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_BALGW_WG_2021_Q4_NP	E162	09-Nov-2021	----	----	----		15-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE EV_BALGW_WG_2021_Q4_NP	E160-L	09-Nov-2021	----	----	----		15-Nov-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_BALGW_WG_2021_Q4_NP	E121	09-Nov-2021	----	----	----		11-Nov-2021	3 days	2 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	343351	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	343341	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	349474	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	343087	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	343088	1	20	5.0	5.0	✓
Conductivity in Water	E100	343339	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	346577	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	346388	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	346576	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	344866	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	342546	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	343085	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	343089	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	343090	1	20	5.0	5.0	✓
ORP by Electrode	E125	345730	1	20	5.0	5.0	✓
pH by Meter	E108	343340	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	343086	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	344849	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	343035	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	346271	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	344871	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	344491	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	342990	1	12	8.3	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	343351	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	343341	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	349474	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	343087	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	343088	1	20	5.0	5.0	✓
Conductivity in Water	E100	343339	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	346577	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	346388	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	346576	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	344866	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	342546	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	343085	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	343089	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	343090	1	20	5.0	5.0	✓
ORP by Electrode	E125	345730	1	20	5.0	5.0	✓
pH by Meter	E108	343340	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	343086	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	344849	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	343035	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	346271	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	344871	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	344491	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	344845	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	342990	1	12	8.3	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	343351	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	343341	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	349474	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	343087	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	343088	1	20	5.0	5.0	✓
Conductivity in Water	E100	343339	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	346577	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	346388	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	346576	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	344866	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	342546	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	343085	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	343089	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	343090	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	343086	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	344849	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	343035	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	346271	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	344871	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	344491	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	344845	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	342990	1	12	8.3	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	349474	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	343087	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	343088	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	346577	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	346388	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	346576	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	344866	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	342546	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	343085	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	343089	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	343090	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	343086	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	343035	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	346271	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	344871	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	344491	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105607**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211109Q4GW  
**Sampler** : C. Bracken/J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 10-Nov-2021 08:40  
**Date Analysis Commenced** : 10-Nov-2021  
**Issue Date** : 23-Nov-2021 14:42

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2105607  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 342990)</b>											
CG2105604-004	Anonymous	turbidity	----	E121	0.10	NTU	0.16	0.18	0.01	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 343339)</b>											
CG2105603-003	Anonymous	conductivity	----	E100	2.0	µS/cm	1000	1010	0.595%	10%	----
<b>Physical Tests (QC Lot: 343340)</b>											
CG2105603-003	Anonymous	pH	----	E108	0.10	pH units	8.19	8.21	0.244%	4%	----
<b>Physical Tests (QC Lot: 343341)</b>											
CG2105603-003	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	198	200	1.03%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	241	244	1.03%	20%	----
<b>Physical Tests (QC Lot: 343351)</b>											
CG2105567-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	9.3	10.1	0.8	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 344849)</b>											
CG2105603-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1040	1010	2.44%	20%	----
<b>Physical Tests (QC Lot: 345730)</b>											
CG2105603-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	450	442	1.64%	15%	----
<b>Anions and Nutrients (QC Lot: 342546)</b>											
CG2105596-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 343035)</b>											
CG2105542-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0397	0.0383	3.72%	20%	----
<b>Anions and Nutrients (QC Lot: 343085)</b>											
CG2105604-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.133	0.130	0.003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 343086)</b>											
CG2105604-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	369	372	0.672%	20%	----
<b>Anions and Nutrients (QC Lot: 343087)</b>											
CG2105604-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 343088)</b>											
CG2105604-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	5.37	5.24	2.52%	20%	----
<b>Anions and Nutrients (QC Lot: 343089)</b>											
CG2105604-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	24.4	24.5	0.733%	20%	----
<b>Anions and Nutrients (QC Lot: 343090)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 343090) - continued</b>											
CG2105604-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0132	0.0151	0.0019	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 344491)</b>											
CG2105592-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	1.08	1.09	0.779%	20%	----
<b>Anions and Nutrients (QC Lot: 346271)</b>											
CG2105607-001	EV_BALGW_WG_2021_Q4_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.051	0.066	0.016	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 349474)</b>											
CG2105603-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0074	0.0056	0.0018	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 344866)</b>											
CG2105601-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.99	2.01	0.02	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 344871)</b>											
CG2105606-002	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.69	0.61	0.08	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 346388)</b>											
CG2105601-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 346576)</b>											
CG2105604-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00017	0.00017	0.000003	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	<0.00010	0.000002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0911	0.0918	0.734%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.013	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0339 µg/L	0.0000316	0.0000023	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	151	154	1.93%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00022	0.00020	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0479	0.0475	0.852%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	72.9	71.5	1.87%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00486	0.00485	0.194%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00128	0.00127	0.833%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00218	0.00213	0.00005	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.12	2.09	1.59%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	98.0 µg/L	0.101	3.18%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.29	2.22	3.11%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 346576) - continued</b>											
CG2105604-001	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.95	2.88	2.09%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.204	0.206	0.940%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	127	126	1.37%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00395	0.00410	3.80%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0015	0.0004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 346577)</b>											
CG2105604-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	0.00012	0.000001	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 342990)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 343339)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 343341)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 343351)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 344845)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 344849)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 342546)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 343035)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 343085)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 343086)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 343087)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 343088)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 343089)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 343090)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 344491)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 346271)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 346271) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 349474)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 344866)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 344871)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 346388)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 346576)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---

Page : 8 of 14  
 Work Order : CG2105607  
 Client : Teck Coal Limited  
 Project : ELKVIEW OPERATIONS



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 346576) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 346577)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 342990)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	90.4	85.0	115	---
<b>Physical Tests (QCLot: 343339)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	---
<b>Physical Tests (QCLot: 343340)</b>									
pH	---	E108	---	pH units	7 pH units	99.6	98.6	101	---
<b>Physical Tests (QCLot: 343341)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 343351)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	98.1	85.0	115	---
<b>Physical Tests (QCLot: 344845)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	89.7	85.0	115	---
<b>Physical Tests (QCLot: 344849)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	95.6	85.0	115	---
<b>Physical Tests (QCLot: 345730)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 342546)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	97.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 343035)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	98.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 343085)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 343086)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 343087)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	108	85.0	115	---
<b>Anions and Nutrients (QCLot: 343088)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 343089)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 343090)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 344491)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Anions and Nutrients (QCLot: 344491) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	95.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 346271)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	99.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 349474)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.1	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 344866)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.1	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 344871)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	109	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.7	80.0	120	----
<b>Dissolved Metals (QCLot: 346576)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	91.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	88.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	109	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	110	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	90.6	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	112	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	109	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	111	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	116	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 346576) - continued</b>									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	108	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	108	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	107	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	107	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	111	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	109	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	107	80.0	120	----
<b>Dissolved Metals (QCLot: 346577)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	107	80.0	120	----





## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 342546)</b>										
CG2105603-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0530 mg/L	0.05 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 343035)</b>										
CG2105542-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0571 mg/L	0.0676 mg/L	84.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 343085)</b>										
CG2105606-003	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 343086)</b>										
CG2105606-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 343087)</b>										
CG2105606-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.522 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 343088)</b>										
CG2105606-003	Anonymous	chloride	16887-00-6	E235.Cl-L	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 343089)</b>										
CG2105606-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.54 mg/L	2.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 343090)</b>										
CG2105606-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.513 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 344491)</b>										
CG2105603-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0590 mg/L	0.0676 mg/L	87.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 346271)</b>										
CG2105610-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.74 mg/L	2.5 mg/L	110	70.0	130	----
<b>Anions and Nutrients (QCLot: 349474)</b>										
CG2105603-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 344866)</b>										
CG2105601-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	26.6 mg/L	23.9 mg/L	111	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 344871)</b>										
CG2105606-002	Anonymous	carbon, total organic [TOC]	----	E355-L	23.4 mg/L	23.9 mg/L	98.1	70.0	130	----
<b>Dissolved Metals (QCLot: 346388)</b>										
CG2105601-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 346576)</b>										
CG2105604-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.215 mg/L	0.2 mg/L	108	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0228 mg/L	0.02 mg/L	114	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0222 mg/L	0.02 mg/L	111	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00912 mg/L	0.01 mg/L	91.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	87.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00438 mg/L	0.004 mg/L	110	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.07 mg/L	2 mg/L	104	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0949 mg/L	0.1 mg/L	94.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0225 mg/L	0.02 mg/L	112	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.53 mg/L	4 mg/L	113	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.75 mg/L	10 mg/L	97.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00440 mg/L	0.004 mg/L	110	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00389 mg/L	0.004 mg/L	97.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0219 mg/L	0.02 mg/L	110	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0447 mg/L	0.04 mg/L	112	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.111 mg/L	0.1 mg/L	111	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.412 mg/L	0.4 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 346577)</b>										
CG2105604-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0428 mg/L	0.04 mg/L	107	70.0	130	----



COC ID: 20211109Q4GW      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO						
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD			
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emsle@teck.com	X	X	X		
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X		
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:		X	X	X		
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X		
								Email 5:	teckcoal@equisonline.com			X		
City	Sparwood		Province	BC		City	Calgary		Province	AB				X
Postal Code			Country	Canada		Postal Code	T1Y 7B5		Country	Canada				X
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597					

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PRESERV.	No		Yes		No		No		No		Yes		Yes	
									Nitric	Sulphuric	Sulphuric	NO	Sodium Bisulphate	HCl	NaOH							
								TECKCOAL-ROUTINE-VA (E305.1) Bicarbonate, Bi-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI				
EV_BALGW_WG_2021_Q4_NP	EV_BALGW	WG		11/09/21	15:07	G	15		1	1	1	1						1				
Total																						

Environmental Division  
Calgary  
Work Order Reference  
**CG2105607**



Telephone : +1 403 407 1800

CONDITIONS	RELINQUISHED BY/AFFILIATION C. Bracken/J. Batstone	DATE/TIME November 9, 2021	ACCEPTED BY/AFFILIATION <i>[Signature]</i>	DATE/TIME NOV 9 7:00 8:40
------------	-------------------------------------------------------	-------------------------------	-----------------------------------------------	------------------------------

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	C. Bracken/J. Batstone		Mobile #	
Sampler's Signature	<i>[Signature]</i>		Date/Time	November 9, 2021

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105680**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HWY#3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211112Q4GW  
**Sampler** : JB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 4  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 13-Nov-2021 08:40  
**Date Analysis Commenced** : 13-Nov-2021  
**Issue Date** : 25-Nov-2021 08:57

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### **Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_ECgw_WG_	----	----	----	----
(Matrix: Water)						2021-11-12_NP				
					Client sampling date / time	12-Nov-2021 09:34	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105680-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	213	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	259	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	213	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	402	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	154	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	380	----	----	----	----	----
pH	----	E108	0.10	pH units	8.11	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	276	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	138	----	----	----	----	----
turbidity	----	E121	0.10	NTU	114	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0932	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.46	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.735	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.150	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0071	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0093	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0956	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	23.7	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	4.81	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	4.41	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	91.7	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	4.34	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_ECgw_WG_2021-11-12_NP	----	----	----	----
					Client sampling date / time	12-Nov-2021 09:34	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105680-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Dissolved Metals</b>										
calcium, dissolved	7440-70-2	E421	0.050	mg/L	34.2	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	16.7	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.03	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	29.8	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Laboratory	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105680</b>	Page	: 1 of 8
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HWY#3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 13-Nov-2021 08:40
PO	: VPO00741597	Issue Date	: 25-Nov-2021 08:57
C-O-C number	: 20211112Q4GW		
Sampler	: JB		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_ECgw_WG_2021-11-12_NP	E298	12-Nov-2021	22-Nov-2021	----	----		22-Nov-2021	28 days	10 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ECgw_WG_2021-11-12_NP	E235.Br-L	12-Nov-2021	----	----	----		13-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ECgw_WG_2021-11-12_NP	E235.Cl-L	12-Nov-2021	----	----	----		13-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> EV_ECgw_WG_2021-11-12_NP	E378-U	12-Nov-2021	----	----	----		13-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_ECgw_WG_2021-11-12_NP	E235.F	12-Nov-2021	----	----	----		13-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ECgw_WG_2021-11-12_NP	E235.NO3-L	12-Nov-2021	----	----	----		13-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ECgw_WG_2021-11-12_NP	E235.NO2-L	12-Nov-2021	----	----	----		13-Nov-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Container / Client Sample ID(s)				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_ECgw_WG_2021-11-12_NP	E235.SO4	12-Nov-2021	----	----	----		13-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> EV_ECgw_WG_2021-11-12_NP	E372-U	12-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	28 days	4 days	✓
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> EV_ECgw_WG_2021-11-12_NP	E421	12-Nov-2021	16-Nov-2021	----	----		16-Nov-2021	180 days	4 days	✓
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> EV_ECgw_WG_2021-11-12_NP	E283	12-Nov-2021	----	----	----		15-Nov-2021	14 days	3 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> EV_ECgw_WG_2021-11-12_NP	E290	12-Nov-2021	----	----	----		15-Nov-2021	14 days	3 days	✓
<b>Physical Tests : Conductivity in Water</b>										
<b>HDPE</b> EV_ECgw_WG_2021-11-12_NP	E100	12-Nov-2021	----	----	----		15-Nov-2021	28 days	3 days	✓
<b>Physical Tests : ORP by Electrode</b>										
<b>HDPE</b> EV_ECgw_WG_2021-11-12_NP	E125	12-Nov-2021	----	----	----		18-Nov-2021	0.25 hrs	145 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
<b>HDPE</b> EV_ECgw_WG_2021-11-12_NP	E108	12-Nov-2021	----	----	----		15-Nov-2021	0.25 hrs	73 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> EV_ECgw_WG_2021-11-12_NP	E162	12-Nov-2021	----	----	----		17-Nov-2021	7 days	5 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_ECgw_WG_2021-11-12_NP	E160-L	12-Nov-2021	----	----	----		17-Nov-2021	7 days	5 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_ECgw_WG_2021-11-12_NP	E121	12-Nov-2021	----	----	----		14-Nov-2021	3 days	2 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	344899	1	10	10.0	5.0	✓
Alkalinity Species by Titration	E290	344894	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	350200	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	344469	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	344470	1	13	7.6	5.0	✓
Conductivity in Water	E100	344892	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	345281	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	344435	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	344467	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	344471	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	344472	1	13	7.6	5.0	✓
ORP by Electrode	E125	347475	1	20	5.0	5.0	✓
pH by Meter	E108	344893	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	344468	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	346408	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	345010	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	344478	1	5	20.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	344899	1	10	10.0	5.0	✓
Alkalinity Species by Titration	E290	344894	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	350200	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	344469	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	344470	1	13	7.6	5.0	✓
Conductivity in Water	E100	344892	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	345281	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	344435	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	344467	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	344471	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	344472	1	13	7.6	5.0	✓
ORP by Electrode	E125	347475	1	20	5.0	5.0	✓
pH by Meter	E108	344893	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	344468	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	346408	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	345010	1	16	6.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	346400	1	13	7.6	5.0	✓
Turbidity by Nephelometry	E121	344478	1	5	20.0	5.0	✓
<b>Method Blanks (MB)</b>							



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Method Blanks (MB) - Continued</b>							
Acidity by Titration	E283	344899	1	10	10.0	5.0	✓
Alkalinity Species by Titration	E290	344894	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	350200	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	344469	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	344470	1	13	7.6	5.0	✓
Conductivity in Water	E100	344892	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	345281	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	344435	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	344467	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	344471	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	344472	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	344468	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	346408	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	345010	1	16	6.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	346400	1	13	7.6	5.0	✓
Turbidity by Nephelometry	E121	344478	1	5	20.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	350200	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	344469	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	344470	1	13	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	345281	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	344435	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	344467	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	344471	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	344472	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	344468	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	345010	1	16	6.2	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Calgary - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Calgary - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.  Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Calgary - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .



## QUALITY CONTROL REPORT

**Work Order** : **CG2105680**

**Page** : 1 of 9

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HWY#3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211112Q4GW  
**Sampler** : JB  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 13-Nov-2021 08:40  
**Date Analysis Commenced** : 13-Nov-2021  
**Issue Date** : 25-Nov-2021 08:57

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta

Page : 2 of 9  
Work Order : CG2105680  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 344478)</b>											
CG2105680-001	EV_ECgw_WG_2021-11-12_NP	turbidity	----	E121	0.10	NTU	114	110	3.74%	15%	----
<b>Physical Tests (QC Lot: 344892)</b>											
CG2105673-004	Anonymous	conductivity	----	E100	2.0	µS/cm	1790	1780	0.280%	10%	----
<b>Physical Tests (QC Lot: 344893)</b>											
CG2105673-004	Anonymous	pH	----	E108	0.10	pH units	7.62	7.64	0.262%	4%	----
<b>Physical Tests (QC Lot: 344894)</b>											
CG2105673-004	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	489	482	1.50%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	489	482	1.50%	20%	----
<b>Physical Tests (QC Lot: 344899)</b>											
CG2105676-003	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.8	2.5	0.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 346408)</b>											
CG2105677-002	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1560	1570	0.639%	20%	----
<b>Physical Tests (QC Lot: 347475)</b>											
CG2105675-010	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	448	440	1.91%	15%	----
<b>Anions and Nutrients (QC Lot: 344435)</b>											
CG2105676-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	0.0012	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 344467)</b>											
CG2105676-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.145	0.142	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 344468)</b>											
CG2105676-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	302	299	0.886%	20%	----
<b>Anions and Nutrients (QC Lot: 344469)</b>											
CG2105676-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 344470)</b>											
CG2105676-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	5.74	5.68	1.03%	20%	----
<b>Anions and Nutrients (QC Lot: 344471)</b>											
CG2105676-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	19.9	19.7	0.903%	20%	----
<b>Anions and Nutrients (QC Lot: 344472)</b>											
CG2105676-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0307	0.0298	0.0009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 345010)</b>											



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Anions and Nutrients (QC Lot: 345010) - continued</b>											
CG2105675-010	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0046	0.0046	0.00002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 350200)</b>											
CG2105673-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 345281)</b>											
CG2105673-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.250	mg/L	224	225	0.717%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0250	mg/L	150	150	0.660%	20%	----
		potassium, dissolved	7440-09-7	E421	0.250	mg/L	4.56	4.61	1.09%	20%	----
		sodium, dissolved	17341-25-2	E421	0.250	mg/L	5.77	5.78	0.132%	20%	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 344478)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 344892)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 344894)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 344899)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 346400)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 346408)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 344435)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 344467)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 344468)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 344469)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 344470)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 344471)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 344472)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 345010)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 350200)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Dissolved Metals (QCLot: 345281)</b>						

Page : 6 of 9  
Work Order : CG2105680  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 345281) - continued</b>						
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 344478)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
<b>Physical Tests (QCLot: 344892)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	95.0	90.0	110	----
<b>Physical Tests (QCLot: 344893)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 344894)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	107	85.0	115	----
<b>Physical Tests (QCLot: 344899)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	98.1	85.0	115	----
<b>Physical Tests (QCLot: 346400)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	93.5	85.0	115	----
<b>Physical Tests (QCLot: 346408)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	100	85.0	115	----
<b>Physical Tests (QCLot: 347475)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----
<b>Anions and Nutrients (QCLot: 344435)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	95.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 344467)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	93.6	90.0	110	----
<b>Anions and Nutrients (QCLot: 344468)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	91.3	90.0	110	----
<b>Anions and Nutrients (QCLot: 344469)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	94.9	85.0	115	----
<b>Anions and Nutrients (QCLot: 344470)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	94.1	90.0	110	----
<b>Anions and Nutrients (QCLot: 344471)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	94.1	90.0	110	----
<b>Anions and Nutrients (QCLot: 344472)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 345010)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	90.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 350200)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 350200) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	92.2	85.0	115	----
<b>Dissolved Metals (QCLot: 345281)</b>									
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	86.3	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	90.6	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	90.8	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	93.0	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 344435)</b>										
CG2105676-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0484 mg/L	0.05 mg/L	96.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 344467)</b>										
CG2105676-002	Anonymous	fluoride	16984-48-8	E235.F	0.882 mg/L	1 mg/L	88.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 344468)</b>										
CG2105676-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 344469)</b>										
CG2105676-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.463 mg/L	0.5 mg/L	92.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 344470)</b>										
CG2105676-002	Anonymous	chloride	16887-00-6	E235.Cl-L	92.4 mg/L	100 mg/L	92.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 344471)</b>										
CG2105676-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 344472)</b>										
CG2105676-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.463 mg/L	0.5 mg/L	92.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 345010)</b>										
CG2105675-011	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0602 mg/L	0.0676 mg/L	89.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 350200)</b>										
CG2105673-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0991 mg/L	0.1 mg/L	99.1	75.0	125	----
<b>Dissolved Metals (QCLot: 345281)</b>										
CG2105673-002	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	35.6 mg/L	40 mg/L	89.1	70.0	130	----
		sodium, dissolved	17341-25-2	E421	17.6 mg/L	20 mg/L	88.3	70.0	130	----

COC ID: 20211112Q4GW      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.ernette@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	coby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB		Jennifer.Dane@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Ycs/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PRESERV.		Yes		No		No		Yes		Yes			
								Nitric	Sulphuric	Sulphuric	NO	Sodium Bisulphate	HCl	NaOH							
ANALYSIS	Filtered: F: Field, L: Lab, FL: Field & Lab, N: None																				
EV_ECgw_WG_2021-11-12_NP	EV_Ecgw	WG		11/12/21	9:34	G	1	TECKCOAL-ROUTINE-VA (E305.1)													
								Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL													
								TECKCOAL-MET-D-VA (SW6020)													
								DOC (APHA 5310)													
								Dissolved Phosphorus													
								TKN/TOC (APHA 4500-NORG)													
								Total Nitrogen for BC (NO2 and NO3)													
								T-ULTRA MERCURY (SW6020)													
								D-ULTRA MERCURY (SW6020)													
								EPH (C10-C32)													
								D-Mercury													
								D-CrVI													
Total																					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	J. Batstone	November 12, 2021	<i>[Signature]</i>	13 Nov 21 8:40 AM

Environmental Division  
Calgary  
Work Order Reference  
**CG2105680**

Regularity (default)	X
50% surcharge	
100% surcharge	
Contact ALS	

Sampler's Name	J. Batstone	Mobile #	
Sampler's Signature		Date/Time	November 12, 2021



Telephone : +1 403 407 1800

q.7c



CERTIFICATE OF ANALYSIS

Work Order : CG2105725
Client : Teck Coal Limited
Contact : Jennifer Dane
Address : RR#1 HIGHWAY #3
Sparwood BC Canada V0B 2G1
Telephone : ---
Project : ELKVIEW OPERATIONS
PO : VPO00741597
C-O-C number : 20211114Q4GW
Sampler : S. HANSEN
Site : ---
Quote number : Teck Coal Master Quote
No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 5
Laboratory : Calgary - Environmental
Account Manager : Lyudmyla Shvets
Address : 2559 29th Street NE
Calgary AB Canada T1Y 7B5
Telephone : +1 403 407 1800
Date Samples Received : 16-Nov-2021 08:38
Date Analysis Commenced : 16-Nov-2021
Issue Date : 26-Nov-2021 09:04

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Lists names like Angela Ren, Anthony Calero, Caleb Deroche, etc., along with their roles and lab departments.



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID		EV_MW_SPR1A	EV_MW_SPR1B	EV_MW_SPR1C	----	----
(Matrix: Water)					_WG_2021_Q4	_WG_2021_Q4	_WG_2021_Q4				
					_NP	_NP	_NP				
Client sampling date / time					14-Nov-2021	14-Nov-2021	14-Nov-2021				
					10:58	12:15	09:25				
Analyte	CAS Number	Method	LOR	Unit	CG2105725-001	CG2105725-002	CG2105725-003	-----	-----		
					Result	Result	Result	---	---		
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	8.2	<2.0	8.2	----	----		
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	298	200	299	----	----		
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	364	243	365	----	----		
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	298	200	299	----	----		
conductivity	----	E100	2.0	µS/cm	611	428	923	----	----		
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	306	125	430	----	----		
oxidation-reduction potential [ORP]	----	E125	0.10	mV	336	457	477	----	----		
pH	----	E108	0.10	pH units	7.79	8.10	7.73	----	----		
solids, total dissolved [TDS]	----	E162	10	mg/L	350	266	566	----	----		
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	15.8	<1.0	----	----		
turbidity	----	E121	0.10	NTU	4.25	10.3	0.15	----	----		
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0557	0.162	0.0072	----	----		
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0.691	----	----		
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	17.5	0.69	70.8	----	----		
fluoride	16984-48-8	E235.F	0.020	mg/L	0.304	1.28	0.133	----	----		
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.090	0.223	0.166	----	----		
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	1.05	----	----		
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0050 <sup>D LDS</sup>	----	----		
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0015	0.0012	0.0044	----	----		
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0050	0.0184	0.0043 <sup>D LM</sup>	----	----		
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0032	0.0027	0.0047 <sup>D LM</sup>	----	----		
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	29.5	42.2	130	----	----		
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.07 <sup>D TC</sup>	2.60	1.46 <sup>D TC</sup>	----	----		



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SPR1A _WG_2021_Q4 _NP	EV_MW_SPR1B _WG_2021_Q4 _NP	EV_MW_SPR1C _WG_2021_Q4 _NP	----	----
Client sampling date / time					14-Nov-2021 10:58	14-Nov-2021 12:15	14-Nov-2021 09:25	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105725-001 Result	CG2105725-002 Result	CG2105725-003 Result	----- ----	----- ----	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.76	2.88	1.13	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	7.08	4.96	10.8	----	----	
cation sum	----	EC101	0.10	meq/L	6.35	4.44	9.18	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	89.7	89.5	85.0	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.44	5.53	8.11	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0014	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0.00011	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00098	0.00060	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.344	0.0403	0.206	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.020	0.127	0.018	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	0.0966	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	77.7	31.1	116	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00013	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.42	<0.10	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0.00043	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.297	0.183	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0146	0.0106	0.0211	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	27.2	11.5	34.0	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.256	0.0971	<0.00010	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00147	0.0253	0.000672	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00119	<0.00050	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.52	1.15	1.68	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	7.10	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.74	4.35	3.19	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_SPR1A _WG_2021_Q4 _NP	EV_MW_SPR1B _WG_2021_Q4 _NP	EV_MW_SPR1C _WG_2021_Q4 _NP	----	----
Client sampling date / time					14-Nov-2021 10:58	14-Nov-2021 12:15	14-Nov-2021 09:25	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105725-001 Result	CG2105725-002 Result	CG2105725-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.89	43.6	12.7	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.308	0.878	0.282	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	10.8	15.5	42.8	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000656	0.00127	0.00131	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0.0010	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105725</b>	Page	: 1 of 16
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 16-Nov-2021 08:38
PO	: VPO00741597	Issue Date	: 26-Nov-2021 09:04
C-O-C number	: 20211114Q4GW		
Sampler	: S. HANSEN		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1A_WG_2021_Q4_NP	E298	14-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1B_WG_2021_Q4_NP	E298	14-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1C_WG_2021_Q4_NP	E298	14-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	9 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SPR1A_WG_2021_Q4_NP	E235.Br-L	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SPR1B_WG_2021_Q4_NP	E235.Br-L	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SPR1C_WG_2021_Q4_NP	E235.Br-L	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_SPR1A_WG_2021_Q4_NP	E235.Cl-L	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_SPR1B_WG_2021_Q4_NP	E235.Cl-L	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE EV_MW_SPR1C_WG_2021_Q4_NP	E235.Cl-L	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_SPR1A_WG_2021_Q4_NP	E378-U	14-Nov-2021	----	----	----		16-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_SPR1B_WG_2021_Q4_NP	E378-U	14-Nov-2021	----	----	----		16-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE EV_MW_SPR1C_WG_2021_Q4_NP	E378-U	14-Nov-2021	----	----	----		16-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_SPR1A_WG_2021_Q4_NP	E235.F	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_SPR1B_WG_2021_Q4_NP	E235.F	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE EV_MW_SPR1C_WG_2021_Q4_NP	E235.F	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE EV_MW_SPR1A_WG_2021_Q4_NP	E235.NO3-L	14-Nov-2021	----	----	----		16-Nov-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_SPR1B_WG_2021_Q4_NP	E235.NO3-L	14-Nov-2021	----	----	----		16-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_SPR1C_WG_2021_Q4_NP	E235.NO3-L	14-Nov-2021	----	----	----		16-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_SPR1A_WG_2021_Q4_NP	E235.NO2-L	14-Nov-2021	----	----	----		16-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_SPR1B_WG_2021_Q4_NP	E235.NO2-L	14-Nov-2021	----	----	----		16-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_SPR1C_WG_2021_Q4_NP	E235.NO2-L	14-Nov-2021	----	----	----		16-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_SPR1A_WG_2021_Q4_NP	E235.SO4	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_SPR1B_WG_2021_Q4_NP	E235.SO4	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_SPR1C_WG_2021_Q4_NP	E235.SO4	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SPR1A_WG_2021_Q4_NP	E375-T	14-Nov-2021	17-Nov-2021	----	----		17-Nov-2021	28 days	3 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SPR1B_WG_2021_Q4_NP	E375-T	14-Nov-2021	17-Nov-2021	----	----		17-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SPR1C_WG_2021_Q4_NP	E375-T	14-Nov-2021	17-Nov-2021	----	----		17-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1A_WG_2021_Q4_NP	E318	14-Nov-2021	19-Nov-2021	----	----		24-Nov-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1B_WG_2021_Q4_NP	E318	14-Nov-2021	19-Nov-2021	----	----		24-Nov-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1C_WG_2021_Q4_NP	E318	14-Nov-2021	19-Nov-2021	----	----		24-Nov-2021	28 days	10 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1A_WG_2021_Q4_NP	E372-U	14-Nov-2021	17-Nov-2021	----	----		17-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1B_WG_2021_Q4_NP	E372-U	14-Nov-2021	17-Nov-2021	----	----		17-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1C_WG_2021_Q4_NP	E372-U	14-Nov-2021	17-Nov-2021	----	----		17-Nov-2021	28 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SPR1A_WG_2021_Q4_NP	E421.Cr-L	14-Nov-2021	18-Nov-2021	----	----		19-Nov-2021	180 days	5 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SPR1B_WG_2021_Q4_NP	E421.Cr-L	14-Nov-2021	18-Nov-2021	----	----		19-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SPR1C_WG_2021_Q4_NP	E421.Cr-L	14-Nov-2021	18-Nov-2021	----	----		19-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SPR1A_WG_2021_Q4_NP	E509	14-Nov-2021	22-Nov-2021	----	----		22-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SPR1B_WG_2021_Q4_NP	E509	14-Nov-2021	22-Nov-2021	----	----		22-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_SPR1C_WG_2021_Q4_NP	E509	14-Nov-2021	22-Nov-2021	----	----		22-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SPR1A_WG_2021_Q4_NP	E421	14-Nov-2021	18-Nov-2021	----	----		19-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SPR1B_WG_2021_Q4_NP	E421	14-Nov-2021	18-Nov-2021	----	----		19-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_SPR1C_WG_2021_Q4_NP	E421	14-Nov-2021	18-Nov-2021	----	----		19-Nov-2021	180 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SPR1A_WG_2021_Q4_NP	E358-L	14-Nov-2021	17-Nov-2021	----	----		22-Nov-2021	28 days	8 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SPR1B_WG_2021_Q4_NP	E358-L	14-Nov-2021	17-Nov-2021	----	----		22-Nov-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_SPR1C_WG_2021_Q4_NP	E358-L	14-Nov-2021	17-Nov-2021	----	----		22-Nov-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1A_WG_2021_Q4_NP	E355-L	14-Nov-2021	17-Nov-2021	----	----		22-Nov-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1B_WG_2021_Q4_NP	E355-L	14-Nov-2021	17-Nov-2021	----	----		22-Nov-2021	28 days	8 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_SPR1C_WG_2021_Q4_NP	E355-L	14-Nov-2021	17-Nov-2021	----	----		22-Nov-2021	28 days	8 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_SPR1A_WG_2021_Q4_NP	E283	14-Nov-2021	----	----	----		16-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_SPR1B_WG_2021_Q4_NP	E283	14-Nov-2021	----	----	----		16-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_SPR1C_WG_2021_Q4_NP	E283	14-Nov-2021	----	----	----		16-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_SPR1A_WG_2021_Q4_NP	E290	14-Nov-2021	----	----	----		16-Nov-2021	14 days	2 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_SPR1B_WG_2021_Q4_NP	E290	14-Nov-2021	----	----	----		16-Nov-2021	14 days	2 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_SPR1C_WG_2021_Q4_NP	E290	14-Nov-2021	----	----	----		16-Nov-2021	14 days	2 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_SPR1A_WG_2021_Q4_NP	E100	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_SPR1B_WG_2021_Q4_NP	E100	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_SPR1C_WG_2021_Q4_NP	E100	14-Nov-2021	----	----	----		16-Nov-2021	28 days	2 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_SPR1B_WG_2021_Q4_NP	E125	14-Nov-2021	----	----	----		21-Nov-2021	0.25 hrs	170 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_SPR1A_WG_2021_Q4_NP	E125	14-Nov-2021	----	----	----		21-Nov-2021	0.25 hrs	171 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_SPR1C_WG_2021_Q4_NP	E125	14-Nov-2021	----	----	----		21-Nov-2021	0.25 hrs	173 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_SPR1B_WG_2021_Q4_NP	E108	14-Nov-2021	----	----	----		16-Nov-2021	0.25 hrs	50 hrs	* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_SPR1A_WG_2021_Q4_NP	E108	14-Nov-2021	----	----	----		16-Nov-2021	0.25 hrs	51 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_SPR1C_WG_2021_Q4_NP	E108	14-Nov-2021	----	----	----		16-Nov-2021	0.25 hrs	53 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_SPR1A_WG_2021_Q4_NP	E162	14-Nov-2021	----	----	----		18-Nov-2021	7 days	4 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_SPR1B_WG_2021_Q4_NP	E162	14-Nov-2021	----	----	----		18-Nov-2021	7 days	4 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_SPR1C_WG_2021_Q4_NP	E162	14-Nov-2021	----	----	----		18-Nov-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_SPR1A_WG_2021_Q4_NP	E160-L	14-Nov-2021	----	----	----		18-Nov-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_SPR1B_WG_2021_Q4_NP	E160-L	14-Nov-2021	----	----	----		18-Nov-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_SPR1C_WG_2021_Q4_NP	E160-L	14-Nov-2021	----	----	----		18-Nov-2021	7 days	4 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MW_SPR1A_WG_2021_Q4_NP	E121	14-Nov-2021	----	----	----		17-Nov-2021	3 days	3 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_SPR1B_WG_2021_Q4_NP	E121	14-Nov-2021	----	----	----		17-Nov-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_SPR1C_WG_2021_Q4_NP	E121	14-Nov-2021	----	----	----		17-Nov-2021	3 days	3 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	345930	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	345925	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	350723	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	345948	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	345949	1	17	5.8	5.0	✓
Conductivity in Water	E100	345924	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	347928	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	350233	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	347929	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	346689	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	345934	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	345952	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	345950	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	345951	1	17	5.8	5.0	✓
ORP by Electrode	E125	349600	1	18	5.5	5.0	✓
pH by Meter	E108	345923	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	345947	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	347297	1	17	5.8	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	345937	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	348836	1	14	7.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	346695	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	345936	1	3	33.3	5.0	✓
Turbidity by Nephelometry	E121	346555	1	8	12.5	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	345930	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	345925	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	350723	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	345948	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	345949	1	17	5.8	5.0	✓
Conductivity in Water	E100	345924	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	347928	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	350233	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	347929	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	346689	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	345934	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	345952	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	345950	1	17	5.8	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	345951	1	17	5.8	5.0	✓
ORP by Electrode	E125	349600	1	18	5.5	5.0	✓
pH by Meter	E108	345923	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	345947	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	347297	1	17	5.8	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	345937	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	348836	1	14	7.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	346695	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	345936	1	3	33.3	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	347295	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	346555	1	8	12.5	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	345930	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	345925	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	350723	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	345948	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	345949	1	17	5.8	5.0	✓
Conductivity in Water	E100	345924	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	347928	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	350233	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	347929	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	346689	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	345934	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	345952	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	345950	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	345951	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	345947	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	347297	1	17	5.8	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	345937	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	348836	1	14	7.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	346695	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	345936	1	3	33.3	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	347295	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	346555	1	8	12.5	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	350723	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	345948	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	345949	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	347928	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	350233	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	347929	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	346689	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	345934	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	345952	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	345950	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	345951	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	345947	1	17	5.8	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	345937	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	348836	1	14	7.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	346695	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	345936	1	3	33.3	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105725**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00741597  
**C-O-C number** : 20211114Q4GW  
**Sampler** : S. HANSEN  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 16-Nov-2021 08:38  
**Date Analysis Commenced** : 16-Nov-2021  
**Issue Date** : 26-Nov-2021 09:04

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



Page : 2 of 14  
Work Order : CG2105725  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 345923)</b>											
CG2105714-001	Anonymous	pH	----	E108	0.10	pH units	8.25	8.26	0.121%	4%	----
<b>Physical Tests (QC Lot: 345924)</b>											
CG2105714-001	Anonymous	conductivity	----	E100	2.0	µS/cm	708	713	0.704%	10%	----
<b>Physical Tests (QC Lot: 345925)</b>											
CG2105714-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	164	164	0.427%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	164	164	0.427%	20%	----
<b>Physical Tests (QC Lot: 345930)</b>											
CG2105712-005	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	6.0	5.2	0.8	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 346555)</b>											
CG2105725-001	EV_MW_SPR1A_WG_202 1_Q4_NP	turbidity	----	E121	0.10	NTU	4.25	4.30	1.12%	15%	----
<b>Physical Tests (QC Lot: 347297)</b>											
CG2105690-007	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1600	1640	2.47%	20%	----
<b>Physical Tests (QC Lot: 349600)</b>											
CG2105712-005	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	450	444	1.23%	15%	----
<b>Anions and Nutrients (QC Lot: 345934)</b>											
CG2105712-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0018	0.0018	0.000002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 345936)</b>											
CG2105725-001	EV_MW_SPR1A_WG_202 1_Q4_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0050	0.0048	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 345937)</b>											
CG2105725-001	EV_MW_SPR1A_WG_202 1_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0032	0.0032	0.00003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 345947)</b>											
CG2105714-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	121	121	0.582%	20%	----
<b>Anions and Nutrients (QC Lot: 345948)</b>											
CG2105714-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 345949)</b>											
CG2105714-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	10.2	10.2	0.0768%	20%	----
<b>Anions and Nutrients (QC Lot: 345950)</b>											
CG2105714-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	23.4	23.6	0.883%	20%	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 345951)</b>											
CG2105714-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0032	0.0033	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 345952)</b>											
CG2105714-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.097	0.095	0.001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348836)</b>											
CG2105692-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 350723)</b>											
CG2105720-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0068	0.0018	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 346689)</b>											
CG2105720-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 346695)</b>											
CG2105720-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 347928)</b>											
CG2105712-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 347929)</b>											
CG2105712-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0021	0.0020	0.00004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00027	0.00026	0.000004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0278	0.0276	0.821%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	0.014	0.000009	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.470 µg/L	0.000469	0.196%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	148	148	0.519%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0692	0.0684	1.10%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	63.7	62.0	2.76%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00073	0.00073	0.000003	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00114	0.00112	1.59%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0221	0.0218	1.60%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.47	2.44	1.26%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	120 µg/L	0.125	4.40%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.72	1.72	0.140%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 347929) - continued</b>											
CG2105712-001	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.43	3.30	3.84%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.214	0.212	1.11%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	108	110	1.25%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000016	0.000016	0.0000007	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00566	0.00573	1.27%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0128	0.0125	2.12%	20%	----
<b>Dissolved Metals (QC Lot: 350233)</b>											
CG2105692-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 345924)</b>						
conductivity	----	E100	1	µS/cm	1.1	----
<b>Physical Tests (QCLot: 345925)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 345930)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 346555)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 347295)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 347297)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 345934)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 345936)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 345937)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 345947)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 345948)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 345949)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 345950)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 345951)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 345952)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 348836)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 348836) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 350723)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 346689)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 346695)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 347928)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 347929)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 347929) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 350233)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 345923)</b>									
pH	----	E108	----	pH units	7 pH units	99.8	98.6	101	----
<b>Physical Tests (QCLot: 345924)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	----
<b>Physical Tests (QCLot: 345925)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	112	85.0	115	----
<b>Physical Tests (QCLot: 345930)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	97.0	85.0	115	----
<b>Physical Tests (QCLot: 346555)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
<b>Physical Tests (QCLot: 347295)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	91.8	85.0	115	----
<b>Physical Tests (QCLot: 347297)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.6	85.0	115	----
<b>Physical Tests (QCLot: 349600)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	102	95.4	104	----
<b>Anions and Nutrients (QCLot: 345934)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	98.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 345936)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	94.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 345937)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	93.4	80.0	120	----
<b>Anions and Nutrients (QCLot: 345947)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 345948)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 345949)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 345950)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 345951)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 345952)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 345952) - continued</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 348836)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 350723)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 346689)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	95.6	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 346695)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	98.2	80.0	120	----
<b>Dissolved Metals (QCLot: 347928)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	94.8	80.0	120	----
<b>Dissolved Metals (QCLot: 347929)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.4	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.7	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.7	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.8	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 347929) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	104	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	92.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	104	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 345934)</b>										
CG2105712-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0509 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 345936)</b>										
CG2105725-002	EV_MW_SPR1B_WG_2021_Q4_NP	phosphorus, total	7723-14-0	E372-U	0.0566 mg/L	0.0676 mg/L	83.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 345937)</b>										
CG2105725-002	EV_MW_SPR1B_WG_2021_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0527 mg/L	0.0676 mg/L	77.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 345947)</b>										
CG2105720-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 345948)</b>										
CG2105720-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.515 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 345949)</b>										
CG2105720-003	Anonymous	chloride	16887-00-6	E235.Cl-L	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 345950)</b>										
CG2105720-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.68 mg/L	2.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 345951)</b>										
CG2105720-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.542 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 345952)</b>										
CG2105720-003	Anonymous	fluoride	16984-48-8	E235.F	1.07 mg/L	1 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 348836)</b>										
CG2105696-009	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.53 mg/L	2.5 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 350723)</b>										
CG2105720-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.108 mg/L	0.1 mg/L	108	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 346689)</b>										
CG2105720-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.0 mg/L	23.9 mg/L	92.1	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 346695)</b>										
CG2105720-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.3 mg/L	23.9 mg/L	97.6	70.0	130	----
<b>Dissolved Metals (QCLot: 347928)</b>										
CG2105712-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0382 mg/L	0.04 mg/L	95.5	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 347929)</b>										
CG2105712-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.196 mg/L	0.2 mg/L	97.8	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00850 mg/L	0.01 mg/L	85.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.090 mg/L	0.1 mg/L	89.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00386 mg/L	0.004 mg/L	96.5	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0177 mg/L	0.02 mg/L	88.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0926 mg/L	0.1 mg/L	92.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0348 mg/L	0.04 mg/L	86.9	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.79 mg/L	4 mg/L	94.8	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.78 mg/L	10 mg/L	87.8	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00403 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00380 mg/L	0.004 mg/L	95.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.362 mg/L	0.4 mg/L	90.4	70.0	130	----
<b>Dissolved Metals (QCLot: 350233)</b>										
CG2105696-008	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000990 mg/L	0.0001 mg/L	99.0	70.0	130	----



# Teck

<b>COC ID:</b> 20211114Q4GW		<b>TURNAROUND TIME:</b>				<b>RUSH:</b>					
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>				<b>OTHER INFO</b>			
Facility Name / Job# Elkview Operations		Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD			
Job Description Q4 Ground Water Sampling		Lab Contact Lyudmyla Shvets		Email 1: chris.emsle@teck.com		X	X	X			
Project Manager Jennifer Dane		Email lyudmyla.shvets@alsglobal.com		Email 2: colby.bracken@teck.com		X	X	X			
Email jennifer.dane@teck.com		Address 2559 29 Street NE		Email 3: kennedy.allen@teck.com		X	X	X			
Address RR#1 HWY# 3				Email 4: Teck.Lab.Results@sharepoint.teck.com		X	X	X			
				Email 5: teckcoal@equisonline.com							
City Sparwood		Province BC	City Calgary		Province AB	Email 6: Jennifer.Dane@teck.com	X	X	X		
Postal Code		Country Canada	Postal Code T1Y 7B5		Country Canada						
Phone Number 1-250-865-5289		Phone Number 403-407-1800		PO number		<b>VPO00741597</b>					

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	NO	Yes	Yes	No	No	No	No	Yes	Yes
								TECKCOAL-ROUTINE-VA (E305.1)			Nitric	Sulphuric	Sulphuric				
								Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL									
								TECKCOAL-MET-D-VA (SW6020)									
								DOC (APHA 5310)									
								Dissolved Phosphorus									
								TKN/TOC (APHA 4500-NORG)									
								Total Nitrogen for BC (NO2 and NO3)									
								T-ULTRA MERCURY (SW6020)									
								D-ULTRA MERCURY (SW6020)									
								EPH (C10-C32)									
								D-Mercury									
								D-CrVI									
							<b>Total</b>										<b>15</b>

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b> S.Hansen	<b>DATE/TIME</b> November 14, 2021	<b>ACCEPTED BY/AFFILIATION</b> RM	<b>DATE/TIME</b> 11/16 8:38

<b>SERVICE REQUEST (rush - subject to availability)</b>			
Regular (default) X	<b>Sampler's Name</b> S.Hansen	<b>Mobile #</b>	
Priority (2-3 business days) - 50% surcharge	<b>Sampler's Signature</b> <i>[Signature]</i>	<b>Date/Time</b>	November 14, 2021
Emergency (1 Business Day) - 100% surcharge			
For Emergency Call Only - ASAP or Weekend - Contact ALS			

Environmental Division  
Calgary  
Work Order Reference  
**CG2105725**



Telephone : +1 403 407 1800

bc



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105846**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00798016  
**C-O-C number** : 20211117Q4GW  
**Sampler** : C. Bracken/J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 19-Nov-2021 09:00  
**Date Analysis Commenced** : 19-Nov-2021  
**Issue Date** : 29-Nov-2021 19:09

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.





## Analytical Results

Sub-Matrix: Water					Client sample ID		EV_ER1gwD_W	EV_ER1gwS_W	----	----	----
(Matrix: Water)					G_2021_Q4_NP	G_2021_Q4_NP					
Client sampling date / time					17-Nov-2021 14:44	17-Nov-2021 17:02	----	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105846-001	CG2105846-002	-----	-----	-----	-----	-----
					Result	Result	----	----	----	----	----
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	224	223	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	273	272	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	224	223	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	446	527	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	230	257	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	466	465	----	----	----	----	----
pH	----	E108	0.10	pH units	8.04	8.08	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	247	301	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.2	<1.0	----	----	----	----	----
turbidity	----	E121	0.10	NTU	0.30	<0.10	----	----	----	----	----
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0307	0.0081	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.074	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.15	7.23	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.191	0.131	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.283	0.398	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.816	1.38	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0014	0.0012	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0039	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0034	0.0042	----	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	0.0037	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	31.1	59.2	----	----	----	----	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	1.10	1.78	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.57	0.56	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_ER1gwD_W G_2021_Q4_NP	EV_ER1gwS_W G_2021_Q4_NP	----	----	----
Client sampling date / time					17-Nov-2021 14:44	17-Nov-2021 17:02	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105846-001 Result	CG2105846-002 Result	-----	-----	-----	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	0.89	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.31	6.00	----	----	----	
cation sum	----	EC101	0.10	meq/L	4.76	5.45	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	89.6	90.8	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.46	4.80	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0052	<0.0010	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00015	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0870	0.127	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.010	<0.010	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0080	0.0148	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	61.7	68.6	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00039	0.00024	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00083	0.00073	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0081	0.0085	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.5	20.9	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00167	0.00116	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.709	0.827	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	4.24	8.60	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.32	2.66	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_ER1gwD_W G_2021_Q4_NP	EV_ER1gwS_W G_2021_Q4_NP	----	----	----
Client sampling date / time					17-Nov-2021 14:44	17-Nov-2021 17:02	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105846-001	CG2105846-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.12	6.52	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.197	0.202	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	12.2	24.8	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00136	0.00112	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0031	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105846</b>	Page	: 1 of 14
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V1C 4C3	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 19-Nov-2021 09:00
PO	: VPO00798016	Issue Date	: 29-Nov-2021 19:10
C-O-C number	: 20211117Q4GW		
Sampler	: C. Bracken/J. Batstone		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_ER1gwD_WG_2021_Q4_NP	E298	17-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	8 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_ER1gwS_WG_2021_Q4_NP	E298	17-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	8 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ER1gwD_WG_2021_Q4_NP	E235.Br-L	17-Nov-2021	----	----	----		19-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ER1gwS_WG_2021_Q4_NP	E235.Br-L	17-Nov-2021	----	----	----		19-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ER1gwD_WG_2021_Q4_NP	E235.Cl-L	17-Nov-2021	----	----	----		19-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_ER1gwS_WG_2021_Q4_NP	E235.Cl-L	17-Nov-2021	----	----	----		19-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> EV_ER1gwD_WG_2021_Q4_NP	E378-U	17-Nov-2021	----	----	----		19-Nov-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_ER1gwS_WG_2021_Q4_NP	E378-U	17-Nov-2021	----	----	----		19-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_ER1gwD_WG_2021_Q4_NP	E235.F	17-Nov-2021	----	----	----		19-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_ER1gwS_WG_2021_Q4_NP	E235.F	17-Nov-2021	----	----	----		19-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_ER1gwD_WG_2021_Q4_NP	E235.NO3-L	17-Nov-2021	----	----	----		19-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_ER1gwS_WG_2021_Q4_NP	E235.NO3-L	17-Nov-2021	----	----	----		19-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_ER1gwD_WG_2021_Q4_NP	E235.NO2-L	17-Nov-2021	----	----	----		19-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_ER1gwS_WG_2021_Q4_NP	E235.NO2-L	17-Nov-2021	----	----	----		19-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_ER1gwD_WG_2021_Q4_NP	E235.SO4	17-Nov-2021	----	----	----		19-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_ER1gwS_WG_2021_Q4_NP	E235.SO4	17-Nov-2021	----	----	----		19-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ER1gwD_WG_2021_Q4_NP	E375-T	17-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ER1gwS_WG_2021_Q4_NP	E375-T	17-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1gwD_WG_2021_Q4_NP	E318	17-Nov-2021	24-Nov-2021	----	----		26-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1gwS_WG_2021_Q4_NP	E318	17-Nov-2021	24-Nov-2021	----	----		26-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1gwD_WG_2021_Q4_NP	E372-U	17-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1gwS_WG_2021_Q4_NP	E372-U	17-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ER1gwD_WG_2021_Q4_NP	E421.Cr-L	17-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ER1gwS_WG_2021_Q4_NP	E421.Cr-L	17-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_ER1gwS_WG_2021_Q4_NP	E509	17-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	7 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_ER1gwD_WG_2021_Q4_NP	E509	17-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ER1gwD_WG_2021_Q4_NP	E421	17-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_ER1gwS_WG_2021_Q4_NP	E421	17-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	180 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ER1gwD_WG_2021_Q4_NP	E358-L	17-Nov-2021	22-Nov-2021	----	----		24-Nov-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_ER1gwS_WG_2021_Q4_NP	E358-L	17-Nov-2021	22-Nov-2021	----	----		24-Nov-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1gwD_WG_2021_Q4_NP	E355-L	17-Nov-2021	22-Nov-2021	----	----		24-Nov-2021	28 days	7 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_ER1gwS_WG_2021_Q4_NP	E355-L	17-Nov-2021	22-Nov-2021	----	----		24-Nov-2021	28 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_ER1gwD_WG_2021_Q4_NP	E283	17-Nov-2021	----	----	----		22-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_ER1gwS_WG_2021_Q4_NP	E283	17-Nov-2021	----	----	----		22-Nov-2021	14 days	5 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_ER1gwD_WG_2021_Q4_NP	E290	17-Nov-2021	----	----	----		22-Nov-2021	14 days	5 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_ER1gwS_WG_2021_Q4_NP	E290	17-Nov-2021	----	----	----		22-Nov-2021	14 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_ER1gwD_WG_2021_Q4_NP	E100	17-Nov-2021	----	----	----		22-Nov-2021	28 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_ER1gwS_WG_2021_Q4_NP	E100	17-Nov-2021	----	----	----		22-Nov-2021	28 days	5 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_ER1gwS_WG_2021_Q4_NP	E125	17-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	189 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_ER1gwD_WG_2021_Q4_NP	E125	17-Nov-2021	----	----	----		25-Nov-2021	0.25 hrs	191 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_ER1gwS_WG_2021_Q4_NP	E108	17-Nov-2021	----	----	----		22-Nov-2021	0.25 hrs	113 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_ER1gwD_WG_2021_Q4_NP	E108	17-Nov-2021	----	----	----		22-Nov-2021	0.25 hrs	115 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_ER1gwD_WG_2021_Q4_NP	E162	17-Nov-2021	----	----	----		21-Nov-2021	7 days	4 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TDS by Gravimetry</b>										
<b>HDPE</b> EV_ER1gwS_WG_2021_Q4_NP	E162	17-Nov-2021	----	----	----		21-Nov-2021	7 days	4 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_ER1gwD_WG_2021_Q4_NP	E160-L	17-Nov-2021	----	----	----		23-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> EV_ER1gwS_WG_2021_Q4_NP	E160-L	17-Nov-2021	----	----	----		23-Nov-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_ER1gwD_WG_2021_Q4_NP	E121	17-Nov-2021	----	----	----		20-Nov-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_ER1gwS_WG_2021_Q4_NP	E121	17-Nov-2021	----	----	----		20-Nov-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	349779	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	349790	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	352571	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348804	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	348805	1	10	10.0	5.0	✓
Conductivity in Water	E100	349788	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352082	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352083	1	4	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349833	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	348826	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	348802	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	348806	1	10	10.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	348807	1	10	10.0	5.0	✓
ORP by Electrode	E125	352818	1	13	7.6	5.0	✓
pH by Meter	E108	349789	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	348803	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	349542	1	13	7.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	349385	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	352120	1	12	8.3	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349837	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349396	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	349208	1	19	5.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	349779	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	349790	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	352571	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348804	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	348805	1	10	10.0	5.0	✓
Conductivity in Water	E100	349788	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352082	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352083	1	4	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349833	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	348826	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	348802	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	348806	1	10	10.0	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	348807	1	10	10.0	5.0	✓
ORP by Electrode	E125	352818	1	13	7.6	5.0	✓
pH by Meter	E108	349789	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	348803	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	349542	1	13	7.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	349385	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	352120	1	12	8.3	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349837	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349396	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	349538	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	349208	1	19	5.2	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	349779	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	349790	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	352571	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348804	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	348805	1	10	10.0	5.0	✓
Conductivity in Water	E100	349788	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352082	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352083	1	4	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349833	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	348826	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	348802	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	348806	1	10	10.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	348807	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	348803	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	349542	1	13	7.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	349385	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	352120	1	12	8.3	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349837	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349396	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	349538	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	349208	1	19	5.2	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	352571	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	348804	1	10	10.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	348805	1	10	10.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352082	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352217	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	352083	1	4	25.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	349833	1	15	6.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	348826	1	15	6.6	5.0	✔
Fluoride in Water by IC	E235.F	348802	1	10	10.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	348806	1	10	10.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	348807	1	10	10.0	5.0	✔
Sulfate in Water by IC	E235.SO4	348803	1	10	10.0	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	349385	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	352120	1	12	8.3	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	349837	1	6	16.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	349396	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.





## QUALITY CONTROL REPORT

**Work Order** : **CG2105846**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V1C 4C3  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00798016  
**C-O-C number** : 20211117Q4GW  
**Sampler** : C. Bracken/J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 19-Nov-2021 09:00  
**Date Analysis Commenced** : 19-Nov-2021  
**Issue Date** : 29-Nov-2021 19:09

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
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Page : 2 of 14  
Work Order : CG2105846  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 349208)</b>											
CG2105794-001	Anonymous	turbidity	----	E121	0.10	NTU	10.7	10.1	5.52%	15%	----
<b>Physical Tests (QC Lot: 349542)</b>											
CG2105807-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	580	582	0.430%	20%	----
<b>Physical Tests (QC Lot: 349779)</b>											
CG2105841-002	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 349788)</b>											
CG2105844-002	Anonymous	conductivity	----	E100	2.0	µS/cm	335	335	0.00%	10%	----
<b>Physical Tests (QC Lot: 349789)</b>											
CG2105844-002	Anonymous	pH	----	E108	0.10	pH units	8.33	8.34	0.120%	4%	----
<b>Physical Tests (QC Lot: 349790)</b>											
CG2105844-002	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	132	131	0.762%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	3.4	4.0	0.6	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	135	135	0.296%	20%	----
<b>Physical Tests (QC Lot: 352818)</b>											
CG2105844-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	513	513	0.0390%	15%	----
<b>Anions and Nutrients (QC Lot: 348802)</b>											
CG2105834-002	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.416	0.404	0.013	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348803)</b>											
CG2105834-002	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	333	328	1.58%	20%	----
<b>Anions and Nutrients (QC Lot: 348804)</b>											
CG2105834-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	0.296	<0.250	0.046	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348805)</b>											
CG2105834-002	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.56	1.88	0.32	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348806)</b>											
CG2105834-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.0759	0.0921	0.0162	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348807)</b>											
CG2105834-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 348826)</b>											
CG2105842-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0050	0.0050	0.00003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 349385)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 349385) - continued</b>											
CG2105814-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0287	0.0320	10.8%	20%	----
<b>Anions and Nutrients (QC Lot: 349396)</b>											
CG2105842-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352120)</b>											
CG2105834-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.090	0.097	0.007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352571)</b>											
CG2105841-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0072	0.0068	0.0004	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 349833)</b>											
CG2105842-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	8.10	8.18	1.04%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 349837)</b>											
CG2105846-001	EV_ER1gwd_WG_2021_Q4_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352082)</b>											
CG2105846-001	EV_ER1gwd_WG_2021_Q4_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00039	0.00044	0.00005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352083)</b>											
CG2105846-001	EV_ER1gwd_WG_2021_Q4_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0052	0.0049	0.0004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	0.00012	0.000004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00012	0.000007	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0870	0.0865	0.649%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.010	<0.010	0.00008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0080 µg/L	0.0000087	0.0000006	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	61.7	61.2	0.807%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00083	0.00083	0.000002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0081	0.0080	0.0001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.5	19.0	2.79%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00167	0.00166	0.478%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.709	0.723	1.91%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	4.24 µg/L	0.00448	5.37%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 352083) - continued</b>											
CG2105846-001	EV_ER1gWD_WG_2021_Q4_NP	silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.32	3.37	1.48%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.12	3.20	2.59%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.197	0.191	3.05%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	12.2	12.4	1.24%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00136	0.00134	1.57%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0031	0.0034	0.0003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352217)</b>											
CG2105834-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 349208)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 349538)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 349542)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 349779)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 349788)</b>						
conductivity	----	E100	1	µS/cm	1.2	----
<b>Physical Tests (QCLot: 349790)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 348802)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 348803)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 348804)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 348805)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 348806)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 348807)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 348826)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 349385)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 349396)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 352120)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 352120) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 352571)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 349833)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 349837)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 352082)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 352083)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---





Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 352083) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 352217)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 349208)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 349538)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	91.4	85.0	115	---
<b>Physical Tests (QCLot: 349542)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	91.1	85.0	115	---
<b>Physical Tests (QCLot: 349779)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 349788)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 349789)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 349790)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 352818)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 348802)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 348803)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 348804)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 348805)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 348806)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 348807)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	94.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 348826)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 349385)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	95.4	80.0	120	---
<b>Anions and Nutrients (QCLot: 349396)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 349396) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	96.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 352120)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 352571)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 349833)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	118	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 349837)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	95.3	80.0	120	----
<b>Dissolved Metals (QCLot: 352082)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
<b>Dissolved Metals (QCLot: 352083)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.1	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.5	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	92.8	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 352083) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.5	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.5	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.7	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 348802)</b>										
CG2105834-003	Anonymous	fluoride	16984-48-8	E235.F	0.932 mg/L	1 mg/L	93.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 348803)</b>										
CG2105834-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 348804)</b>										
CG2105834-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.398 mg/L	0.5 mg/L	79.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 348805)</b>										
CG2105834-003	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 348806)</b>										
CG2105834-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.59 mg/L	2.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 348807)</b>										
CG2105834-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.400 mg/L	0.5 mg/L	79.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 348826)</b>										
CG2105842-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0495 mg/L	0.05 mg/L	99.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 349385)</b>										
CG2105814-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0535 mg/L	0.0676 mg/L	79.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 349396)</b>										
CG2105844-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0625 mg/L	0.0676 mg/L	92.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 352120)</b>										
CG2105834-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.57 mg/L	2.5 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 352571)</b>										
CG2105842-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0999 mg/L	0.1 mg/L	99.9	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 349833)</b>										
CG2105842-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	30.3 mg/L	23.9 mg/L	127	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 349837)</b>										
CG2105846-001	EV_ER1gwD_WG_2021_Q4_NP	carbon, total organic [TOC]	----	E355-L	23.8 mg/L	23.9 mg/L	99.4	70.0	130	----
<b>Dissolved Metals (QCLot: 352082)</b>										
CG2105846-002	EV_ER1gwS_WG_2021_Q4_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 352083)</b>										
CG2105846-002	EV_ER1gws_WG_2021_Q4_NP	aluminum, dissolved	7429-90-5	E421	0.203 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0223 mg/L	0.02 mg/L	111	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00920 mg/L	0.01 mg/L	92.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.099 mg/L	0.1 mg/L	99.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00406 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	97.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0981 mg/L	0.1 mg/L	98.1	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.95 mg/L	4 mg/L	98.8	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0467 mg/L	0.04 mg/L	117	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.58 mg/L	10 mg/L	95.8	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00400 mg/L	0.004 mg/L	99.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00398 mg/L	0.004 mg/L	99.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.399 mg/L	0.4 mg/L	99.7	70.0	130	----
<b>Dissolved Metals (QCLot: 352217)</b>										
CG2105834-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000103 mg/L	0.0001 mg/L	103	70.0	130	----



COC ID: 20211117Q4GW      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emsle@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 6:	Jennifer.Dane@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00798016			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample Location (ys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.		TECKCOAL-ROUTINE-VA (E105.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (CI0-C32)	D-Mercury	D-CVI	
EV_ER1gwD_WG_2021_Q4_NP	EV_ER1gwD	WG	N	11/17/21	14:44	G	5	1	1	1	1	1	1	1				1		
EV_ER1gwS_WG_2021_Q4_NP	EV_ER1gwS	WG	N	11/17/21	17:02	G	5	1	1	1	1	1	1	1				1		
Total							10													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
		C. Bracken/J. Batstone		November 17, 2021		<i>[Signature]</i>		11/17/21	
SERVICE REQUEST (rush - subject to availability)		Sampler's Name		C. Bracken/J. Batstone		Mobile #		(250) 425-1227	
Regular (default) X		Sampler's Signature		<i>[Signature]</i>		Date/Time		November 17, 2021	
Priority (2-3 business days) - 50% surcharge									
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									

Environmental Division  
Calgary  
Work Order Reference  
**CG2105846**



Telephone: +1 403 407 1800





**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105917**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
 Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00798016  
**C-O-C number** : 20211122Q4GW  
**Sampler** : S. Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 8  
**No. of samples analysed** : 8

**Page** : 1 of 8  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Nov-2021 08:50  
**Date Analysis Commenced** : 23-Nov-2021  
**Issue Date** : 30-Nov-2021 16:25

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC3_WG_2021_Q4_NP	EV_EC5GW_WG_2021_Q4_NP	EV_EC6GW_WG_2021_Q4_NP	EV_EC7GW_WG_2021_Q4_NP	EV_MW_MC2A_WG_2021_Q4_NP
Client sampling date / time					22-Nov-2021 14:10	22-Nov-2021 14:12	22-Nov-2021 14:15	22-Nov-2021 12:00	22-Nov-2021 13:13	
Analyte	CAS Number	Method	LOR	Unit	CG2105917-001	CG2105917-002	CG2105917-003	CG2105917-004	CG2105917-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	5.8	7.1	<2.0	<2.0	6.7	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	293	293	<2.0	<2.0	417	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	357	358	<2.0	<2.0	509	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	293	293	<2.0	<2.0	417	
conductivity	----	E100	2.0	µS/cm	860	862	<2.0	<2.0	918	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	428	420	<0.50	<0.50	396	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	493	486	461	491	457	
pH	----	E108	0.10	pH units	7.77	7.78	5.52	5.38	7.83	
solids, total dissolved [TDS]	----	E162	10	mg/L	570	586	<10	<10	514	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.2	<1.0	<1.0	4.8	
turbidity	----	E121	0.10	NTU	0.16	0.14	<0.10	<0.10	21.6	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0125	0.0120	<0.0050	0.0201 <sup>RRV</sup>	0.893	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.130	0.130	<0.050	<0.050	0.053	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	23.3	23.1	<0.10	<0.10	83.3	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.199	0.204	<0.020	<0.020	0.303	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.347	0.246 <sup>TKN</sup>	<0.050	<0.050	0.921	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	3.27	3.20	<0.0050	<0.0050	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0058	0.0063	<0.0010	<0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0021	0.0022	<0.0010	<0.0010	0.0011	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0030	0.0029	<0.0020	<0.0020	0.0149	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0034	0.0022	<0.0020	<0.0020	0.0053	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	174	173	<0.30	<0.30	<0.30	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	3.62	3.45	<0.050	<0.050	0.921	
<b>Organic / Inorganic Carbon</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC3_WG_2021_Q4_NP	EV_EC5GW_WG_2021_Q4_NP	EV_EC6GW_WG_2021_Q4_NP	EV_EC7GW_WG_2021_Q4_NP	EV_MW_MC2A_WG_2021_Q4_NP
Client sampling date / time					22-Nov-2021 14:10	22-Nov-2021 14:12	22-Nov-2021 14:15	22-Nov-2021 12:00	22-Nov-2021 13:13	
Analyte	CAS Number	Method	LOR	Unit	CG2105917-001	CG2105917-002	CG2105917-003	CG2105917-004	CG2105917-005	
					Result	Result	Result	Result	Result	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.39	1.23	<0.50	<0.50	0.94	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.11	1.17	<0.50	<0.50	0.80	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	10.4	10.3	<0.10	<0.10	10.7	
cation sum	----	EC101	0.10	meq/L	9.35	9.21	<0.10	<0.10	9.87	
ion balance (cations/anions ratio)	----	EC101	0.010	%	89.9	89.4	100	100	92.2	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.32	5.59	<0.010	<0.010	4.04	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020 <sup>DLA</sup>	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00012	0.00010	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00011	<0.00010	<0.00010	0.00086	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.126	0.122	<0.00010	<0.00010	5.59	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.040 <sup>DLA</sup>	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.024	0.024	<0.010	<0.010	0.066	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0706	0.0625	<0.0050	<0.0050	<0.0100 <sup>DLA</sup>	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	110	109	<0.050	<0.050	102	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.20 <sup>DLA</sup>	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00069	0.00028	<0.00020	<0.00020	<0.00040 <sup>DLA</sup>	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	1.40	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0337	0.0341	<0.0010	<0.0010	0.235	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	37.2	35.9	<0.0050	<0.0050	34.2	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00272	0.00280	<0.00010	<0.00010	0.0523	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00124	0.00128	<0.000050	<0.000050	0.000126	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.76	1.72	<0.050	<0.050	3.78	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	24.2	22.1	<0.050	<0.050	<0.100 <sup>DLA</sup>	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC3_WG_2021_Q4_NP	EV_EC5GW_WG_2021_Q4_NP	EV_EC6GW_WG_2021_Q4_NP	EV_EC7GW_WG_2021_Q4_NP	EV_MW_MC2A_WG_2021_Q4_NP
Client sampling date / time					22-Nov-2021 14:10	22-Nov-2021 14:12	22-Nov-2021 14:15	22-Nov-2021 12:00	22-Nov-2021 13:13	
Analyte	CAS Number	Method	LOR	Unit	CG2105917-001	CG2105917-002	CG2105917-003	CG2105917-004	CG2105917-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.40	3.29	<0.050	<0.050	4.28	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	17.4	17.8	<0.050	<0.050	40.3	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.262	0.250	<0.00020	<0.00020	1.47	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	59.6	57.4	<0.50	<0.50	<1.00 <sup>DLA</sup>	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00060 <sup>DLA</sup>	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00123	0.00124	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	<0.0010	<0.0010	<0.0010	0.0036	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC2B _WG_2021_Q4 _NP	EV_MCGWS_W G_2021_Q4_NP	EV_MCGWD_W G_2021_Q4_NP	----	----
Client sampling date / time					22-Nov-2021 12:28	22-Nov-2021 11:10	22-Nov-2021 10:36	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105917-006 Result	CG2105917-007 Result	CG2105917-008 Result	----- ----	----- ----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	7.5	3.2	<2.0	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	259	290	253	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	316	354	308	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	259	290	253	----	----	
conductivity	----	E100	2.0	µS/cm	1150	788	503	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	625	364	221	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	447	454	319	----	----	
pH	----	E108	0.10	pH units	7.78	7.93	8.05	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	842	502	312	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	6.7	25.4	----	----	
turbidity	----	E121	0.10	NTU	<0.10	27.3	22.6	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0154	0.125	0.151	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	0.220	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	26.5	43.6	3.33	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.183	0.401	0.990	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.239 <sup>TKNI</sup>	0.204	0.216	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	7.82	0.0101	0.0850	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0010	0.0039	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0042	<0.0010	0.0085	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0038	0.0061	0.0384	----	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0036 <sup>DLM</sup>	<0.0020	0.0079	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	379	111	45.0	----	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	8.06	0.214	0.305	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.12	2.22	2.01	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC2B _WG_2021_Q4 _NP	EV_MCGWS_W G_2021_Q4_NP	EV_MCGWD_W G_2021_Q4_NP	----	----
Client sampling date / time					22-Nov-2021 12:28	22-Nov-2021 11:10	22-Nov-2021 10:36	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105917-006	CG2105917-007	CG2105917-008	-----	-----	
					Result	Result	Result	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.10	1.88	1.66	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	14.4	9.36	6.14	----	----	
cation sum	----	EC101	0.10	meq/L	13.0	8.45	5.47	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	90.3	90.3	89.1	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.11	5.11	5.77	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0020	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	<0.00010	0.00018	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00175	0.00067	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0539	0.0271	0.0669	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	0.028	0.076	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.102	<0.0050	0.0425	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	148	91.7	48.7	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00016	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.12	0.47	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00075	<0.00020	0.00092	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	1.84	0.059	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0539	0.0244	0.0089	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	62.0	32.9	24.1	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.132	0.360	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000566	0.00335	0.0126	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00054	<0.00050	0.00402	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.16	1.59	1.41	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	67.8	<0.050	<0.050	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.50	5.57	5.27	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC2B _WG_2021_Q4 _NP	EV_MCGWS_W G_2021_Q4_NP	EV_MCGWD_W G_2021_Q4_NP	----	----
Client sampling date / time					22-Nov-2021 12:28	22-Nov-2021 11:10	22-Nov-2021 10:36	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105917-006	CG2105917-007	CG2105917-008	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	10.2	24.2	22.8	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.319	0.303	0.472	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	126	36.8	14.9	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000011	<0.000010	0.000046	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00170	0.00209	0.00240	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0016	<0.0010	0.0559	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105917</b>	Page	: 1 of 30
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 23-Nov-2021 08:50
PO	: VPO00798016	Issue Date	: 30-Nov-2021 16:25
C-O-C number	: 20211122Q4GW		
Sampler	: S. Hansen		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC5GW_WG_2021_Q4_NP	E298	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC6GW_WG_2021_Q4_NP	E298	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC7GW_WG_2021_Q4_NP	E298	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MCGWD_WG_2021_Q4_NP	E298	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MCGWS_WG_2021_Q4_NP	E298	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q4_NP	E298	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q4_NP	E298	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q4_NP	E298	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_EC5GW_WG_2021_Q4_NP	E235.Br-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_EC6GW_WG_2021_Q4_NP	E235.Br-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_EC7GW_WG_2021_Q4_NP	E235.Br-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MCGWD_WG_2021_Q4_NP	E235.Br-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MCGWS_WG_2021_Q4_NP	E235.Br-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_MC2A_WG_2021_Q4_NP	E235.Br-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_MC2B_WG_2021_Q4_NP	E235.Br-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_MC3_WG_2021_Q4_NP	E235.Br-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_EC5GW_WG_2021_Q4_NP	E235.CI-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_EC6GW_WG_2021_Q4_NP	E235.CI-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_EC7GW_WG_2021_Q4_NP	E235.CI-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MCGWD_WG_2021_Q4_NP	E235.CI-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MCGWS_WG_2021_Q4_NP	E235.CI-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC2A_WG_2021_Q4_NP	E235.CI-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC2B_WG_2021_Q4_NP	E235.CI-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC3_WG_2021_Q4_NP	E235.CI-L	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> EV_EC5GW_WG_2021_Q4_NP	E378-U	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_EC6GW_WG_2021_Q4_NP	E378-U	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_EC7GW_WG_2021_Q4_NP	E378-U	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MCGWD_WG_2021_Q4_NP	E378-U	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MCGWS_WG_2021_Q4_NP	E378-U	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC2A_WG_2021_Q4_NP	E378-U	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC2B_WG_2021_Q4_NP	E378-U	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC3_WG_2021_Q4_NP	E378-U	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_EC5GW_WG_2021_Q4_NP	E235.F	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_EC6GW_WG_2021_Q4_NP	E235.F	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_EC7GW_WG_2021_Q4_NP	E235.F	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MCGWD_WG_2021_Q4_NP	E235.F	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MCGWS_WG_2021_Q4_NP	E235.F	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC2A_WG_2021_Q4_NP	E235.F	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC2B_WG_2021_Q4_NP	E235.F	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC3_WG_2021_Q4_NP	E235.F	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_EC5GW_WG_2021_Q4_NP	E235.NO3-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_EC6GW_WG_2021_Q4_NP	E235.NO3-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_EC7GW_WG_2021_Q4_NP	E235.NO3-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MCGWD_WG_2021_Q4_NP	E235.NO3-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MCGWS_WG_2021_Q4_NP	E235.NO3-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2A_WG_2021_Q4_NP	E235.NO3-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2B_WG_2021_Q4_NP	E235.NO3-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_MC3_WG_2021_Q4_NP	E235.NO3-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_EC5GW_WG_2021_Q4_NP	E235.NO2-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_EC6GW_WG_2021_Q4_NP	E235.NO2-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_EC7GW_WG_2021_Q4_NP	E235.NO2-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MCGWD_WG_2021_Q4_NP	E235.NO2-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MCGWS_WG_2021_Q4_NP	E235.NO2-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2A_WG_2021_Q4_NP	E235.NO2-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_MC2B_WG_2021_Q4_NP	E235.NO2-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MW_MC3_WG_2021_Q4_NP	E235.NO2-L	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_EC5GW_WG_2021_Q4_NP	E235.SO4	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_EC6GW_WG_2021_Q4_NP	E235.SO4	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_EC7GW_WG_2021_Q4_NP	E235.SO4	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MCGWD_WG_2021_Q4_NP	E235.SO4	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_MCGWS_WG_2021_Q4_NP	E235.SO4	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✓	





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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC2A_WG_2021_Q4_NP	E235.SO4	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC2B_WG_2021_Q4_NP	E235.SO4	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC3_WG_2021_Q4_NP	E235.SO4	22-Nov-2021	----	----	----		24-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_EC5GW_WG_2021_Q4_NP	E375-T	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_EC6GW_WG_2021_Q4_NP	E375-T	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_EC7GW_WG_2021_Q4_NP	E375-T	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MCGWD_WG_2021_Q4_NP	E375-T	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MCGWS_WG_2021_Q4_NP	E375-T	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q4_NP	E375-T	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q4_NP	E375-T	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q4_NP	E375-T	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC5GW_WG_2021_Q4_NP	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC6GW_WG_2021_Q4_NP	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC7GW_WG_2021_Q4_NP	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MCGWD_WG_2021_Q4_NP	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MCGWS_WG_2021_Q4_NP	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q4_NP	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q4_NP	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q4_NP	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC5GW_WG_2021_Q4_NP	E372-U	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC6GW_WG_2021_Q4_NP	E372-U	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC7GW_WG_2021_Q4_NP	E372-U	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MCGWD_WG_2021_Q4_NP	E372-U	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MCGWS_WG_2021_Q4_NP	E372-U	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q4_NP	E372-U	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q4_NP	E372-U	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q4_NP	E372-U	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_EC5GW_WG_2021_Q4_NP	E421.Cr-L	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_EC6GW_WG_2021_Q4_NP	E421.Cr-L	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_EC7GW_WG_2021_Q4_NP	E421.Cr-L	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MCGWD_WG_2021_Q4_NP	E421.Cr-L	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MCGWS_WG_2021_Q4_NP	E421.Cr-L	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC2A_WG_2021_Q4_NP	E421.Cr-L	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC2B_WG_2021_Q4_NP	E421.Cr-L	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC3_WG_2021_Q4_NP	E421.Cr-L	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_EC5GW_WG_2021_Q4_NP	E509	22-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_EC6GW_WG_2021_Q4_NP	E509	22-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC3_WG_2021_Q4_NP	E509	22-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_EC7GW_WG_2021_Q4_NP	E509	22-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MCGWD_WG_2021_Q4_NP	E509	22-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MCGWS_WG_2021_Q4_NP	E509	22-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC2A_WG_2021_Q4_NP	E509	22-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC2B_WG_2021_Q4_NP	E509	22-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_EC5GW_WG_2021_Q4_NP	E421	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_EC6GW_WG_2021_Q4_NP	E421	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_EC7GW_WG_2021_Q4_NP	E421	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MCGWD_WG_2021_Q4_NP	E421	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MCGWS_WG_2021_Q4_NP	E421	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC2A_WG_2021_Q4_NP	E421	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC2B_WG_2021_Q4_NP	E421	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC3_WG_2021_Q4_NP	E421	22-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	180 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_EC5GW_WG_2021_Q4_NP	E358-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_EC6GW_WG_2021_Q4_NP	E358-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_EC7GW_WG_2021_Q4_NP	E358-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MCGWD_WG_2021_Q4_NP	E358-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MCGWS_WG_2021_Q4_NP	E358-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q4_NP	E358-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q4_NP	E358-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q4_NP	E358-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC5GW_WG_2021_Q4_NP	E355-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC6GW_WG_2021_Q4_NP	E355-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_EC7GW_WG_2021_Q4_NP	E355-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MCGWD_WG_2021_Q4_NP	E355-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MCGWS_WG_2021_Q4_NP	E355-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2A_WG_2021_Q4_NP	E355-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC2B_WG_2021_Q4_NP	E355-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC3_WG_2021_Q4_NP	E355-L	22-Nov-2021	23-Nov-2021	----	----		26-Nov-2021	28 days	4 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_EC5GW_WG_2021_Q4_NP	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_EC6GW_WG_2021_Q4_NP	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_EC7GW_WG_2021_Q4_NP	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MCGWD_WG_2021_Q4_NP	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MCGWS_WG_2021_Q4_NP	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_MW_MC2A_WG_2021_Q4_NP	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_MW_MC2B_WG_2021_Q4_NP	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_MW_MC3_WG_2021_Q4_NP	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_EC5GW_WG_2021_Q4_NP	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_EC6GW_WG_2021_Q4_NP	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_EC7GW_WG_2021_Q4_NP	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MCGWD_WG_2021_Q4_NP	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MCGWS_WG_2021_Q4_NP	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_MC2A_WG_2021_Q4_NP	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✔	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_MC2B_WG_2021_Q4_NP	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_MC3_WG_2021_Q4_NP	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_EC5GW_WG_2021_Q4_NP	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_EC6GW_WG_2021_Q4_NP	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_EC7GW_WG_2021_Q4_NP	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MCGWD_WG_2021_Q4_NP	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MCGWS_WG_2021_Q4_NP	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MC2A_WG_2021_Q4_NP	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MC2B_WG_2021_Q4_NP	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MC3_WG_2021_Q4_NP	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_EC5GW_WG_2021_Q4_NP	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	145 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_EC6GW_WG_2021_Q4_NP	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	145 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MC3_WG_2021_Q4_NP	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	145 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MC2A_WG_2021_Q4_NP	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	146 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_EC7GW_WG_2021_Q4_NP	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	147 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MC2B_WG_2021_Q4_NP	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	147 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MCGWS_WG_2021_Q4_NP	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	148 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MCGWD_WG_2021_Q4_NP	E125	22-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	149 hrs	* EHTR-FM	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE EV_EC5GW_WG_2021_Q4_NP	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	24 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_EC6GW_WG_2021_Q4_NP	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	24 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MC3_WG_2021_Q4_NP	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	24 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MC2A_WG_2021_Q4_NP	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	25 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_EC7GW_WG_2021_Q4_NP	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	26 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MC2B_WG_2021_Q4_NP	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	26 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MCGWS_WG_2021_Q4_NP	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	27 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MCGWD_WG_2021_Q4_NP	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	28 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_EC5GW_WG_2021_Q4_NP	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_EC6GW_WG_2021_Q4_NP	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_EC7GW_WG_2021_Q4_NP	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MCGWD_WG_2021_Q4_NP	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MCGWS_WG_2021_Q4_NP	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC2A_WG_2021_Q4_NP	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC2B_WG_2021_Q4_NP	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC3_WG_2021_Q4_NP	E162	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_EC5GW_WG_2021_Q4_NP	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_EC6GW_WG_2021_Q4_NP	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_EC7GW_WG_2021_Q4_NP	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MCGWD_WG_2021_Q4_NP	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MCGWS_WG_2021_Q4_NP	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_MC2A_WG_2021_Q4_NP	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_MC2B_WG_2021_Q4_NP	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE EV_MW_MC3_WG_2021_Q4_NP	E160-L	22-Nov-2021	----	----	----		27-Nov-2021	7 days	5 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_EC5GW_WG_2021_Q4_NP	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_EC6GW_WG_2021_Q4_NP	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_EC7GW_WG_2021_Q4_NP	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MCGWD_WG_2021_Q4_NP	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MCGWS_WG_2021_Q4_NP	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MW_MC2A_WG_2021_Q4_NP	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MW_MC2B_WG_2021_Q4_NP	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MW_MC3_WG_2021_Q4_NP	E121	22-Nov-2021	----	----	----		24-Nov-2021	3 days	2 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	350928	1	13	7.6	5.0	✓
Alkalinity Species by Titration	E290	350924	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	354132	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351350	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351351	1	20	5.0	5.0	✓
Conductivity in Water	E100	350923	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353904	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355560	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353905	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350987	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351377	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	351354	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351352	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351353	1	20	5.0	5.0	✓
ORP by Electrode	E125	354752	2	40	5.0	5.0	✓
pH by Meter	E108	350925	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	351349	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352773	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	351708	2	31	6.4	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353877	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350988	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351719	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	351614	3	41	7.3	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	350928	1	13	7.6	5.0	✓
Alkalinity Species by Titration	E290	350924	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	354132	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351350	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351351	1	20	5.0	5.0	✓
Conductivity in Water	E100	350923	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353904	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355560	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353905	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350987	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351377	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	351354	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351352	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	351353	1	20	5.0	5.0	✓
ORP by Electrode	E125	354752	2	40	5.0	5.0	✓
pH by Meter	E108	350925	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	351349	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352773	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	351708	2	31	6.4	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353877	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350988	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351719	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352770	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	351614	3	41	7.3	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	350928	1	13	7.6	5.0	✓
Alkalinity Species by Titration	E290	350924	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	354132	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351350	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351351	1	20	5.0	5.0	✓
Conductivity in Water	E100	350923	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353904	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355560	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353905	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350987	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351377	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	351354	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351352	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351353	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	351349	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	352773	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	351708	2	31	6.4	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353877	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350988	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351719	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352770	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	351614	3	41	7.3	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	354132	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351350	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351351	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353904	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355560	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	353905	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350987	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351377	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	351354	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351352	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351353	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	351349	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	351708	2	31	6.4	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353877	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350988	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351719	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2105917**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00798016  
**C-O-C number** : 20211122Q4GW  
**Sampler** : S. Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 8  
**No. of samples analysed** : 8

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Nov-2021 08:50  
**Date Analysis Commenced** : 23-Nov-2021  
**Issue Date** : 30-Nov-2021 16:25

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
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Page : 2 of 14  
Work Order : CG2105917  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 350923)</b>											
CG2105913-004	Anonymous	conductivity	----	E100	2.0	µS/cm	830	837	0.840%	10%	----
<b>Physical Tests (QC Lot: 350924)</b>											
CG2105913-004	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	202	202	0.0496%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	5.4	6.2	0.8	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	207	208	0.338%	20%	----
<b>Physical Tests (QC Lot: 350925)</b>											
CG2105913-005	Anonymous	pH	----	E108	0.10	pH units	8.11	8.12	0.123%	4%	----
<b>Physical Tests (QC Lot: 350928)</b>											
CG2105913-005	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	2.3	<2.0	0.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 351614)</b>											
CG2105913-009	Anonymous	turbidity	----	E121	0.10	NTU	0.17	0.16	0.01	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 351856)</b>											
CG2105886-001	Anonymous	turbidity	----	E121	0.10	NTU	0.12	0.12	0.006	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 351857)</b>											
CG2105917-005	EV_MW_MC2A_WG_2021_Q4_NP	turbidity	----	E121	0.10	NTU	21.6	21.0	2.81%	15%	----
<b>Physical Tests (QC Lot: 352773)</b>											
CG2105890-006	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	220	202	8.55%	20%	----
<b>Physical Tests (QC Lot: 352774)</b>											
CG2105917-006	EV_MW_MC2B_WG_2021_Q4_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	842	847	0.592%	20%	----
<b>Physical Tests (QC Lot: 354752)</b>											
CG2105890-006	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	498	488	1.93%	15%	----
<b>Physical Tests (QC Lot: 354753)</b>											
CG2105917-005	EV_MW_MC2A_WG_2021_Q4_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	457	461	0.981%	15%	----
<b>Anions and Nutrients (QC Lot: 351349)</b>											
CG2105913-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	207	206	0.482%	20%	----
<b>Anions and Nutrients (QC Lot: 351350)</b>											
CG2105913-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351351)</b>											
CG2105913-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	11.9	11.9	0.504%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 351352)</b>											
CG2105913-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	7.81	7.75	0.762%	20%	----
<b>Anions and Nutrients (QC Lot: 351353)</b>											
CG2105913-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0016	<0.0010	0.0006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351354)</b>											
CG2105913-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.261	0.253	2.85%	20%	----
<b>Anions and Nutrients (QC Lot: 351377)</b>											
CG2105913-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0040	0.0038	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351708)</b>											
CG2105814-008	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0966	0.0991	2.58%	20%	----
<b>Anions and Nutrients (QC Lot: 351709)</b>											
CG2105917-008	EV_MCGWD_WG_2021_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0079	0.0080	0.00003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351719)</b>											
CG2105913-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0050	0.0035	0.0015	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353877)</b>											
CG2105917-001	EV_MW_MC3_WG_2021_Q4_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.347	0.333	0.014	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354132)</b>											
CG2105913-009	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 350987)</b>											
CG2105917-001	EV_MW_MC3_WG_2021_Q4_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.39	1.35	0.04	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 350988)</b>											
CG2105917-001	EV_MW_MC3_WG_2021_Q4_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.11	1.21	0.10	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353904)</b>											
CG2105886-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353905)</b>											
CG2105886-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00067	0.00071	0.00004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	<0.00010	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0246	0.0247	0.189%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.062	0.061	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.328 µg/L	0.000310	5.63%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	188	186	0.821%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 353905) - continued</b>											
CG2105886-001	Anonymous	cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.24 µg/L	0.00023	0.000008	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00035	0.00032	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0662	0.0646	2.43%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	111	109	1.82%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00014	0.00014	0.0000008	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00211	0.00217	2.84%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0246	0.0244	0.482%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.85	3.90	1.29%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	26.6 µg/L	0.0284	6.67%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.21	2.25	1.79%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	15.0	15.3	2.15%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.156	0.163	4.22%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	231	229	0.900%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000010	0.000010	0.00000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00560	0.00557	0.534%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0212	0.0215	1.35%	20%	----
<b>Dissolved Metals (QC Lot: 355560)</b>											
CG2105917-001	EV_MW_MC3_WG_2021_Q4_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 350923)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 350924)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 350928)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 351614)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 351856)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 351857)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 352770)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 352771)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 352773)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 352774)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 351349)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 351350)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 351351)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 351352)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 351353)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 351354)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 351354) - continued</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 351377)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 351708)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 351709)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 351719)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 353877)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 354132)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 350987)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 350988)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 353904)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 353905)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 353905) - continued</b>						
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 355560)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 350923)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.4	90.0	110	---
<b>Physical Tests (QCLot: 350924)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 350925)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 350928)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	97.4	85.0	115	---
<b>Physical Tests (QCLot: 351614)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	105	85.0	115	---
<b>Physical Tests (QCLot: 351856)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	106	85.0	115	---
<b>Physical Tests (QCLot: 351857)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	103	85.0	115	---
<b>Physical Tests (QCLot: 352770)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 352771)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	106	85.0	115	---
<b>Physical Tests (QCLot: 352773)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	93.0	85.0	115	---
<b>Physical Tests (QCLot: 352774)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	94.6	85.0	115	---
<b>Physical Tests (QCLot: 354752)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 354753)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 351349)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 351350)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	106	85.0	115	---
<b>Anions and Nutrients (QCLot: 351351)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 351352)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		
						Low	High		
<b>Anions and Nutrients (QCLot: 351352) - continued</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 351353)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 351354)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 351377)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	95.4	80.0	120	----
<b>Anions and Nutrients (QCLot: 351708)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	91.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 351709)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	90.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 351719)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	90.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 353877)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 354132)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.6	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 350987)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	96.3	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 350988)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	98.0	80.0	120	----
<b>Dissolved Metals (QCLot: 353904)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.5	80.0	120	----
<b>Dissolved Metals (QCLot: 353905)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	93.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.3	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 353905) - continued</b>									
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.9	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.9	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.9	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.8	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.9	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.3	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	92.7	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.9	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 351349)</b>										
CG2105913-008	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 351350)</b>										
CG2105913-008	Anonymous	bromide	24959-67-9	E235.Br-L	0.480 mg/L	0.5 mg/L	96.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 351351)</b>										
CG2105913-008	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 351352)</b>										
CG2105913-008	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.55 mg/L	2.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 351353)</b>										
CG2105913-008	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.513 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 351354)</b>										
CG2105913-008	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 351377)</b>										
CG2105913-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0534 mg/L	0.05 mg/L	107	70.0	130	----
<b>Anions and Nutrients (QCLot: 351708)</b>										
CG2105814-009	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0578 mg/L	0.0676 mg/L	85.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 351709)</b>										
CG2105924-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0614 mg/L	0.0676 mg/L	90.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 351719)</b>										
CG2105913-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0544 mg/L	0.0676 mg/L	80.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 353877)</b>										
CG2105917-002	EV_EC5GW_WG_2021_Q4_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.77 mg/L	2.5 mg/L	111	70.0	130	----
<b>Anions and Nutrients (QCLot: 354132)</b>										
CG2105913-008	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.118 mg/L	0.1 mg/L	118	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 350987)</b>										
CG2105917-001	EV_MW_MC3_WG_2021_Q4_NP	carbon, dissolved organic [DOC]	----	E358-L	21.4 mg/L	23.9 mg/L	89.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 350988)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Organic / Inorganic Carbon (QCLot: 350988) - continued</b>										
CG2105917-001	EV_MW_MC3_WG_2021_Q4_NP	carbon, total organic [TOC]	----	E355-L	23.3 mg/L	23.9 mg/L	97.3	70.0	130	----
<b>Dissolved Metals (QCLot: 353904)</b>										
CG2105898-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0755 mg/L	0.08 mg/L	94.4	70.0	130	----
<b>Dissolved Metals (QCLot: 353905)</b>										
CG2105898-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.394 mg/L	0.4 mg/L	98.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0727 mg/L	0.08 mg/L	90.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0173 mg/L	0.02 mg/L	86.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.196 mg/L	0.2 mg/L	97.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00752 mg/L	0.008 mg/L	94.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0370 mg/L	0.04 mg/L	92.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0357 mg/L	0.04 mg/L	89.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.74 mg/L	4 mg/L	93.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0361 mg/L	0.04 mg/L	90.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.177 mg/L	0.2 mg/L	88.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0385 mg/L	0.04 mg/L	96.2	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0709 mg/L	0.08 mg/L	88.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	7.60 mg/L	8 mg/L	94.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.3 mg/L	20 mg/L	91.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00741 mg/L	0.008 mg/L	92.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00721 mg/L	0.008 mg/L	90.1	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0378 mg/L	0.04 mg/L	94.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0734 mg/L	0.08 mg/L	91.7	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.200 mg/L	0.2 mg/L	100	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.694 mg/L	0.8 mg/L	86.7	70.0	130	----

Page : 14 of 14  
 Work Order : CG2105917  
 Client : Teck Coal Limited  
 Project : ELKVIEW OPERATIONS



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 355560)</b>										
CG2105917-002	EV_EC5GW_WG_2021_Q4_NP	mercury, dissolved	7439-97-6	E509	0.0000987 mg/L	0.0001 mg/L	98.7	70.0	130	----

COC ID: 20211122Q4GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO		LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD
Job Description	Q4 Ground Water Sampling	Lab Contact	Lyudmyla Shvets			Email 1:	chris.emsle@teck.com		X	X	X
Project Manager	Jennifer Dane	Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com		X	X	X
Email	jennifer.dane@teck.com	Address	2559 29 Street NE			Email 3:	Jennifer.Dane@teck.com		X	X	X
						Email 4:	Teck.Lab.Results@sharepoint.teck.com		X	X	X
						Email 5:	teckcoal@equisonline.com				X
		Province	BC		City	Calgary		Province	AB		
		Country	Canada		Postal Code	T1Y 7B5		Country	Canada		
			Phone Number			403-407-1800		PO number	VPO00798016		

Environmental Division  
Calgary  
Work Order Reference  
**CG2105917**

SAMPLE DETAILS ANALYSIS REQUESTED Filtered F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys_loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FIL	ANALYSIS REQUESTED									
									No	Yes	Yes	No	No	No	No	Yes	Yes	
										Nitric	Sulphuric	Sulphuric		NO	Sodium Bisulphate	HCl	NaOH	
									TECKCOAL-ROUTINE-VA (E305.1)									
									Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL									
									TECKCOAL-MET-D-VA (SW6020)									
									DOC (APHA 5310)									
									Dissolved Phosphorus									
									TKN/TOC (APHA 4500-NORG)									
									Total Nitrogen for BC (NO2 and NO3)									
									T-ULTRA MERCURY (SW6020)									
									D-ULTRA MERCURY (SW6020)									
									EPH (C10-C32)									
									D-Mercury									
									D-CrVI									
									Total								40	

Telephone : +1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	S.Hansen	November 22, 2021	<i>[Signature]</i>	11/23 850
SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name	S.Hansen	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	November 22, 2021
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105924**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HWY#3  
 Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATION  
**PO** : VPO00798016  
**C-O-C number** : 20211121Q4GW  
**Sampler** : S. Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Nov-2021 09:00  
**Date Analysis Commenced** : 23-Nov-2021  
**Issue Date** : 01-Dec-2021 15:27

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC4_ WG_2021_Q4_ NP	EV_MW_MCGW A_WG_2021_Q 4_NP	EV_MW_MCGW B_WG_2021_Q 4_NP	----	----
Client sampling date / time					21-Nov-2021 11:32	21-Nov-2021 13:08	21-Nov-2021 13:59	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105924-001	CG2105924-002	CG2105924-003	-----	-----	
					Result	Result	Result	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	5.9	4.1	6.1	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	379	377	334	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	462	460	407	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	379	377	334	----	----	
conductivity	----	E100	2.0	µS/cm	870	764	748	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	454	376	365	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	487	448	463	----	----	
pH	----	E108	0.10	pH units	7.51	7.58	7.58	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	592	482	464	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.9	1.1	<1.0	----	----	
turbidity	----	E121	0.10	NTU	3.48	1.01	<0.10	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0418	0.0143	0.0071	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.130	0.191	0.095	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	31.2	38.9	30.2	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.202	0.215	0.207	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.097	0.187	0.264	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0054	1.00	2.35	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0084	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0010	0.0014	0.0055	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0037	0.0023	0.0046	----	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0024	<0.0020	0.0068	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	113	33.1	51.9	----	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.102	1.20	2.61	----	----	
<b>Organic / Inorganic Carbon</b>										





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC4_WG_2021_Q4_NP	EV_MW_MCGW_A_WG_2021_Q4_NP	EV_MW_MCGW_B_WG_2021_Q4_NP	----	----
Client sampling date / time					21-Nov-2021 11:32	21-Nov-2021 13:08	21-Nov-2021 13:59	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105924-001	CG2105924-002	CG2105924-003	-----	-----	
					Result	Result	Result	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.67	1.22	1.43	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.41	0.80	0.94	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	10.8	9.40	8.78	----	----	
cation sum	----	EC101	0.10	meq/L	9.49	8.20	7.95	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	87.9	87.2	90.5	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	6.46	6.82	4.96	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00011	0.00011	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00056	0.00015	0.00014	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.121	0.359	0.218	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.036	0.033	0.039	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0215	0.0718	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	121	97.3	97.4	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00012	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.46	0.17	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0.00034	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.379	0.090	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0206	0.0206	0.0148	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	36.9	32.4	29.5	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0656	0.0272	0.00012	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00381	0.00318	0.00330	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00261	0.00168	0.00161	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.43	2.27	2.34	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	1.14	1.97	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC4_WG_2021_Q4_NP	EV_MW_MCGW_A_WG_2021_Q4_NP	EV_MW_MCGW_B_WG_2021_Q4_NP	----	----
Client sampling date / time					21-Nov-2021 11:32	21-Nov-2021 13:08	21-Nov-2021 13:59	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105924-001	CG2105924-002	CG2105924-003	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.90	4.75	4.29	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.73	14.1	13.8	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.601	0.403	0.312	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	35.7	10.3	15.8	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000022	0.000013	0.000014	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00116	0.000640	0.000710	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0046	0.0012	<0.0010	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105924</b>	Page	: 1 of 17
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HWY#3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATION	Date Samples Received	: 23-Nov-2021 09:00
PO	: VPO00798016	Issue Date	: 01-Dec-2021 15:27
C-O-C number	: 20211121Q4GW		
Sampler	: S. Hansen		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q4_NP	E298	21-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWA_WG_2021_Q4_NP	E298	21-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWB_WG_2021_Q4_NP	E298	21-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	7 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_MC4_WG_2021_Q4_NP	E235.Br-L	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_MCGWA_WG_2021_Q4_NP	E235.Br-L	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_MCGWB_WG_2021_Q4_NP	E235.Br-L	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_MC4_WG_2021_Q4_NP	E235.Cl-L	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_MCGWA_WG_2021_Q4_NP	E235.Cl-L	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MW_MCGWB_WG_2021_Q4_NP	E235.Cl-L	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MC4_WG_2021_Q4_NP	E378-U	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MCGWA_WG_2021_Q4_NP	E378-U	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MW_MCGWB_WG_2021_Q4_NP	E378-U	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MC4_WG_2021_Q4_NP	E235.F	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MCGWA_WG_2021_Q4_NP	E235.F	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MW_MCGWB_WG_2021_Q4_NP	E235.F	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MW_MC4_WG_2021_Q4_NP	E235.NO3-L	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_MCGWA_WG_2021_Q4_NP	E235.NO3-L	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_MCGWB_WG_2021_Q4_NP	E235.NO3-L	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_MC4_WG_2021_Q4_NP	E235.NO2-L	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_MCGWA_WG_2021_Q4_NP	E235.NO2-L	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_MW_MCGWB_WG_2021_Q4_NP	E235.NO2-L	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_MC4_WG_2021_Q4_NP	E235.SO4	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_MCGWA_WG_2021_Q4_NP	E235.SO4	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> EV_MW_MCGWB_WG_2021_Q4_NP	E235.SO4	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q4_NP	E375-T	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	4 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MCGWA_WG_2021_Q4_NP	E375-T	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MCGWB_WG_2021_Q4_NP	E375-T	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q4_NP	E318	21-Nov-2021	26-Nov-2021	----	----		30-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWA_WG_2021_Q4_NP	E318	21-Nov-2021	26-Nov-2021	----	----		30-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWB_WG_2021_Q4_NP	E318	21-Nov-2021	26-Nov-2021	----	----		30-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q4_NP	E372-U	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWA_WG_2021_Q4_NP	E372-U	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWB_WG_2021_Q4_NP	E372-U	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	4 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC4_WG_2021_Q4_NP	E421.Cr-L	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	4 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MCGWA_WG_2021_Q4_NP	E421.Cr-L	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MCGWB_WG_2021_Q4_NP	E421.Cr-L	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC4_WG_2021_Q4_NP	E509	21-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MCGWA_WG_2021_Q4_NP	E509	21-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MCGWB_WG_2021_Q4_NP	E509	21-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC4_WG_2021_Q4_NP	E421	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MCGWA_WG_2021_Q4_NP	E421	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MCGWB_WG_2021_Q4_NP	E421	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	180 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q4_NP	E358-L	21-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MCGWA_WG_2021_Q4_NP	E358-L	21-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MCGWB_WG_2021_Q4_NP	E358-L	21-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC4_WG_2021_Q4_NP	E355-L	21-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWA_WG_2021_Q4_NP	E355-L	21-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MCGWB_WG_2021_Q4_NP	E355-L	21-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC4_WG_2021_Q4_NP	E283	21-Nov-2021	----	----	----		24-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MCGWA_WG_2021_Q4_NP	E283	21-Nov-2021	----	----	----		24-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MCGWB_WG_2021_Q4_NP	E283	21-Nov-2021	----	----	----		24-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_MC4_WG_2021_Q4_NP	E290	21-Nov-2021	----	----	----		24-Nov-2021	14 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_MCGWA_WG_2021_Q4_NP	E290	21-Nov-2021	----	----	----		24-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MW_MCGWB_WG_2021_Q4_NP	E290	21-Nov-2021	----	----	----		24-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MC4_WG_2021_Q4_NP	E100	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MCGWA_WG_2021_Q4_NP	E100	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MW_MCGWB_WG_2021_Q4_NP	E100	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MCGWB_WG_2021_Q4_NP	E125	21-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	169 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MCGWA_WG_2021_Q4_NP	E125	21-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	170 hrs	*	EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MW_MC4_WG_2021_Q4_NP	E125	21-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	172 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MCGWB_WG_2021_Q4_NP	E108	21-Nov-2021	----	----	----		24-Nov-2021	0.25 hrs	68 hrs	*	EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MCGWA_WG_2021_Q4_NP	E108	21-Nov-2021	----	----	----		24-Nov-2021	0.25 hrs	69 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MW_MC4_WG_2021_Q4_NP	E108	21-Nov-2021	----	----	----		24-Nov-2021	0.25 hrs	70 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MC4_WG_2021_Q4_NP	E162	21-Nov-2021	----	----	----		25-Nov-2021	7 days	4 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MCGWA_WG_2021_Q4_NP	E162	21-Nov-2021	----	----	----		25-Nov-2021	7 days	4 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_MW_MCGWB_WG_2021_Q4_NP	E162	21-Nov-2021	----	----	----		25-Nov-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] EV_MW_MC4_WG_2021_Q4_NP	E160-L	21-Nov-2021	----	----	----		25-Nov-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] EV_MW_MCGWA_WG_2021_Q4_NP	E160-L	21-Nov-2021	----	----	----		25-Nov-2021	7 days	4 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] EV_MW_MCGWB_WG_2021_Q4_NP	E160-L	21-Nov-2021	----	----	----		25-Nov-2021	7 days	4 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_MW_MC4_WG_2021_Q4_NP	E121	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_MCGWA_WG_2021_Q4_NP	E121	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_MCGWB_WG_2021_Q4_NP	E121	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	351505	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	351499	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354538	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351357	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351358	1	15	6.6	5.0	✓
Conductivity in Water	E100	351500	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352992	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	354015	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352993	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	351188	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351378	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	351355	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351359	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351360	1	15	6.6	5.0	✓
ORP by Electrode	E125	354754	1	20	5.0	5.0	✓
pH by Meter	E108	351498	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	351356	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	352266	1	11	9.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	351709	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353879	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	351189	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351720	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	351494	1	7	14.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	351505	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	351499	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354538	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351357	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351358	1	15	6.6	5.0	✓
Conductivity in Water	E100	351500	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352992	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	354015	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352993	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	351188	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351378	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	351355	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351359	1	15	6.6	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	351360	1	15	6.6	5.0	✓
ORP by Electrode	E125	354754	1	20	5.0	5.0	✓
pH by Meter	E108	351498	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	351356	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	352266	1	11	9.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	351709	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353879	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	351189	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351720	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352251	1	11	9.0	5.0	✓
Turbidity by Nephelometry	E121	351494	1	7	14.2	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	351505	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	351499	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	354538	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351357	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351358	1	15	6.6	5.0	✓
Conductivity in Water	E100	351500	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352992	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	354015	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	352993	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	351188	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351378	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	351355	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351359	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351360	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	351356	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	352266	1	11	9.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	351709	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353879	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	351189	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351720	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352251	1	11	9.0	5.0	✓
Turbidity by Nephelometry	E121	351494	1	7	14.2	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	354538	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351357	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351358	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	352992	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	354015	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	352993	1	17	5.8	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	351188	1	11	9.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351378	1	14	7.1	5.0	✔
Fluoride in Water by IC	E235.F	351355	1	15	6.6	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	351359	1	15	6.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	351360	1	15	6.6	5.0	✔
Sulfate in Water by IC	E235.SO4	351356	1	15	6.6	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	351709	1	11	9.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353879	1	13	7.6	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	351189	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351720	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2105924**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HWY#3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATION  
**PO** : VPO00798016  
**C-O-C number** : 20211121Q4GW  
**Sampler** : S. Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Nov-2021 09:00  
**Date Analysis Commenced** : 23-Nov-2021  
**Issue Date** : 01-Dec-2021 15:27

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2105924  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATION

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 351494)</b>											
CG2105924-001	EV_MW_MC4_WG_2021_Q4_NP	turbidity	----	E121	0.10	NTU	3.48	3.56	2.33%	15%	----
<b>Physical Tests (QC Lot: 351498)</b>											
CG2105920-001	Anonymous	pH	----	E108	0.10	pH units	8.30	8.29	0.120%	4%	----
<b>Physical Tests (QC Lot: 351499)</b>											
CG2105920-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	592	612	3.39%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	4.0	3.4	0.6	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	596	616	3.27%	20%	----
<b>Physical Tests (QC Lot: 351500)</b>											
CG2105920-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2610	2610	0.00%	10%	----
<b>Physical Tests (QC Lot: 351505)</b>											
CG2105922-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	13.1	13.7	0.6	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352266)</b>											
CG2105904-005	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1980	2010	1.15%	20%	----
<b>Physical Tests (QC Lot: 354754)</b>											
CG2105923-006	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	516	523	1.35%	15%	----
<b>Anions and Nutrients (QC Lot: 351355)</b>											
CG2105922-003	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351356)</b>											
CG2105922-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351357)</b>											
CG2105922-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351358)</b>											
CG2105922-003	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351359)</b>											
CG2105922-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351360)</b>											
CG2105922-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351378)</b>											
CG2105922-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0029	0.0029	0.00002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351709)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 351709) - continued</b>											
CG2105917-008	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0079	0.0080	0.00003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351720)</b>											
CG2105920-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353879)</b>											
CG2105923-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.314	0.329	0.015	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354538)</b>											
CG2105923-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 351188)</b>											
CG2105922-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.84	0.82	0.02	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 351189)</b>											
CG2105922-001	Anonymous	carbon, total organic [TOC]	----	E355-L	2.50	mg/L	9.55	7.91	1.64	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352992)</b>											
CG2105913-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00014	0.00011	0.00003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352993)</b>											
CG2105913-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0020	0.0010	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00018	0.00018	0.000006	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	<0.00010	0.000003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0639	0.0653	2.20%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.012	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.114 µg/L	0.0000983	15.1%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	90.6	92.6	2.28%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0367	0.0364	1.01%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	42.2	41.5	1.78%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00234	0.00228	2.45%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00212	0.00213	0.250%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00356	0.00357	0.000002	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.27	1.25	1.30%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	32.5 µg/L	0.0326	0.192%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.16	2.13	1.16%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 352993) - continued</b>											
CG2105913-001	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	7.02	7.01	0.137%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.194	0.195	0.683%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	66.0	64.0	2.98%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00300	0.00298	0.842%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0041	0.0044	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 354015)</b>											
CG2105913-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 351494)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 351499)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 351500)</b>						
conductivity	----	E100	1	µS/cm	1.2	----
<b>Physical Tests (QCLot: 351505)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 352251)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 352266)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 351355)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 351356)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 351357)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 351358)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 351359)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 351360)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 351378)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 351709)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 351720)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 353879)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 353879) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 354538)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 351188)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 351189)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 352992)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 352993)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 352993) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 354015)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 351494)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100	85.0	115	---
<b>Physical Tests (QCLot: 351498)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 351499)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	114	85.0	115	---
<b>Physical Tests (QCLot: 351500)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.0	90.0	110	---
<b>Physical Tests (QCLot: 351505)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	110	85.0	115	---
<b>Physical Tests (QCLot: 352251)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 352266)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	92.6	85.0	115	---
<b>Physical Tests (QCLot: 354754)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 351355)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 351356)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 351357)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.8	85.0	115	---
<b>Anions and Nutrients (QCLot: 351358)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 351359)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 351360)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 351378)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	96.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 351709)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	90.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 351720)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		
						Low	High		
<b>Anions and Nutrients (QCLot: 351720) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	89.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 353879)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 354538)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	87.8	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 351188)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	90.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 351189)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	93.8	80.0	120	----
<b>Dissolved Metals (QCLot: 352992)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 352993)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.6	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.5	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.9	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.0	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	87.9	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	93.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.6	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.8	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	91.1	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.2	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	96.7	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 352993) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	90.0	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.8	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.7	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.5	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 351355)</b>										
CG2105923-005	Anonymous	fluoride	16984-48-8	E235.F	0.996 mg/L	1 mg/L	99.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 351356)</b>										
CG2105923-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 351357)</b>										
CG2105923-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.495 mg/L	0.5 mg/L	99.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 351358)</b>										
CG2105923-005	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 351359)</b>										
CG2105923-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.60 mg/L	2.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 351360)</b>										
CG2105923-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.513 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 351378)</b>										
CG2105922-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0524 mg/L	0.05 mg/L	105	70.0	130	----
<b>Anions and Nutrients (QCLot: 351709)</b>										
CG2105924-001	EV_MW_MC4_WG_2021_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0614 mg/L	0.0676 mg/L	90.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 351720)</b>										
CG2105922-001	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 353879)</b>										
CG2105923-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.48 mg/L	2.5 mg/L	99.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 354538)</b>										
CG2105923-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0983 mg/L	0.1 mg/L	98.3	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 351188)</b>										
CG2105922-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.1 mg/L	23.9 mg/L	92.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 351189)</b>										
CG2105922-001	Anonymous	carbon, total organic [TOC]	----	E355-L	21.6 mg/L	23.9 mg/L	90.6	70.0	130	----
<b>Dissolved Metals (QCLot: 352992)</b>										
CG2105913-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0389 mg/L	0.04 mg/L	97.4	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 352993)</b>										
CG2105913-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.191 mg/L	0.2 mg/L	95.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00788 mg/L	0.01 mg/L	78.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.084 mg/L	0.1 mg/L	84.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00389 mg/L	0.004 mg/L	97.2	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0186 mg/L	0.02 mg/L	92.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0177 mg/L	0.02 mg/L	88.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0176 mg/L	0.02 mg/L	88.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0914 mg/L	0.1 mg/L	91.4	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.93 mg/L	4 mg/L	98.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0436 mg/L	0.04 mg/L	109	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.07 mg/L	10 mg/L	90.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00351 mg/L	0.004 mg/L	87.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00352 mg/L	0.004 mg/L	88.1	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00386 mg/L	0.004 mg/L	96.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0999 mg/L	0.1 mg/L	99.9	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.381 mg/L	0.4 mg/L	95.3	70.0	130	----
<b>Dissolved Metals (QCLot: 354015)</b>										
CG2105913-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000979 mg/L	0.0001 mg/L	97.9	70.0	130	----






COC ID: 20211121Q4GW      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emsile@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	Jennifer.Dane@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00798016			

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PH	NO	YES	YES	NO	NO	NO	NO	YES	YES
								TECKCOAL-ROUTINE-VA (E305.1)	Nitric	Sulphuric	Sulphuric						
								Bicarbonate, BI-CL, Carbonate, CO3-CL, Hydroxide, OH-CL									
								TECKCOAL-MET-D-VA (SW6020)									
								DOC (APHA 5310)									
								Dissolved Phosphorus									
								TKN/TOC (APHA 4500-NORG)									
								Total Nitrogen for BC (NO2 and NO3)									
								T-ULTRA MERCURY (SW6020)									
								D-ULTRA MERCURY (SW6020)									
								EPH (C10-C32)									
								D-Mercury									
								D-CrVI									
							Total	15									

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	S.Hansen	November 21, 2021	<i>[Signature]</i>	11/23/21
SERVICE REQUEST (rush -subject to availability)				
Regular (default) X	Sampler's Name	S.Hansen	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	November 21, 2021
Emergency (1 Business Day) - 100% surcharge				
Weekend - Contact ALS				

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2105924**



Telephone : +1 403 407 1800

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105925**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00798016  
**C-O-C number** : 20211121Q4GW  
**Sampler** : S. Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 7  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Nov-2021 16:00  
**Date Analysis Commenced** : 23-Nov-2021  
**Issue Date** : 06-Dec-2021 10:38

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Greg Pokocky	Team Leader - Inorganics	Inorganics, Waterloo, Ontario
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kenson Lo		Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					EV_OCGW_WG _2021_Q4_NP	EV_MC5GW_W G_2021_Q4_NP	EV_MC6GW_W G_2021_Q4_NP	EV_MC7GW_W G_2021_Q4_NP	----
Client sampling date / time					21-Nov-2021 15:30	21-Nov-2021 15:32	21-Nov-2021 15:35	21-Nov-2021 12:00	----
Analyte	CAS Number	Method	LOR	Unit	CG2105925-001	CG2105925-002	CG2105925-003	CG2105925-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	2.1	2.2	----
conductivity	----	E100	2.0	µS/cm	469	466	<2.0	<2.0	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	142	140	<0.50	<0.50	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	455	432	463	462	----
pH	----	E108	0.10	pH units	8.09	8.09	5.73	5.70	----
solids, total dissolved [TDS]	----	E162	10	mg/L	303	290	<10	<10	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.7	1.7	<1.0	<1.0	----
turbidity	----	E121	0.10	NTU	1.82	1.35	<0.10	<0.10	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	196	201	<2.0	<2.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	196	201	<2.0	<2.0	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	239	246	<2.0	<2.0	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0592	0.0606	0.0104 <sup>RRV</sup>	0.0373 <sup>RRV</sup>	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.16	2.15	<0.10	<0.10	----
fluoride	16984-48-8	E235.F	0.020	mg/L	1.22	1.22	<0.020	<0.020	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.110	0.098	<0.050	0.070 <sup>RRV</sup>	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0401	0.0307	<0.0050	<0.0050	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0013	<0.0010	<0.0010	<0.0010	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0094	0.0098	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0172	0.0183	<0.0020	<0.0020	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0125	0.0128	<0.0020	<0.0020	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	68.3	68.6	<0.30	<0.30	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.151	0.129	<0.050	0.070	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.87	0.88	<0.50	<0.50	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_OCGW_WG _2021_Q4_NP	EV_MC5GW_W G_2021_Q4_NP	EV_MC6GW_W G_2021_Q4_NP	EV_MC7GW_W G_2021_Q4_NP	----
Client sampling date / time					21-Nov-2021 15:30	21-Nov-2021 15:32	21-Nov-2021 15:35	21-Nov-2021 12:00	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105925-001	CG2105925-002	CG2105925-003	CG2105925-004	-----	
					Result	Result	Result	Result	---	
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.64	0.77	<0.50	<0.50	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.47	5.57	<0.10	<0.10	----	
cation sum	----	EC101	0.10	meq/L	4.90	4.85	<0.10	<0.10	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	89.6	87.1	100	100	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.50	6.91	<0.010	<0.010	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0013	<0.0010	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00145	0.00151	<0.00010	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0503	0.0506	<0.00010	<0.00010	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.112	0.111	<0.010	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	27.2	27.0	<0.050	<0.050	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.10	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.156	0.193	<0.010	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0274	0.0266	<0.0010	<0.0010	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.0	17.7	<0.0050	<0.0050	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0725	0.0731	<0.00010	<0.00010	----	
mercury, dissolved	7439-97-6	E509-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0146	0.0145	<0.000050	<0.000050	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.57	1.55	<0.050	<0.050	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.39	4.53	<0.050	<0.050	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_OCGW_WG _2021_Q4_NP	EV_MC5GW_W G_2021_Q4_NP	EV_MC6GW_W G_2021_Q4_NP	EV_MC7GW_W G_2021_Q4_NP	----
Client sampling date / time					21-Nov-2021 15:30	21-Nov-2021 15:32	21-Nov-2021 15:35	21-Nov-2021 12:00	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105925-001	CG2105925-002	CG2105925-003	CG2105925-004	-----	
					Result	Result	Result	Result	---	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	46.2	45.8	<0.050	<0.050	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.384	0.381	<0.00020	<0.00020	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	22.5	23.3	<0.50	<0.50	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00113	0.00112	<0.000010	<0.000010	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----	
dissolved mercury filtration location	----	EP509-L	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	
<b>Speciated Metals</b>										
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	----	
EPH (C10-C32)	----	E601A	0.40	mg/L	<0.40	<0.40	<0.40	<0.40	----	
EPH (C19-C32)	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	----	
TEH (C10-C30), BC	----	E601A	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	----	
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	93.8	92.4	103	92.2	----	
<b>Polycyclic Aromatic Hydrocarbons</b>										
acenaphthene	83-32-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
acenaphthylene	208-96-8	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
acridine	260-94-6	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
anthracene	120-12-7	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	----	
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	<0.015	<0.015	<0.015	<0.015	----	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_OCGW_WG _2021_Q4_NP	EV_MC5GW_W G_2021_Q4_NP	EV_MC6GW_W G_2021_Q4_NP	EV_MC7GW_W G_2021_Q4_NP	----
Client sampling date / time					21-Nov-2021 15:30	21-Nov-2021 15:32	21-Nov-2021 15:35	21-Nov-2021 12:00	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105925-001	CG2105925-002	CG2105925-003	CG2105925-004	-----	
					Result	Result	Result	Result	---	
<b>Polycyclic Aromatic Hydrocarbons</b>										
chrysene	218-01-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	----	
fluoranthene	206-44-0	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
fluorene	86-73-7	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
methylnaphthalene, 1+2-	----	E641A	0.015	µg/L	<0.015	<0.015	<0.015	<0.015	----	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
naphthalene	91-20-3	E641A	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	----	
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
quinoline	91-22-5	E641A	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	----	
B(a)P total potency equivalents [B(a)P TPE]	----	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----	
PAHs, high molecular weight (BC AWQ)	----	E641A	0.030	µg/L	<0.030	<0.030	<0.030	<0.030	----	
PAHs, low molecular weight (BC AWQ)	----	E641A	0.060	µg/L	<0.060	<0.060	<0.060	<0.060	----	
PAHs, total (EPA 16)	----	E641A	0.065	µg/L	<0.065	<0.065	<0.065	<0.065	----	
<b>Polycyclic Aromatic Hydrocarbons Surrogates</b>										
chrysene-d12	1719-03-5	E641A	0.1	%	101	105	115	88.7	----	
naphthalene-d8	1146-65-2	E641A	0.1	%	94.5	104	114	100	----	
phenanthrene-d10	1517-22-2	E641A	0.1	%	101	109	118	98.6	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105925</b>	Page	: 1 of 21
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 23-Nov-2021 16:00
PO	: VPO00798016	Issue Date	: 06-Dec-2021 10:39
C-O-C number	: 20211121Q4GW		
Sampler	: S. Hansen		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q4_NP	E298	21-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q4_NP	E298	21-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC7GW_WG_2021_Q4_NP	E298	21-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q4_NP	E298	21-Nov-2021	27-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q4_NP	E235.Br-L	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q4_NP	E235.Br-L	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC7GW_WG_2021_Q4_NP	E235.Br-L	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE EV_OCGW_WG_2021_Q4_NP	E235.Br-L	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MC5GW_WG_2021_Q4_NP	E235.Cl-L	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MC6GW_WG_2021_Q4_NP	E235.Cl-L	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_MC7GW_WG_2021_Q4_NP	E235.Cl-L	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE EV_OCGW_WG_2021_Q4_NP	E235.Cl-L	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MC5GW_WG_2021_Q4_NP	E378-U	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MC6GW_WG_2021_Q4_NP	E378-U	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_MC7GW_WG_2021_Q4_NP	E378-U	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_OCGW_WG_2021_Q4_NP	E378-U	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MC5GW_WG_2021_Q4_NP	E235.F	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MC6GW_WG_2021_Q4_NP	E235.F	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_MC7GW_WG_2021_Q4_NP	E235.F	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_OCGW_WG_2021_Q4_NP	E235.F	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MC5GW_WG_2021_Q4_NP	E235.NO3-L	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MC6GW_WG_2021_Q4_NP	E235.NO3-L	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_MC7GW_WG_2021_Q4_NP	E235.NO3-L	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_OCGW_WG_2021_Q4_NP	E235.NO3-L	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_MC5GW_WG_2021_Q4_NP	E235.NO2-L	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q4_NP	E235.NO2-L	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MC7GW_WG_2021_Q4_NP	E235.NO2-L	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_OCGW_WG_2021_Q4_NP	E235.NO2-L	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q4_NP	E235.SO4	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q4_NP	E235.SO4	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MC7GW_WG_2021_Q4_NP	E235.SO4	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_OCGW_WG_2021_Q4_NP	E235.SO4	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC5GW_WG_2021_Q4_NP	E375-T	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC6GW_WG_2021_Q4_NP	E375-T	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	4 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC7GW_WG_2021_Q4_NP	E375-T	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_OCGW_WG_2021_Q4_NP	E375-T	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q4_NP	E318	21-Nov-2021	26-Nov-2021	----	----		30-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q4_NP	E318	21-Nov-2021	26-Nov-2021	----	----		30-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC7GW_WG_2021_Q4_NP	E318	21-Nov-2021	26-Nov-2021	----	----		30-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q4_NP	E318	21-Nov-2021	26-Nov-2021	----	----		30-Nov-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q4_NP	E372-U	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q4_NP	E372-U	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC7GW_WG_2021_Q4_NP	E372-U	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	4 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q4_NP	E372-U	21-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	4 days	✓
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MC5GW_WG_2021_Q4_NP	E421.Cr-L	21-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	5 days	✓
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MC6GW_WG_2021_Q4_NP	E421.Cr-L	21-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	5 days	✓
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> EV_MC7GW_WG_2021_Q4_NP	E421.Cr-L	21-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	5 days	✓
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> EV_OCGW_WG_2021_Q4_NP	E421.Cr-L	21-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	5 days	✓
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_MC5GW_WG_2021_Q4_NP	E509-L	21-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	7 days	✓
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_MC6GW_WG_2021_Q4_NP	E509-L	21-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	7 days	✓
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_MC7GW_WG_2021_Q4_NP	E509-L	21-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	7 days	✓
<b>Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)</b>										
<b>Pre-cleaned amber glass - dissolved (lab preserved)</b> EV_OCGW_WG_2021_Q4_NP	E509-L	21-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	7 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC5GW_WG_2021_Q4_NP	E421	21-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC6GW_WG_2021_Q4_NP	E421	21-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MC7GW_WG_2021_Q4_NP	E421	21-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_OCGW_WG_2021_Q4_NP	E421	21-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	5 days	✓	
<b>Hydrocarbons : BC PHCs - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC5GW_WG_2021_Q4_NP	E601A	21-Nov-2021	25-Nov-2021	14 days	4 days	✓	26-Nov-2021	40 days	1 days	✓	
<b>Hydrocarbons : BC PHCs - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC6GW_WG_2021_Q4_NP	E601A	21-Nov-2021	25-Nov-2021	14 days	4 days	✓	26-Nov-2021	40 days	1 days	✓	
<b>Hydrocarbons : BC PHCs - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC7GW_WG_2021_Q4_NP	E601A	21-Nov-2021	25-Nov-2021	14 days	4 days	✓	26-Nov-2021	40 days	1 days	✓	
<b>Hydrocarbons : BC PHCs - EPH by GC-FID</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_OCGW_WG_2021_Q4_NP	E601A	21-Nov-2021	25-Nov-2021	14 days	4 days	✓	26-Nov-2021	40 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC5GW_WG_2021_Q4_NP	E358-L	21-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC6GW_WG_2021_Q4_NP	E358-L	21-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MC7GW_WG_2021_Q4_NP	E358-L	21-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_OCGW_WG_2021_Q4_NP	E358-L	21-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC5GW_WG_2021_Q4_NP	E355-L	21-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC6GW_WG_2021_Q4_NP	E355-L	21-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MC7GW_WG_2021_Q4_NP	E355-L	21-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_OCGW_WG_2021_Q4_NP	E355-L	21-Nov-2021	23-Nov-2021	----	----		27-Nov-2021	28 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q4_NP	E283	21-Nov-2021	----	----	----		24-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q4_NP	E283	21-Nov-2021	----	----	----		24-Nov-2021	14 days	3 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_MC7GW_WG_2021_Q4_NP	E283	21-Nov-2021	----	----	----		24-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_OCGW_WG_2021_Q4_NP	E283	21-Nov-2021	----	----	----		24-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MC5GW_WG_2021_Q4_NP	E290	21-Nov-2021	----	----	----		24-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MC6GW_WG_2021_Q4_NP	E290	21-Nov-2021	----	----	----		24-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_MC7GW_WG_2021_Q4_NP	E290	21-Nov-2021	----	----	----		24-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_OCGW_WG_2021_Q4_NP	E290	21-Nov-2021	----	----	----		24-Nov-2021	14 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MC5GW_WG_2021_Q4_NP	E100	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MC6GW_WG_2021_Q4_NP	E100	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_MC7GW_WG_2021_Q4_NP	E100	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days	✓	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_OCGW_WG_2021_Q4_NP	E100	21-Nov-2021	----	----	----		24-Nov-2021	28 days	3 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MC5GW_WG_2021_Q4_NP	E125	21-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	168 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MC6GW_WG_2021_Q4_NP	E125	21-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	168 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_OCGW_WG_2021_Q4_NP	E125	21-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	168 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_MC7GW_WG_2021_Q4_NP	E125	21-Nov-2021	----	----	----		28-Nov-2021	0.25 hrs	171 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MC5GW_WG_2021_Q4_NP	E108	21-Nov-2021	----	----	----		24-Nov-2021	0.25 hrs	66 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MC6GW_WG_2021_Q4_NP	E108	21-Nov-2021	----	----	----		24-Nov-2021	0.25 hrs	66 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_OCGW_WG_2021_Q4_NP	E108	21-Nov-2021	----	----	----		24-Nov-2021	0.25 hrs	66 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE EV_MC7GW_WG_2021_Q4_NP	E108	21-Nov-2021	----	----	----		24-Nov-2021	0.25 hrs	70 hrs		* EHTR-FM



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q4_NP	E162	21-Nov-2021	----	----	----		25-Nov-2021	7 days	4 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q4_NP	E162	21-Nov-2021	----	----	----		25-Nov-2021	7 days	4 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_MC7GW_WG_2021_Q4_NP	E162	21-Nov-2021	----	----	----		25-Nov-2021	7 days	4 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> EV_OCGW_WG_2021_Q4_NP	E162	21-Nov-2021	----	----	----		25-Nov-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MC5GW_WG_2021_Q4_NP	E160-L	21-Nov-2021	----	----	----		25-Nov-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MC6GW_WG_2021_Q4_NP	E160-L	21-Nov-2021	----	----	----		25-Nov-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_MC7GW_WG_2021_Q4_NP	E160-L	21-Nov-2021	----	----	----		25-Nov-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> EV_OCGW_WG_2021_Q4_NP	E160-L	21-Nov-2021	----	----	----		25-Nov-2021	7 days	4 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MC5GW_WG_2021_Q4_NP	E121	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MC6GW_WG_2021_Q4_NP	E121	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_MC7GW_WG_2021_Q4_NP	E121	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> EV_OCGW_WG_2021_Q4_NP	E121	21-Nov-2021	----	----	----		24-Nov-2021	3 days	3 days	✔	
<b>Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC5GW_WG_2021_Q4_NP	E641A	21-Nov-2021	25-Nov-2021	14 days	4 days	✔	26-Nov-2021	40 days	1 days	✔	
<b>Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC6GW_WG_2021_Q4_NP	E641A	21-Nov-2021	25-Nov-2021	14 days	4 days	✔	26-Nov-2021	40 days	1 days	✔	
<b>Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_MC7GW_WG_2021_Q4_NP	E641A	21-Nov-2021	25-Nov-2021	14 days	4 days	✔	26-Nov-2021	40 days	1 days	✔	
<b>Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS</b>											
<b>Amber glass/Teflon lined cap (sodium bisulfate)</b> EV_OCGW_WG_2021_Q4_NP	E641A	21-Nov-2021	25-Nov-2021	14 days	4 days	✔	26-Nov-2021	40 days	1 days	✔	
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>											
<b>HDPE - dissolved (sodium hydroxide)</b> EV_MC5GW_WG_2021_Q4_NP	E532A	21-Nov-2021	----	----	----		29-Nov-2021	28 days	8 days	✔	
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>											
<b>HDPE - dissolved (sodium hydroxide)</b> EV_MC6GW_WG_2021_Q4_NP	E532A	21-Nov-2021	----	----	----		29-Nov-2021	28 days	8 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>										
<b>HDPE - dissolved (sodium hydroxide)</b> EV_MC7GW_WG_2021_Q4_NP	E532A	21-Nov-2021	----	----	----		29-Nov-2021	28 days	8 days	✔
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>										
<b>HDPE - dissolved (sodium hydroxide)</b> EV_OCGW_WG_2021_Q4_NP	E532A	21-Nov-2021	----	----	----		29-Nov-2021	28 days	8 days	✔

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	351505	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	351499	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	354292	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351357	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351358	1	15	6.6	5.0	✓
Conductivity in Water	E100	351500	2	38	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353893	1	5	20.0	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	355147	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	354714	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353894	1	6	16.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	351188	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351378	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	351355	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351359	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351360	1	15	6.6	5.0	✓
ORP by Electrode	E125	354754	1	20	5.0	5.0	✓
pH by Meter	E108	351498	2	39	5.1	5.0	✓
Sulfate in Water by IC	E235.SO4	351356	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	352266	1	11	9.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	351709	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353879	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	351189	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351720	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	351494	1	7	14.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	351505	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	351499	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	354292	1	19	5.2	5.0	✓
BC PHCs - EPH by GC-FID	E601A	352907	1	5	20.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351357	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351358	1	15	6.6	5.0	✓
Conductivity in Water	E100	351500	2	38	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353893	1	5	20.0	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	355147	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	354714	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353894	1	6	16.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	351188	1	11	9.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351378	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	351355	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351359	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351360	1	15	6.6	5.0	✓
ORP by Electrode	E125	354754	1	20	5.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	352908	1	4	25.0	5.0	✓
pH by Meter	E108	351498	2	39	5.1	5.0	✓
Sulfate in Water by IC	E235.SO4	351356	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	352266	1	11	9.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	351709	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353879	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	351189	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351720	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352251	1	11	9.0	5.0	✓
Turbidity by Nephelometry	E121	351494	1	7	14.2	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	351505	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	351499	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	354292	1	19	5.2	5.0	✓
BC PHCs - EPH by GC-FID	E601A	352907	1	5	20.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351357	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351358	1	15	6.6	5.0	✓
Conductivity in Water	E100	351500	2	38	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353893	1	5	20.0	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	355147	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	354714	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353894	1	6	16.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	351188	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351378	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	351355	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351359	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351360	1	15	6.6	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	352908	1	4	25.0	5.0	✓
Sulfate in Water by IC	E235.SO4	351356	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	352266	1	11	9.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	351709	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353879	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	351189	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351720	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352251	1	11	9.0	5.0	✓
Turbidity by Nephelometry	E121	351494	1	7	14.2	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	354292	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351357	1	15	6.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351358	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353893	1	5	20.0	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	355147	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	354714	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353894	1	6	16.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	351188	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351378	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	351355	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351359	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351360	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	351356	1	15	6.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	351709	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353879	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	351189	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	351720	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A Waterloo - Environmental	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection.  sample pretreatment involved field or lab filtration following by sample preservation.
BC PHCs - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions.
PAHs by Hexane LVI GC-MS	E641A Calgary - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.  Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration (Low Level)	EP509-L Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
PHCs and PAHs Hexane Extraction	EP601 Calgary - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105925**

**Page** : 1 of 17

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00798016  
**C-O-C number** : 20211121Q4GW  
**Sampler** : S. Hansen  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Nov-2021 16:00  
**Date Analysis Commenced** : 23-Nov-2021  
**Issue Date** : 06-Dec-2021 10:39

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Greg Pokocky	Team Leader - Inorganics	Inorganics, Waterloo, Ontario
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kenson Lo		Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
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Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Woochan Song

Lab Analyst

Metals, Burnaby, British Columbia



Page : 3 of 17  
Work Order : CG2105925  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 351494)</b>											
CG2105924-001	Anonymous	turbidity	----	E121	0.10	NTU	3.48	3.56	2.33%	15%	----
<b>Physical Tests (QC Lot: 351498)</b>											
CG2105920-001	Anonymous	pH	----	E108	0.10	pH units	8.30	8.29	0.120%	4%	----
<b>Physical Tests (QC Lot: 351499)</b>											
CG2105920-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	592	612	3.39%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	4.0	3.4	0.6	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	596	616	3.27%	20%	----
<b>Physical Tests (QC Lot: 351500)</b>											
CG2105920-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2610	2610	0.00%	10%	----
<b>Physical Tests (QC Lot: 351501)</b>											
CG2105925-004	EV_MC7GW_WG_2021_Q4_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 351502)</b>											
CG2105925-004	EV_MC7GW_WG_2021_Q4_NP	pH	----	E108	0.10	pH units	5.70	5.62	1.41%	4%	----
<b>Physical Tests (QC Lot: 351503)</b>											
CG2105925-004	EV_MC7GW_WG_2021_Q4_NP	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 351505)</b>											
CG2105922-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	13.1	13.7	0.6	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352266)</b>											
CG2105904-005	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1980	2010	1.15%	20%	----
<b>Physical Tests (QC Lot: 354754)</b>											
CG2105923-006	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	516	523	1.35%	15%	----
<b>Anions and Nutrients (QC Lot: 351355)</b>											
CG2105922-003	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351356)</b>											
CG2105922-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351357)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 351357) - continued</b>											
CG2105922-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351358)</b>											
CG2105922-003	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351359)</b>											
CG2105922-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351360)</b>											
CG2105922-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351378)</b>											
CG2105922-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0029	0.0029	0.00002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351709)</b>											
CG2105917-008	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0079	0.0080	0.00003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351720)</b>											
CG2105920-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353879)</b>											
CG2105923-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.314	0.329	0.015	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354292)</b>											
CG2105918-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0162	0.0108	0.0054	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 351188)</b>											
CG2105922-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.84	0.82	0.02	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 351189)</b>											
CG2105922-001	Anonymous	carbon, total organic [TOC]	----	E355-L	2.50	mg/L	9.55	7.91	1.64	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353893)</b>											
CG2105925-001	EV_OCGW_WG_2021_Q4_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353894)</b>											
CG2105925-001	EV_OCGW_WG_2021_Q4_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0014	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00145	0.00145	0.402%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0503	0.0512	1.66%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.112	0.118	4.54%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	27.2	27.1	0.0723%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 353894) - continued</b>											
CG2105925-001	EV_OCGW_WG_2021_Q4_NP	copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.156	0.158	1.15%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0274	0.0267	2.70%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.0	17.7	1.76%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0725	0.0735	1.42%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0146	0.0146	0.139%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.57	1.57	0.0328%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.39	4.40	0.260%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	46.2	46.9	1.49%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.384	0.393	2.40%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	22.5	22.4	0.324%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00113	0.00112	0.863%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 354714)</b>											
VA21C6019-001	Anonymous	mercury, dissolved	7439-97-6	E509-L	0.00000050	ng/L	<0.00000050 mg/L	<0.50	0	Diff <2x LOR	----
<b>Speciated Metals (QC Lot: 355147)</b>											
CG2105925-001	EV_OCGW_WG_2021_Q4_NP	chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 351494)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 351499)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 351500)</b>						
conductivity	----	E100	1	µS/cm	1.2	----
<b>Physical Tests (QCLot: 351501)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 351503)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 351505)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 352251)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 352266)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 351355)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 351356)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 351357)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 351358)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 351359)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 351360)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 351378)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 351709)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 351720)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 353879)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 354292)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 351188)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 351189)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 353893)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 353894)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 353894) - continued</b>						
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	---
<b>Dissolved Metals (QCLot: 354714)</b>						
mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	<0.50	---
<b>Speciated Metals (QCLot: 355147)</b>						
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	<0.00050	---
<b>Hydrocarbons (QCLot: 352907)</b>						
EPH (C10-C19)	---	E601A	250	µg/L	<250	---
EPH (C19-C32)	---	E601A	250	µg/L	<250	---
TEH (C10-C30), BC	---	E601A	250	µg/L	<250	---
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 352908)</b>						
acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	---
acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	---
acridine	260-94-6	E641A	0.01	µg/L	<0.010	---
anthracene	120-12-7	E641A	0.01	µg/L	<0.010	---
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	---
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	---
benzo(b+j)fluoranthene	---	E641A	0.01	µg/L	<0.010	---
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	---
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	---
chrysene	218-01-9	E641A	0.01	µg/L	<0.010	---
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	---
fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	---
fluorene	86-73-7	E641A	0.01	µg/L	<0.010	---
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	---
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	---
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	---

Page : 10 of 17  
Work Order : CG2105925  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 352908) - continued</b>						
naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	----
phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	----
pyrene	129-00-0	E641A	0.01	µg/L	<0.010	----
quinoline	91-22-5	E641A	0.05	µg/L	<0.050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 351494)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100	85.0	115	---
<b>Physical Tests (QCLot: 351498)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 351499)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	114	85.0	115	---
<b>Physical Tests (QCLot: 351500)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.0	90.0	110	---
<b>Physical Tests (QCLot: 351501)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	113	85.0	115	---
<b>Physical Tests (QCLot: 351502)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 351503)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.4	90.0	110	---
<b>Physical Tests (QCLot: 351505)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	110	85.0	115	---
<b>Physical Tests (QCLot: 352251)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 352266)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	92.6	85.0	115	---
<b>Physical Tests (QCLot: 354754)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 351355)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 351356)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 351357)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.8	85.0	115	---
<b>Anions and Nutrients (QCLot: 351358)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 351359)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 351360)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 351360) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 351378)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	96.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 351709)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	90.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 351720)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	89.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 353879)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 354292)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 351188)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	90.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 351189)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	93.8	80.0	120	----
<b>Dissolved Metals (QCLot: 353893)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
<b>Dissolved Metals (QCLot: 353894)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.2	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	99.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.7	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.6	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 353894) - continued</b>									
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.1	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.3	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	94.0	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.3	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.6	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.6	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.8	80.0	120	----
mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	91.0	80.0	120	----
<b>Speciated Metals (QCLot: 355147)</b>									
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	0.025 mg/L	97.5	80.0	120	----
<b>Hydrocarbons (QCLot: 352907)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	7719.3 µg/L	70.9	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3536.8 µg/L	77.4	70.0	130	----
TEH (C10-C30), BC	----	E601A	250	µg/L	10414 µg/L	73.2	70.0	130	----
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 352908)</b>									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	86.0	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	83.2	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	76.4	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	82.1	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	87.7	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	80.5	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	96.2	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	88.6	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	88.5	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	83.2	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	84.7	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	86.0	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	88.2	60.0	130	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 352908) - continued</b>									
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	85.1	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	90.0	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	88.6	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	86.0	50.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	84.5	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	86.7	60.0	130	----
quinoline	91-22-5	E641A	0.05	µg/L	0.5 µg/L	81.3	60.0	130	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 351355)</b>										
CG2105923-005	Anonymous	fluoride	16984-48-8	E235.F	0.996 mg/L	1 mg/L	99.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 351356)</b>										
CG2105923-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 351357)</b>										
CG2105923-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.495 mg/L	0.5 mg/L	99.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 351358)</b>										
CG2105923-005	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 351359)</b>										
CG2105923-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.60 mg/L	2.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 351360)</b>										
CG2105923-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.513 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 351378)</b>										
CG2105922-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0524 mg/L	0.05 mg/L	105	70.0	130	----
<b>Anions and Nutrients (QCLot: 351709)</b>										
CG2105924-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0614 mg/L	0.0676 mg/L	90.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 351720)</b>										
CG2105922-001	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 353879)</b>										
CG2105923-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.48 mg/L	2.5 mg/L	99.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 354292)</b>										
CG2105918-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.107 mg/L	0.1 mg/L	107	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 351188)</b>										
CG2105922-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.1 mg/L	23.9 mg/L	92.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 351189)</b>										
CG2105922-001	Anonymous	carbon, total organic [TOC]	----	E355-L	21.6 mg/L	23.9 mg/L	90.6	70.0	130	----
<b>Dissolved Metals (QCLot: 353893)</b>										
CG2105925-002	EV_MC5GW_WG_2021_Q4_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0372 mg/L	0.04 mg/L	93.0	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 353894)</b>										
CG2105925-002	EV_MC5GW_WG_2021_Q4_NP	aluminum, dissolved	7429-90-5	E421	0.195 mg/L	0.2 mg/L	97.4	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0382 mg/L	0.04 mg/L	95.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00826 mg/L	0.01 mg/L	82.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00379 mg/L	0.004 mg/L	94.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0178 mg/L	0.02 mg/L	88.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.82 mg/L	2 mg/L	90.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0180 mg/L	0.02 mg/L	89.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0917 mg/L	0.1 mg/L	91.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0363 mg/L	0.04 mg/L	90.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.72 mg/L	4 mg/L	93.0	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.43 mg/L	10 mg/L	84.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00289 mg/L	0.004 mg/L	72.4	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----		
sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00356 mg/L	0.004 mg/L	89.1	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00368 mg/L	0.004 mg/L	92.0	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.0960 mg/L	0.1 mg/L	96.0	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.368 mg/L	0.4 mg/L	91.9	70.0	130	----		
<b>Dissolved Metals (QCLot: 354714)</b>										
VA21C6019-002	Anonymous	mercury, dissolved	7439-97-6	E509-L	3.92 ng/L	5 ng/L	78.5	70.0	130	----
<b>Speciated Metals (QCLot: 355147)</b>										
CG2105925-001	EV_OCGW_WG_2021_Q4_NP	chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----



COC ID: 20211121Q4GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emsie@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	Jennifer.Dane@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	403-865-5289			Phone Number	403-407-1800			PO number	VPO00798016			

Environmental Division  
Calgary  
Work Order Reference  
**CG2105925**



Telephone : + 1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None											
							TECK COAL-ROUTINE-VA (E305.1)	No	Yes	Yes	No	No	Yes	No	Yes	Yes			
							Bicarbonate, BI-CL, Carbonate, CO3-CL, Hydroxide, OH-CL			Nitric	Sulphuric	Sulphuric			NO	Sodium Bisulphate	HCl	NaOH	
							TECK COAL-MET-D-VA (SW6020)												
							DOC (APHA 5310)												
							Dissolved Phosphorus												
							TKN/TOC (APHA 4500-NORG)												
							Total Nitrogen for BC (NO2 and NO3)												
							T-ULTRA MERCURY (SW6020)												
							D-ULTRA MERCURY (SW6020)												
							EPH & PAH (C10-C32)												
							D-Mercury												
							D-CVI												
Total							32												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	S.Hansen	November 21, 2021	<i>[Signature]</i>	11/23/2021

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	S.Hansen	
	Sampler's Signature	Date/Time
	<i>[Signature]</i>	November 21, 2021



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105943**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00798016  
**C-O-C number** : 20211123Q4GW  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 24-Nov-2021 08:40  
**Date Analysis Commenced** : 24-Nov-2021  
**Issue Date** : 01-Dec-2021 15:10

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_MW_WW_	---	---	---	---
(Matrix: Water)					WG_2021_Q4_					
					NP					
					Client sampling date / time	23-Nov-2021	---	---	---	---
						11:47				
Analyte	CAS Number	Method	LOR	Unit	CG2105943-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	4.8	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	2.0	mg/L	195	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	238	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	2.0	mg/L	195	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	463	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	240	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	488	---	---	---	---	---
pH	---	E108	0.10	pH units	7.74	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	282	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	7.7	---	---	---	---	---
turbidity	---	E121	0.10	NTU	3.12	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.49	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.145	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.222	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.95	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0015	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0037	---	---	---	---	---
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	63.8	---	---	---	---	---
nitrogen, total	7727-37-9	EC368	0.050	mg/L	2.17	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										



## Analytical Results

Sub-Matrix: Water					Client sample ID	RG_MW_WW_	----	----	----	----
(Matrix: Water)					WG_2021_Q4_					
					NP					
					Client sampling date / time	23-Nov-2021	----	----	----	----
						11:47				
Analyte	CAS Number	Method	LOR	Unit	CG2105943-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.44	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	4.92	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	90.4	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	5.02	----	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	----	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.134	----	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0097	----	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	66.3	----	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00019	----	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0050	----	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	18.1	----	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00015	----	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00136	----	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.669	----	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	11.6	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	RG_MW_WW_ WG_2021_Q4_ NP	----	----	----	----
Client sampling date / time					23-Nov-2021 11:47	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105943-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.64	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.45	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.216	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	21.8	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000938	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105943</b>	Page	: 1 of 11
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 24-Nov-2021 08:40
PO	: VPO00798016	Issue Date	: 01-Dec-2021 15:11
C-O-C number	: 20211123Q4GW		
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> RG_MW_WW_WG_2021_Q4_NP	E298	23-Nov-2021	28-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_MW_WW_WG_2021_Q4_NP	E235.Br-L	23-Nov-2021	----	----	----		24-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_MW_WW_WG_2021_Q4_NP	E235.Cl-L	23-Nov-2021	----	----	----		24-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> RG_MW_WW_WG_2021_Q4_NP	E378-U	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> RG_MW_WW_WG_2021_Q4_NP	E235.F	23-Nov-2021	----	----	----		24-Nov-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_MW_WW_WG_2021_Q4_NP	E235.NO3-L	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> RG_MW_WW_WG_2021_Q4_NP	E235.NO2-L	23-Nov-2021	----	----	----		24-Nov-2021	3 days	1 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> RG_MW_WW_WG_2021_Q4_NP	E235.SO4	23-Nov-2021	----	----	----		24-Nov-2021	28 days	1 days	✔
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> RG_MW_WW_WG_2021_Q4_NP	E375-T	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_MW_WW_WG_2021_Q4_NP	E318	23-Nov-2021	29-Nov-2021	----	----		30-Nov-2021	28 days	7 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_MW_WW_WG_2021_Q4_NP	E372-U	23-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	2 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> RG_MW_WW_WG_2021_Q4_NP	E421.Cr-L	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> RG_MW_WW_WG_2021_Q4_NP	E509	23-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	6 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> RG_MW_WW_WG_2021_Q4_NP	E421	23-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> RG_MW_WW_WG_2021_Q4_NP	E358-L	23-Nov-2021	24-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> RG_MW_WW_WG_2021_Q4_NP	E355-L	23-Nov-2021	24-Nov-2021	----	----		28-Nov-2021	28 days	5 days	✔





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Acidity by Titration</b>										
HDPE RG_MW_WW_WG_2021_Q4_NP	E283	23-Nov-2021	----	----	----		24-Nov-2021	14 days	1 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE RG_MW_WW_WG_2021_Q4_NP	E290	23-Nov-2021	----	----	----		24-Nov-2021	14 days	1 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_MW_WW_WG_2021_Q4_NP	E100	23-Nov-2021	----	----	----		24-Nov-2021	28 days	1 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_MW_WW_WG_2021_Q4_NP	E125	23-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	166 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE RG_MW_WW_WG_2021_Q4_NP	E108	23-Nov-2021	----	----	----		24-Nov-2021	0.25 hrs	23 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE RG_MW_WW_WG_2021_Q4_NP	E162	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] RG_MW_WW_WG_2021_Q4_NP	E160-L	23-Nov-2021	----	----	----		28-Nov-2021	7 days	5 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE RG_MW_WW_WG_2021_Q4_NP	E121	23-Nov-2021	----	----	----		25-Nov-2021	3 days	2 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	351615	1	15	6.6	5.0	✓
Alkalinity Species by Titration	E290	351612	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351594	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351593	1	9	11.1	5.0	✓
Conductivity in Water	E100	351611	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353202	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355061	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353203	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352124	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351967	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	351596	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351592	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351591	1	16	6.2	5.0	✓
ORP by Electrode	E125	355391	1	20	5.0	5.0	✓
pH by Meter	E108	351610	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	351595	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	352935	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	352046	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352125	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352040	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	352593	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	351615	1	15	6.6	5.0	✓
Alkalinity Species by Titration	E290	351612	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351594	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351593	1	9	11.1	5.0	✓
Conductivity in Water	E100	351611	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353202	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355061	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353203	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352124	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351967	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	351596	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351592	1	16	6.2	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	351591	1	16	6.2	5.0	✓
ORP by Electrode	E125	355391	1	20	5.0	5.0	✓
pH by Meter	E108	351610	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	351595	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	352935	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	352046	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352125	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352040	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352939	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	352593	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	351615	1	15	6.6	5.0	✓
Alkalinity Species by Titration	E290	351612	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351594	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351593	1	9	11.1	5.0	✓
Conductivity in Water	E100	351611	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353202	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355061	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353203	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352124	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351967	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	351596	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351592	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351591	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	351595	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	352935	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	352046	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352125	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352040	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	352939	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	352593	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	354675	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	351594	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	351593	1	9	11.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353202	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	355061	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	353203	1	17	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352124	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	351967	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	351596	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	351592	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	351591	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	351595	1	9	11.1	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	352046	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	354833	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352125	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352040	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.





## QUALITY CONTROL REPORT

**Work Order** : **CG2105943**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00798016  
**C-O-C number** : 20211123Q4GW  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 24-Nov-2021 08:40  
**Date Analysis Commenced** : 24-Nov-2021  
**Issue Date** : 01-Dec-2021 15:11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2105943  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 351610)</b>											
CG2105940-001	Anonymous	pH	----	E108	0.10	pH units	8.09	8.10	0.124%	4%	----
<b>Physical Tests (QC Lot: 351611)</b>											
CG2105940-001	Anonymous	conductivity	----	E100	2.0	µS/cm	916	917	0.109%	10%	----
<b>Physical Tests (QC Lot: 351612)</b>											
CG2105940-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	158	156	1.27%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	158	156	1.27%	20%	----
<b>Physical Tests (QC Lot: 351615)</b>											
CG2105940-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	2.5	2.2	0.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 352593)</b>											
CG2105941-001	Anonymous	turbidity	----	E121	0.10	NTU	3110	3100	0.271%	15%	----
<b>Physical Tests (QC Lot: 352935)</b>											
CG2105939-004	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1420	1410	0.919%	20%	----
<b>Physical Tests (QC Lot: 355391)</b>											
CG2105939-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	465	476	2.46%	15%	----
<b>Anions and Nutrients (QC Lot: 351591)</b>											
CG2105940-007	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0031	0.0027	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351592)</b>											
CG2105940-007	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	20.6	20.6	0.0427%	20%	----
<b>Anions and Nutrients (QC Lot: 351593)</b>											
CG2105940-007	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	7.86	7.83	0.365%	20%	----
<b>Anions and Nutrients (QC Lot: 351594)</b>											
CG2105940-007	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351595)</b>											
CG2105940-007	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	107	106	0.124%	20%	----
<b>Anions and Nutrients (QC Lot: 351596)</b>											
CG2105940-007	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.071	0.072	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 351967)</b>											
CG2105940-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0242	0.0247	1.83%	20%	----
<b>Anions and Nutrients (QC Lot: 352040)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 352040) - continued</b>											
CG2105937-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0023	<0.0020	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352046)</b>											
CG2105937-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354675)</b>											
CG2105941-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.0848	0.0927	0.0079	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354833)</b>											
CG2105939-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352124)</b>											
CG2105939-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.53	1.60	0.06	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352125)</b>											
CG2105939-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.45	1.47	0.02	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353202)</b>											
CG2105937-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353203)</b>											
CG2105937-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00052	0.00052	0.000008	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00046	0.00045	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0515	0.0528	2.45%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.020	0.020	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0108 µg/L	0.0000106	0.0000002	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	251	247	1.41%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	1.65 µg/L	0.00166	0.577%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.024	0.024	0.0002	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0575	0.0570	0.891%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	154	153	0.811%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0363	0.0362	0.234%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00304	0.00315	3.40%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0167	0.0167	0.118%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.80	3.85	1.22%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	166 µg/L	0.167	0.479%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.48	3.51	1.06%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 353203) - continued</b>											
CG2105937-008	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.74	4.74	0.0599%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.352	0.362	2.83%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	264	264	0.0428%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000011	0.000012	0.0000007	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00929	0.00904	2.74%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0043	0.0028	0.0016	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 355061)</b>											
CG2105887-008	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 351611)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 351612)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 351615)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	2.2	----
<b>Physical Tests (QCLot: 352593)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 352935)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 352939)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 351591)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 351592)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 351593)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 351594)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 351595)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 351596)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 351967)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 352040)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 352046)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 354675)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 354675) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 354833)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 352124)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 352125)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 353202)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 353203)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 353203) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 355061)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 351610)</b>									
pH	----	E108	----	pH units	7 pH units	99.6	98.6	101	----
<b>Physical Tests (QCLot: 351611)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	----
<b>Physical Tests (QCLot: 351612)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	114	85.0	115	----
<b>Physical Tests (QCLot: 351615)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	109	85.0	115	----
<b>Physical Tests (QCLot: 352593)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	99.9	85.0	115	----
<b>Physical Tests (QCLot: 352935)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	91.5	85.0	115	----
<b>Physical Tests (QCLot: 352939)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	94.4	85.0	115	----
<b>Physical Tests (QCLot: 355391)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	102	95.4	104	----
<b>Anions and Nutrients (QCLot: 351591)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.0	90.0	110	----
<b>Anions and Nutrients (QCLot: 351592)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 351593)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 351594)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	96.9	85.0	115	----
<b>Anions and Nutrients (QCLot: 351595)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 351596)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	93.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 351967)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	93.0	80.0	120	----
<b>Anions and Nutrients (QCLot: 352040)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	93.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 352046)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 352046) - continued</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	94.3	80.0	120	----
<b>Anions and Nutrients (QCLot: 354675)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Anions and Nutrients (QCLot: 354833)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 352124)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	91.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 352125)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	92.9	80.0	120	----
<b>Dissolved Metals (QCLot: 353202)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
<b>Dissolved Metals (QCLot: 353203)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	111	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	111	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	114	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	106	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	108	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	106	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	110	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	106	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.9	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 353203) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	113	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	109	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 351591)</b>										
CG2105940-008	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.512 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 351592)</b>										
CG2105940-008	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.51 mg/L	2.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 351593)</b>										
CG2105940-008	Anonymous	chloride	16887-00-6	E235.Cl-L	98.9 mg/L	100 mg/L	98.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 351594)</b>										
CG2105940-008	Anonymous	bromide	24959-67-9	E235.Br-L	0.484 mg/L	0.5 mg/L	96.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 351595)</b>										
CG2105940-008	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	93.6 mg/L	100 mg/L	93.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 351596)</b>										
CG2105940-008	Anonymous	fluoride	16984-48-8	E235.F	0.940 mg/L	1 mg/L	94.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 351967)</b>										
CG2105940-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0470 mg/L	0.05 mg/L	94.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 352040)</b>										
CG2105937-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0598 mg/L	0.0676 mg/L	88.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 352046)</b>										
CG2105937-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0629 mg/L	0.0676 mg/L	93.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 354675)</b>										
CG2105941-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 354833)</b>										
CG2105939-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.12 mg/L	2.5 mg/L	84.6	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352124)</b>										
CG2105939-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.0 mg/L	23.9 mg/L	100	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352125)</b>										
CG2105939-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.3 mg/L	23.9 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 353202)</b>										
CG2105937-009	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----



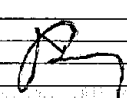
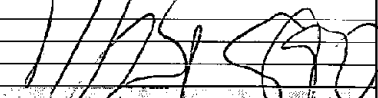
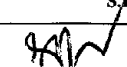
Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 353203)</b>										
CG2105937-009	Anonymous	aluminum, dissolved	7429-90-5	E421	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0215 mg/L	0.02 mg/L	108	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0180 mg/L	0.02 mg/L	90.0	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00835 mg/L	0.01 mg/L	83.5	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.091 mg/L	0.1 mg/L	91.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0181 mg/L	0.02 mg/L	90.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0181 mg/L	0.02 mg/L	90.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	94.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0953 mg/L	0.1 mg/L	95.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0452 mg/L	0.04 mg/L	113	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.31 mg/L	10 mg/L	93.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00366 mg/L	0.004 mg/L	91.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00367 mg/L	0.004 mg/L	91.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.358 mg/L	0.4 mg/L	89.6	70.0	130	----
<b>Dissolved Metals (QCLot: 355061)</b>										
CG2105887-009	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000960 mg/L	0.0001 mg/L	96.0	70.0	130	----

Page : 14 of 14  
Work Order : CG2105943  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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COC ID: 20211123Q4GW		TURNAROUND TIME:		RUSH:													
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>											
Facility Name / Job#: Elkview Operations				Lab Name: ALS Calgary		Report Format / Distribution											
Job Description: Q4 Ground Water Sampling						Excel	PDF	EDD									
Project Manager: Jennifer Dane				Email: jlyudmyla.shvets@alsglobal.com		Email 2:	colby.bracken@teck.com	X	X	X							
Email: jennifer.dane@teck.com				Address: 2559 29 Street NE		Email 3:	Jennifer.Dane@teck.com	X	X	X							
Address: RR#1 HWY# 3						Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X							
						Email 5:	teckcoal@equisonline.com			X							
City: Sparwood		Province: BC	City: Calgary		Province: AB												
Postal Code:		Country: Canada	Postal Code: T1Y 7B5		Country: Canada												
Phone Number: 1-250-865-5289		Phone Number: 403-407-1800		PO number:		VPO00798016											
<b>SAMPLE DETAILS</b>					<b>ANALYSIS REQUESTED</b>					<small>Filtered: F: Field, L: Lab, PL: Field &amp; Lab, N: None</small>							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FA	No	Yes	Yes	No	No	No	No	Yes	Yes
									TECKCOAL-ROUTINE-VA (E305.1)	Nitric	Sulphuric	Sulphuric	NO	Sodium Bisulphate	HCl	NaOH	
RG_MW_WW_WG_2021_Q4_NP	RG_MW_WW	WG	N	11/23/21	11:47	G	5		1	1	1	1			1		
								Total									5
<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>				<b>RELINQUISHED BY/AFFILIATION</b>				<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>				<b>DATE/TIME</b>			
				S.Hansen				November 23, 2021									
<b>SERVICE REQUEST (rush - subject to availability)</b>																	
Regular (default) X				Sampler's Name		S.Hansen				Mobile #							
Priority (2-3 business days) - 50% surcharge				Sampler's Signature						Date/Time		November 23, 2021					
Emergency (1 Business Day) - 100% surcharge																	
For Emergency <1 Day, ASAP or Weekend - Contact ALS																	

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2105943**



Telephone : +1 403 407 1800



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105999**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HWY#3  
Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00798016  
**C-O-C number** : 20211124Q4GW  
**Sampler** : SH/BC  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 25-Nov-2021 09:10  
**Date Analysis Commenced** : 25-Nov-2021  
**Issue Date** : 06-Dec-2021 17:30

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					EV_MW_MC1A _WG_2021_Q4 _NP	EV_MW_MC1B _WG_2021_Q4 _NP	RG_MW-03-04_ WG_2021_Q4_ NP	----	----
Client sampling date / time					24-Nov-2021 15:36	24-Nov-2021 15:34	24-Nov-2021 13:45	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105999-001	CG2105999-002	CG2105999-003	-----	-----
					Result	Result	Result	---	---
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	7.7	17.3	2.9	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	375	394	173	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	457	480	211	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	375	394	173	----	----
conductivity	----	E100	2.0	µS/cm	859	1170	429	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	393	573	220	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	314	329	488	----	----
pH	----	E108	0.10	pH units	7.94	7.15	7.79	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	530	802	266	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.0	27.2	<1.0	----	----
turbidity	----	E121	0.10	NTU	15.6	156	0.23	----	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	1.40	0.300	0.0053	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.641	1.44	<0.050	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	88.9	134	6.54	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.266	0.176	0.118	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	1.37	0.381	0.062	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0271	<0.0250 <sup>DLDS</sup>	0.448	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0010	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0058	<0.0010	0.0051	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0114	0.0176	0.0056 <sup>DLM</sup>	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0088	0.0098	0.0068 <sup>DLM</sup>	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	3.58	121	71.0	----	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	1.40	0.381	0.510	----	----
<b>Organic / Inorganic Carbon</b>									



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC1A _WG_2021_Q4 _NP	EV_MW_MC1B _WG_2021_Q4 _NP	RG_MW-03-04_ WG_2021_Q4_ NP	----	----
Client sampling date / time					24-Nov-2021 15:36	24-Nov-2021 15:34	24-Nov-2021 13:45	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105999-001 Result	CG2105999-002 Result	CG2105999-003 Result	----- ----	----- ----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.21	2.82	1.50	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.88	2.63	1.27	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	10.1	14.2	5.16	----	----	
cation sum	----	EC101	0.10	meq/L	8.96	13.2	4.62	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	88.7	93.0	89.5	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.98	3.65	5.52	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0024	0.0014	0.0020	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	0.00012	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00052	0.00645	0.00015	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	9.11	0.733	0.120	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.059	0.052	0.010	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0100 <sup>DLA</sup>	<0.0050	0.0094	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	101	150	55.7	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	0.26	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00081	<0.00020	0.00080	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	1.14	13.8	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0988	0.0863	0.0085	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	34.1	48.3	19.6	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.112	0.870	0.00015	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000224	0.00197	0.00105	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	0.00062	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.50	3.71	0.921	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.100 <sup>DLA</sup>	0.083	3.77	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_MW_MC1A _WG_2021_Q4 _NP	EV_MW_MC1B _WG_2021_Q4 _NP	RG_MW-03-04_ WG_2021_Q4_ NP	----	----
Client sampling date / time					24-Nov-2021 15:36	24-Nov-2021 15:34	24-Nov-2021 13:45	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105999-001 Result	CG2105999-002 Result	CG2105999-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.59	6.51	2.48	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLM</sup>	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	19.7	24.3	4.81	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.70	0.747	0.139	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<1.00 <sup>DLA</sup>	40.5	23.8	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000182	0.000415	0.000813	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0041	<0.0010	0.0012	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105999</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HWY#3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 25-Nov-2021 09:10
PO	: VPO00798016	Issue Date	: 06-Dec-2021 17:30
C-O-C number	: 20211124Q4GW		
Sampler	: SH/BC		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.300 % TKND	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

**Result Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q4_NP	E298	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q4_NP	E298	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q4_NP	E298	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q4_NP	E235.Br-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q4_NP	E235.Br-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_MW-03-04_WG_2021_Q4_NP	E235.Br-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q4_NP	E235.Cl-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q4_NP	E235.Cl-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_MW-03-04_WG_2021_Q4_NP	E235.Cl-L	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q4_NP	E378-U	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q4_NP	E378-U	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> RG_MW-03-04_WG_2021_Q4_NP	E378-U	24-Nov-2021	----	----	----		25-Nov-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q4_NP	E235.F	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q4_NP	E235.F	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> RG_MW-03-04_WG_2021_Q4_NP	E235.F	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q4_NP	E235.NO3-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q4_NP	E235.NO3-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_MW-03-04_WG_2021_Q4_NP	E235.NO3-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q4_NP	E235.NO2-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q4_NP	E235.NO2-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> RG_MW-03-04_WG_2021_Q4_NP	E235.NO2-L	24-Nov-2021	----	----	----		26-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q4_NP	E235.SO4	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q4_NP	E235.SO4	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> RG_MW-03-04_WG_2021_Q4_NP	E235.SO4	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q4_NP	E375-T	24-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q4_NP	E375-T	24-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q4_NP	E375-T	24-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q4_NP	E318	24-Nov-2021	30-Nov-2021	----	----		01-Dec-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q4_NP	E318	24-Nov-2021	30-Nov-2021	----	----		01-Dec-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q4_NP	E318	24-Nov-2021	30-Nov-2021	----	----		01-Dec-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q4_NP	E372-U	24-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q4_NP	E372-U	24-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q4_NP	E372-U	24-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	28 days	2 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC1A_WG_2021_Q4_NP	E421.Cr-L	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	180 days	5 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC1B_WG_2021_Q4_NP	E421.Cr-L	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> RG_MW-03-04_WG_2021_Q4_NP	E421.Cr-L	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC1A_WG_2021_Q4_NP	E509	24-Nov-2021	02-Dec-2021	----	----		02-Dec-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_MW_MC1B_WG_2021_Q4_NP	E509	24-Nov-2021	02-Dec-2021	----	----		02-Dec-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> RG_MW-03-04_WG_2021_Q4_NP	E509	24-Nov-2021	02-Dec-2021	----	----		02-Dec-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC1A_WG_2021_Q4_NP	E421	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_MW_MC1B_WG_2021_Q4_NP	E421	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> RG_MW-03-04_WG_2021_Q4_NP	E421	24-Nov-2021	29-Nov-2021	----	----		29-Nov-2021	180 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q4_NP	E358-L	24-Nov-2021	25-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q4_NP	E358-L	24-Nov-2021	25-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q4_NP	E358-L	24-Nov-2021	25-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1A_WG_2021_Q4_NP	E355-L	24-Nov-2021	25-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_MW_MC1B_WG_2021_Q4_NP	E355-L	24-Nov-2021	25-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> RG_MW-03-04_WG_2021_Q4_NP	E355-L	24-Nov-2021	25-Nov-2021	----	----		29-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q4_NP	E283	24-Nov-2021	----	----	----		26-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q4_NP	E283	24-Nov-2021	----	----	----		26-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> RG_MW-03-04_WG_2021_Q4_NP	E283	24-Nov-2021	----	----	----		26-Nov-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> EV_MW_MC1A_WG_2021_Q4_NP	E290	24-Nov-2021	----	----	----		26-Nov-2021	14 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE EV_MW_MC1B_WG_2021_Q4_NP	E290	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE RG_MW-03-04_WG_2021_Q4_NP	E290	24-Nov-2021	----	----	----		29-Nov-2021	14 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_MC1A_WG_2021_Q4_NP	E100	24-Nov-2021	----	----	----		26-Nov-2021	28 days	2 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE EV_MW_MC1B_WG_2021_Q4_NP	E100	24-Nov-2021	----	----	----		29-Nov-2021	28 days	5 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE RG_MW-03-04_WG_2021_Q4_NP	E100	24-Nov-2021	----	----	----		29-Nov-2021	28 days	5 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_MC1A_WG_2021_Q4_NP	E125	24-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	143 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE EV_MW_MC1B_WG_2021_Q4_NP	E125	24-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	143 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE RG_MW-03-04_WG_2021_Q4_NP	E125	24-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	145 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_MC1B_WG_2021_Q4_NP	E108	24-Nov-2021	----	----	----		29-Nov-2021	0.25 hrs	117 hrs	* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : pH by Meter</b>										
HDPE RG_MW-03-04_WG_2021_Q4_NP	E108	24-Nov-2021	----	----	----		29-Nov-2021	0.25 hrs	119 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE EV_MW_MC1A_WG_2021_Q4_NP	E108	24-Nov-2021	----	----	----		26-Nov-2021	0.25 hrs	47 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_MC1A_WG_2021_Q4_NP	E162	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_MW_MC1B_WG_2021_Q4_NP	E162	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE RG_MW-03-04_WG_2021_Q4_NP	E162	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] EV_MW_MC1A_WG_2021_Q4_NP	E160-L	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] EV_MW_MC1B_WG_2021_Q4_NP	E160-L	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] RG_MW-03-04_WG_2021_Q4_NP	E160-L	24-Nov-2021	----	----	----		29-Nov-2021	7 days	5 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_MW_MC1A_WG_2021_Q4_NP	E121	24-Nov-2021	----	----	----		27-Nov-2021	3 days	3 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> EV_MW_MC1B_WG_2021_Q4_NP	E121	24-Nov-2021	----	----	----		27-Nov-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> RG_MW-03-04_WG_2021_Q4_NP	E121	24-Nov-2021	----	----	----		27-Nov-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	353688	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	353685	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	355069	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353518	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353519	1	20	5.0	5.0	✓
Conductivity in Water	E100	353684	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	354712	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357472	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	354713	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352840	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352919	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	353516	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353520	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353521	1	20	5.0	5.0	✓
ORP by Electrode	E125	356179	1	20	5.0	5.0	✓
pH by Meter	E108	353683	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	353517	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	354286	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	352661	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	355620	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352841	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352692	1	13	7.6	5.0	✓
Turbidity by Nephelometry	E121	354193	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	353688	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	353685	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	355069	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353518	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353519	1	20	5.0	5.0	✓
Conductivity in Water	E100	353684	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	354712	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357472	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	354713	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352840	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352919	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	353516	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353520	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	353521	1	20	5.0	5.0	✓
ORP by Electrode	E125	356179	1	20	5.0	5.0	✓
pH by Meter	E108	353683	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	353517	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	354286	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	352661	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	355620	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352841	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352692	1	13	7.6	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	354281	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	354193	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	353688	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	353685	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	355069	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353518	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353519	1	20	5.0	5.0	✓
Conductivity in Water	E100	353684	2	40	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	354712	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357472	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	354713	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352840	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352919	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	353516	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353520	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353521	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	353517	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	354286	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	352661	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	355620	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352841	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352692	1	13	7.6	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	354281	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	354193	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	355069	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	353518	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	353519	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	354712	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	357472	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	354713	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	352840	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	352919	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	353516	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	353520	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	353521	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	353517	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	352661	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	355620	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	352841	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	352692	1	13	7.6	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2105999**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HWY#3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00798016  
**C-O-C number** : 20211124Q4GW  
**Sampler** : SH/BC  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
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**Date Samples Received** : 25-Nov-2021 09:10  
**Date Analysis Commenced** : 25-Nov-2021  
**Issue Date** : 06-Dec-2021 17:30

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
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Page : 2 of 14  
Work Order : CG2105999  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 353683)</b>											
CG2105991-006	Anonymous	pH	----	E108	0.10	pH units	7.68	7.69	0.130%	4%	----
<b>Physical Tests (QC Lot: 353684)</b>											
CG2105991-006	Anonymous	conductivity	----	E100	2.0	µS/cm	1970	1970	0.0507%	10%	----
<b>Physical Tests (QC Lot: 353685)</b>											
CG2105991-006	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	532	531	0.113%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	532	531	0.113%	20%	----
<b>Physical Tests (QC Lot: 353688)</b>											
CG2105991-003	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	25.6	29.7	14.5%	20%	----
<b>Physical Tests (QC Lot: 354193)</b>											
CG2105987-016	Anonymous	turbidity	----	E121	0.10	NTU	1.75	1.75	0.229%	15%	----
<b>Physical Tests (QC Lot: 354286)</b>											
CG2105991-006	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1780	1830	2.89%	20%	----
<b>Physical Tests (QC Lot: 355090)</b>											
CG2105999-002	EV_MW_MC1B_WG_2021_Q4_NP	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	394	387	1.79%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	394	387	1.79%	20%	----
<b>Physical Tests (QC Lot: 355091)</b>											
CG2105999-002	EV_MW_MC1B_WG_2021_Q4_NP	conductivity	----	E100	2.0	µS/cm	1170	1170	0.0856%	10%	----
<b>Physical Tests (QC Lot: 355092)</b>											
CG2105999-002	EV_MW_MC1B_WG_2021_Q4_NP	pH	----	E108	0.10	pH units	7.15	7.16	0.140%	4%	----
<b>Physical Tests (QC Lot: 356179)</b>											
CG2105991-009	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	422	421	0.0712%	15%	----
<b>Anions and Nutrients (QC Lot: 352661)</b>											
CG2105999-001	EV_MW_MC1A_WG_2021_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0088	0.0077	0.0011	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 352692)</b>											
CG2105991-008	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 352919)</b>											
CG2105993-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0066	0.0065	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353516)</b>											
CG2105992-003	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.104	0.138	0.034	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353517)</b>											
CG2105992-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	371	387	4.37%	20%	----
<b>Anions and Nutrients (QC Lot: 353518)</b>											
CG2105992-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353519)</b>											
CG2105992-003	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	2.83	2.60	0.23	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353520)</b>											
CG2105992-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	2.91	3.03	4.10%	20%	----
<b>Anions and Nutrients (QC Lot: 353521)</b>											
CG2105992-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0200	0.0188	0.0012	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 355069)</b>											
CG2105987-021	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.123	0.122	0.815%	20%	----
<b>Anions and Nutrients (QC Lot: 355070)</b>											
CG2105999-003	RG_MW-03-04_WG_2021_Q4_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0053	<0.0050	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 355620)</b>											
CG2105995-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	# 0.350	0.300	Diff <2x LOR	TKND
<b>Organic / Inorganic Carbon (QC Lot: 352840)</b>											
CG2105995-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.40	1.46	0.06	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 352841)</b>											
CG2105995-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.57	1.65	0.08	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 354712)</b>											
CG2105999-001	EV_MW_MC1A_WG_2021_Q4_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 354713)</b>											
CG2105999-001	EV_MW_MC1A_WG_2021_Q4_NP	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0024	<0.0020	0.0004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00052	0.00054	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	9.11	8.84	3.07%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.059	0.060	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	<0.0100 µg/L	<0.0000100	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 354713) - continued</b>											
CG2105999-001	EV_MW_MC1A_WG_2021_Q4_NP	calcium, dissolved	7440-70-2	E421	0.100	mg/L	101	100	0.348%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00081	0.00077	0.00004	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	1.14	1.14	0.189%	20%	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.0988	0.102	3.60%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	34.1	33.6	1.52%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.112	0.111	0.813%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.000224	0.000216	0.000008	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	4.50	4.50	0.0229%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	3.59	3.66	1.83%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	19.7	19.5	0.910%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	1.70	1.64	3.02%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.000182	0.000180	0.000002	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0041	0.0045	0.0004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 357472)</b>											
CG2105999-001	EV_MW_MC1A_WG_2021_Q4_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 353684)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 353685)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 353688)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 354193)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 354281)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 354286)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 355090)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 355091)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 352661)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 352692)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 352919)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 353516)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 353517)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 353518)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 353519)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 353520)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 353521)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 355069)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 355070)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 355620)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 352840)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 352841)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 354712)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 354713)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 354713) - continued</b>						
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 357472)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 353683)</b>									
pH	---	E108	---	pH units	7 pH units	99.8	98.6	101	---
<b>Physical Tests (QCLot: 353684)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.4	90.0	110	---
<b>Physical Tests (QCLot: 353685)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	111	85.0	115	---
<b>Physical Tests (QCLot: 353688)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 354193)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.5	85.0	115	---
<b>Physical Tests (QCLot: 354281)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 354286)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	---
<b>Physical Tests (QCLot: 355090)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 355091)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.2	90.0	110	---
<b>Physical Tests (QCLot: 355092)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 356179)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 352661)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 352692)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	112	80.0	120	---
<b>Anions and Nutrients (QCLot: 352919)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	91.6	80.0	120	---
<b>Anions and Nutrients (QCLot: 353516)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 353517)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 353518)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 353518) - continued</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.9	85.0	115	----
<b>Anions and Nutrients (QCLot: 353519)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 353520)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 353521)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.8	90.0	110	----
<b>Anions and Nutrients (QCLot: 355069)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	104	85.0	115	----
<b>Anions and Nutrients (QCLot: 355070)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	104	85.0	115	----
<b>Anions and Nutrients (QCLot: 355620)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	99.3	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 352840)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	98.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 352841)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	87.6	80.0	120	----
<b>Dissolved Metals (QCLot: 354712)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
<b>Dissolved Metals (QCLot: 354713)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.8	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.2	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.9	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.9	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 354713) - continued</b>									
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.9	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.6	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.4	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	93.3	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	91.0	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.7	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.8	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 352661)</b>										
CG2105999-002	EV_MW_MC1B_WG_2021_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0592 mg/L	0.0676 mg/L	87.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 352692)</b>										
CG2105991-009	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0570 mg/L	0.0676 mg/L	84.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 352919)</b>										
CG2105995-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0526 mg/L	0.05 mg/L	105	70.0	130	----
<b>Anions and Nutrients (QCLot: 353516)</b>										
CG2105992-004	Anonymous	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 353517)</b>										
CG2105992-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 353518)</b>										
CG2105992-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.490 mg/L	0.5 mg/L	98.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 353519)</b>										
CG2105992-004	Anonymous	chloride	16887-00-6	E235.Cl-L	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 353520)</b>										
CG2105992-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 353521)</b>										
CG2105992-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.426 mg/L	0.5 mg/L	85.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 355069)</b>										
CG2105987-021	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 355070)</b>										
CG2106000-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 355620)</b>										
CG2105995-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.51 mg/L	2.5 mg/L	100	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352840)</b>										
CG2105995-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.3 mg/L	23.9 mg/L	97.3	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 352841)</b>										
CG2105995-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.9 mg/L	23.9 mg/L	95.7	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 354712)</b>										
CG2105999-002	EV_MW_MC1B_WG_2021_Q4_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
<b>Dissolved Metals (QCLot: 354713)</b>										
CG2105999-002	EV_MW_MC1B_WG_2021_Q4_NP	aluminum, dissolved	7429-90-5	E421	0.188 mg/L	0.2 mg/L	94.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0373 mg/L	0.04 mg/L	93.3	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00868 mg/L	0.01 mg/L	86.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.098 mg/L	0.1 mg/L	98.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0184 mg/L	0.02 mg/L	92.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0179 mg/L	0.02 mg/L	89.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0869 mg/L	0.1 mg/L	86.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0371 mg/L	0.04 mg/L	92.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.73 mg/L	4 mg/L	93.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0479 mg/L	0.04 mg/L	120	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.79 mg/L	10 mg/L	87.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00694 mg/L	0.008 mg/L	86.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00356 mg/L	0.004 mg/L	89.1	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00374 mg/L	0.004 mg/L	93.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0966 mg/L	0.1 mg/L	96.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.378 mg/L	0.4 mg/L	94.4	70.0	130	----
<b>Dissolved Metals (QCLot: 357472)</b>										
CG2105999-002	EV_MW_MC1B_WG_2021_Q4_NP	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----



COC ID:	20211124Q4GW	TURNAROUND TIME:		RUSH:				
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO			
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary	Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q4 Ground Water Sampling	Lab Contact	Lyudmyla Shvets	Email 1:	chris.emslie@teck.com	X	X	X
Project Manager	Jennifer Dane	Email	lyudmyla.shvets@alsglobal.com	Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com	Address	2559 29 Street NE	Email 3:	Jennifer.Dane@teck.com	X	X	X
Address	RR#1 HWY#3			Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
				Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB	
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	
Phone Number	1-250-865-5289	Phone Number	403-407-1800	PO number	VPO00798016			

SAMPLE DETAILS								ANALYSIS REQUESTED																							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Filtered: F: Field; L: Lab; FL: Field & Lab; N: None																							
								No	Yes	Yes	No	No	No	Yes	Yes																
								Nitric		Sulphuric		Sulphuric		NO		Sodium Bisulphate		HCl		NaOH											
								TECKCOAL-ROUTINE-VA (E305.1)		Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL		TECKCOAL-MET-D-VA (SW6020)		DOC (APHA 5310)		Dissolved Phosphorus		TKN/TOC (APHA 4500-NORG)		Total Nitrogen for BC (NO2 and NO3)		T-ULTRA MERCURY (SW6020)		D-ULTRA MERCURY (SW6020)		EPH (C10-C32)		D-Mercury		D-CrVI	
EV_MW_MC1A_WG_2021_Q4_NP	EV_MW_MC1A	WG	N	11/24/21	15:36	G	5	1	1	1	1								1												
EV_MW_MC1B_WG_2021_Q4_NP	EV_MW_MC1B	WG	N	11/24/21	15:34	G	5	1	1	1	1								1												
RG_MW-03-04_WG_2021_Q4_NP	RG_MW-03-04	WG	N	11/24/21	13:45	G	5	1	1	1	1								1												
							Total	15																							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	S.Hansen/B.Clarke	November 24, 2021		

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	X	Sampler's Name	S.Hansen/B.Clarke	Mobile #
Priority (2-3 business days) - 50% surcharge		Sampler's Signature		Date/Time
Emergency (1 Business Day) - 100% surcharge				November 24, 2021
For Emergency <1 Day, ASAP				

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2105999**



Telephone : +1 403 407 1800

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2106068**  
**Client** : **Teck Coal Limited**  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00798016  
**C-O-C number** : 20211125Q4GW  
**Sampler** : J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Nov-2021 09:10  
**Date Analysis Commenced** : 26-Nov-2021  
**Issue Date** : 10-Dec-2021 08:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Parnian Sane	Analyst	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_BRGW_WG_2021_Q4_NP	EV_WH50GW_WG_2021_Q4_NP	----	----	----
Client sampling date / time					25-Nov-2021 12:30	25-Nov-2021 12:59	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106068-001	CG2106068-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	7.8	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	227	123	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	276	150	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	276	150	----	----	----	
conductivity	----	E100	2.0	µS/cm	1060	391	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	599	201	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	451	438	----	----	----	
pH	----	E108	0.10	pH units	7.67	7.93	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	780	225	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	3.4	----	----	----	
turbidity	----	E121	0.10	NTU	0.58	3.98	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0290	0.0106	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	16.2	1.67	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.135	0.155	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0020	0.0033	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0022	0.0102	----	----	----	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0025	0.0048	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	334	65.1	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	3.19	0.396	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.226 <sup>TKNI</sup>	<0.050	----	----	----	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	3.42	0.396	----	----	----	
<b>Organic / Inorganic Carbon</b>										





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_BRGW_WG_2021_Q4_NP	EV_WH50GW_WG_2021_Q4_NP	----	----	----
Client sampling date / time					25-Nov-2021 12:30	25-Nov-2021 12:59	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106068-001	CG2106068-002	-----	-----	-----	
					Result	Result	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.89 <sup>DTC.RRV</sup>	1.33	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50 <sup>DTC.RRV</sup>	1.16	----	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	13.2	4.44	----	----	----	
cation sum	----	EC101	0.10	meq/L	12.4	4.18	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.9	94.1	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.12	3.02	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00014	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0526	0.0780	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.035	0.010	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0433	0.0066	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	156	51.0	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00025	0.00047	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0465	0.0076	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	50.9	18.0	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00460	0.00262	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000618	0.00104	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00124	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.92	0.778	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	21.6	3.83	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_BRGW_WG_2021_Q4_NP	EV_WH50GW_WG_2021_Q4_NP	----	----	----
Client sampling date / time					25-Nov-2021 12:30	25-Nov-2021 12:59	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2106068-001 Result	CG2106068-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.34	2.15	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	8.40	2.99	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.311	0.130	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	112	22.2	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00170	0.000831	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0044	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106068</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 26-Nov-2021 09:10
PO	: VPO00798016	Issue Date	: 10-Dec-2021 08:56
C-O-C number	: 20211125Q4GW		
Sampler	: J. Batstone		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	26.9 % <sup>MSTN</sup>	70.0-130%	Recovery less than lower data quality objective

**Result Qualifiers**

Qualifier	Description
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BRGW_WG_2021_Q4_NP	E298	25-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WH50GW_WG_2021_Q4_NP	E298	25-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_BRGW_WG_2021_Q4_NP	E235.Br-L	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_WH50GW_WG_2021_Q4_NP	E235.Br-L	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_BRGW_WG_2021_Q4_NP	E235.Cl-L	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> EV_WH50GW_WG_2021_Q4_NP	E235.Cl-L	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> EV_BRGW_WG_2021_Q4_NP	E378-U	25-Nov-2021	----	----	----		26-Nov-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE EV_WH50GW_WG_2021_Q4_NP	E378-U	25-Nov-2021	----	----	----		26-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_BRGW_WG_2021_Q4_NP	E235.F	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE EV_WH50GW_WG_2021_Q4_NP	E235.F	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_BRGW_WG_2021_Q4_NP	E235.NO3-L	25-Nov-2021	----	----	----		27-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EV_WH50GW_WG_2021_Q4_NP	E235.NO3-L	25-Nov-2021	----	----	----		27-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_BRGW_WG_2021_Q4_NP	E235.NO2-L	25-Nov-2021	----	----	----		27-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EV_WH50GW_WG_2021_Q4_NP	E235.NO2-L	25-Nov-2021	----	----	----		27-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_BRGW_WG_2021_Q4_NP	E235.SO4	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE EV_WH50GW_WG_2021_Q4_NP	E235.SO4	25-Nov-2021	----	----	----		27-Nov-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_BRGW_WG_2021_Q4_NP	E375-T	25-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_WH50GW_WG_2021_Q4_NP	E375-T	25-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BRGW_WG_2021_Q4_NP	E318	25-Nov-2021	01-Dec-2021	----	----		03-Dec-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WH50GW_WG_2021_Q4_NP	E318	25-Nov-2021	01-Dec-2021	----	----		03-Dec-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BRGW_WG_2021_Q4_NP	E372-U	25-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WH50GW_WG_2021_Q4_NP	E372-U	25-Nov-2021	30-Nov-2021	----	----		30-Nov-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_BRGW_WG_2021_Q4_NP	E421.Cr-L	25-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_WH50GW_WG_2021_Q4_NP	E421.Cr-L	25-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_BRGW_WG_2021_Q4_NP	E509	25-Nov-2021	03-Dec-2021	----	----		03-Dec-2021	28 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_WH50GW_WG_2021_Q4_NP	E509	25-Nov-2021	03-Dec-2021	----	----		03-Dec-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_BRGW_WG_2021_Q4_NP	E421	25-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_WH50GW_WG_2021_Q4_NP	E421	25-Nov-2021	01-Dec-2021	----	----		02-Dec-2021	180 days	7 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_BRGW_WG_2021_Q4_NP	E358-L	25-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_WH50GW_WG_2021_Q4_NP	E358-L	25-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_BRGW_WG_2021_Q4_NP	E355-L	25-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	4 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WH50GW_WG_2021_Q4_NP	E355-L	25-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	4 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_BRGW_WG_2021_Q4_NP	E283	25-Nov-2021	----	----	----		30-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> EV_WH50GW_WG_2021_Q4_NP	E283	25-Nov-2021	----	----	----		30-Nov-2021	14 days	5 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_BRGW_WG_2021_Q4_NP	E290	25-Nov-2021	----	----	----		30-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_WH50GW_WG_2021_Q4_NP	E290	25-Nov-2021	----	----	----		30-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_BRGW_WG_2021_Q4_NP	E100	25-Nov-2021	----	----	----		30-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_WH50GW_WG_2021_Q4_NP	E100	25-Nov-2021	----	----	----		30-Nov-2021	28 days	5 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_WH50GW_WG_2021_Q4_NP	E125	25-Nov-2021	----	----	----		03-Dec-2021	0.25 hrs	188 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_BRGW_WG_2021_Q4_NP	E125	25-Nov-2021	----	----	----		03-Dec-2021	0.25 hrs	189 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE EV_WH50GW_WG_2021_Q4_NP	E108	25-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	117 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE EV_BRGW_WG_2021_Q4_NP	E108	25-Nov-2021	----	----	----		30-Nov-2021	0.25 hrs	118 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_BRGW_WG_2021_Q4_NP	E162	25-Nov-2021	----	----	----		01-Dec-2021	7 days	6 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE EV_WH50GW_WG_2021_Q4_NP	E162	25-Nov-2021	----	----	----		01-Dec-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE EV_BRGW_WG_2021_Q4_NP	E160-L	25-Nov-2021	----	----	----		01-Dec-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE EV_WH50GW_WG_2021_Q4_NP	E160-L	25-Nov-2021	----	----	----		01-Dec-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_BRGW_WG_2021_Q4_NP	E121	25-Nov-2021	----	----	----		28-Nov-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE EV_WH50GW_WG_2021_Q4_NP	E121	25-Nov-2021	----	----	----		28-Nov-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	355875	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355873	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	355923	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354110	1	3	33.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354111	1	3	33.3	5.0	✓
Conductivity in Water	E100	355871	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	356534	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	358749	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	356533	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	353906	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	353889	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	354108	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354112	1	3	33.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354113	1	3	33.3	5.0	✓
ORP by Electrode	E125	358653	1	20	5.0	5.0	✓
pH by Meter	E108	355872	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	354109	1	3	33.3	5.0	✓
TDS by Gravimetry	E162	355370	1	11	9.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	354436	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357269	1	14	7.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	353907	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354453	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	354434	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	355875	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355873	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	355923	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354110	1	3	33.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354111	1	3	33.3	5.0	✓
Conductivity in Water	E100	355871	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	356534	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	358749	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	356533	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	353906	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	353889	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	354108	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354112	1	3	33.3	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	354113	1	3	33.3	5.0	✓
ORP by Electrode	E125	358653	1	20	5.0	5.0	✓
pH by Meter	E108	355872	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	354109	1	3	33.3	5.0	✓
TDS by Gravimetry	E162	355370	1	11	9.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	354436	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357269	1	14	7.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	353907	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354453	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	355365	1	12	8.3	5.0	✓
Turbidity by Nephelometry	E121	354434	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	355875	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	355873	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	355923	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354110	1	3	33.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354111	1	3	33.3	5.0	✓
Conductivity in Water	E100	355871	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	356534	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	358749	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	356533	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	353906	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	353889	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	354108	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354112	1	3	33.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354113	1	3	33.3	5.0	✓
Sulfate in Water by IC	E235.SO4	354109	1	3	33.3	5.0	✓
TDS by Gravimetry	E162	355370	1	11	9.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	354436	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357269	1	14	7.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	353907	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354453	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	355365	1	12	8.3	5.0	✓
Turbidity by Nephelometry	E121	354434	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	355923	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	354110	1	3	33.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	354111	1	3	33.3	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	356534	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	358749	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	356533	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	353906	1	7	14.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	353889	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	354108	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	354112	1	3	33.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	354113	1	3	33.3	5.0	✓
Sulfate in Water by IC	E235.SO4	354109	1	3	33.3	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	354436	1	2	50.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	357269	1	14	7.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	353907	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	354453	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.





## QUALITY CONTROL REPORT

**Work Order** : **CG2106068**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jennifer Dane  
**Address** : RR#1 HIGHWAY #3  
                   Sparwood BC Canada V0B 2G1  
**Telephone** : ----  
**Project** : ELKVIEW OPERATIONS  
**PO** : VPO00798016  
**C-O-C number** : 20211125Q4GW  
**Sampler** : J. Batstone  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Lyudmyla Shvets  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Nov-2021 09:10  
**Date Analysis Commenced** : 26-Nov-2021  
**Issue Date** : 10-Dec-2021 08:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Parnian Sane	Analyst	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2106068  
Client : Teck Coal Limited  
Project : ELKVIEW OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 354434)</b>											
CG2106056-003	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 355370)</b>											
CG2106065-002	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 355871)</b>											
CG2106056-005	Anonymous	conductivity	----	E100	2.0	µS/cm	463	471	1.71%	10%	----
<b>Physical Tests (QC Lot: 355872)</b>											
CG2106056-005	Anonymous	pH	----	E108	0.10	pH units	7.80	7.80	0.00%	4%	----
<b>Physical Tests (QC Lot: 355873)</b>											
CG2106056-005	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	218	222	1.82%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	266	271	1.82%	20%	----
<b>Physical Tests (QC Lot: 355875)</b>											
CG2106057-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	5.6	4.8	0.8	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 358653)</b>											
CG2106057-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	285	277	3.06%	15%	----
<b>Anions and Nutrients (QC Lot: 353889)</b>											
CG2106057-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354108)</b>											
CG2106065-002	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354109)</b>											
CG2106065-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354110)</b>											
CG2106065-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354111)</b>											
CG2106065-002	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354112)</b>											
CG2106065-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354113)</b>											
CG2106065-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354436)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 354436) - continued</b>											
CG2106068-001	EV_BRGW_WG_2021_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0025	0.0023	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 354453)</b>											
CG2106056-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 355923)</b>											
CG2106056-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 357269)</b>											
CG2106057-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 353906)</b>											
CG2106057-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.54	0.54	0.001	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 353907)</b>											
CG2106057-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.52	0.56	0.04	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 356533)</b>											
CG2106067-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0024	0.0018	0.0006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00024	0.00024	0.000001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00020	0.00018	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.110	0.113	2.88%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	0.014	0.0004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0377 µg/L	0.0000308	0.0000069	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	156	158	1.52%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.36 µg/L	0.00034	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00070	0.00067	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0086	0.0086	0.00008	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	34.8	34.2	1.75%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.205	0.206	0.671%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000659	0.000674	2.27%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00184	0.00174	0.00010	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.30	1.29	1.31%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	95.2 µg/L	0.0909	4.64%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.06	5.18	2.32%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.35	2.36	0.336%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 356533) - continued</b>											
CG2106067-001	Anonymous	strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.181	0.185	2.44%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	62.7	65.2	3.89%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000010	0.000011	0.0000003	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00153	0.00148	2.93%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0050	0.0050	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 356534)</b>											
CG2106067-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 358749)</b>											
CG2106038-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 354434)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 355365)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 355370)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 355871)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 355873)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 355875)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	2.1	----
<b>Anions and Nutrients (QCLot: 353889)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 354108)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 354109)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 354110)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 354111)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 354112)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 354113)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 354436)</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 354453)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 355923)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 355923) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 357269)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 353906)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 353907)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 356533)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---





Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 356533) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 356534)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 358749)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 354434)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	---
<b>Physical Tests (QCLot: 355365)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	95.5	85.0	115	---
<b>Physical Tests (QCLot: 355370)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.1	85.0	115	---
<b>Physical Tests (QCLot: 355871)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.5	90.0	110	---
<b>Physical Tests (QCLot: 355872)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 355873)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 355875)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 358653)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 353889)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	94.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 354108)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 354109)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 354110)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	---
<b>Anions and Nutrients (QCLot: 354111)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 354112)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 354113)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 354436)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	99.3	80.0	120	---
<b>Anions and Nutrients (QCLot: 354453)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 354453) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	98.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 355923)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	107	85.0	115	----
<b>Anions and Nutrients (QCLot: 357269)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	100	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 353906)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 353907)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	109	80.0	120	----
<b>Dissolved Metals (QCLot: 356533)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.6	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	93.8	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	84.9	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	89.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.9	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	94.7	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.9	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.8	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.5	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	108	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.4	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.1	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 356533) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.5	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.9	80.0	120	----
<b>Dissolved Metals (QCLot: 356534)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	91.2	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 353889)</b>										
CG2106057-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0514 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 354108)</b>										
CG2106065-002	Anonymous	fluoride	16984-48-8	E235.F	1.08 mg/L	1 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 354109)</b>										
CG2106065-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 354110)</b>										
CG2106065-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.580 mg/L	0.5 mg/L	116	75.0	125	----
<b>Anions and Nutrients (QCLot: 354111)</b>										
CG2106065-002	Anonymous	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 354112)</b>										
CG2106065-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.68 mg/L	2.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 354113)</b>										
CG2106065-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.542 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 354436)</b>										
CG2106068-002	EV_WH50GW_WG_2021_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0581 mg/L	0.0676 mg/L	85.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 354453)</b>										
CG2106056-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0531 mg/L	0.0676 mg/L	78.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 355923)</b>										
CG2106056-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.107 mg/L	0.1 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 357269)</b>										
CG2106057-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.672 mg/L	2.5 mg/L	26.9	70.0	130	MSTN
<b>Organic / Inorganic Carbon (QCLot: 353906)</b>										
CG2106057-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	26.1 mg/L	23.9 mg/L	109	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 353907)</b>										
CG2106057-001	Anonymous	carbon, total organic [TOC]	----	E355-L	27.6 mg/L	23.9 mg/L	115	70.0	130	----
<b>Dissolved Metals (QCLot: 356533)</b>										
CG2106067-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.193 mg/L	0.2 mg/L	96.5	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 356533) - continued</b>										
CG2106067-002	Anonymous	antimony, dissolved	7440-36-0	E421	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00861 mg/L	0.01 mg/L	86.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	87.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00374 mg/L	0.004 mg/L	93.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0188 mg/L	0.02 mg/L	94.3	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0180 mg/L	0.02 mg/L	90.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0183 mg/L	0.02 mg/L	91.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0187 mg/L	0.02 mg/L	93.5	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0361 mg/L	0.04 mg/L	90.2	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.72 mg/L	4 mg/L	93.1	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.43 mg/L	10 mg/L	94.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00356 mg/L	0.004 mg/L	88.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00361 mg/L	0.004 mg/L	90.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0996 mg/L	0.1 mg/L	99.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.346 mg/L	0.4 mg/L	86.6	70.0	130	----
<b>Dissolved Metals (QCLot: 356534)</b>										
CG2106067-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0389 mg/L	0.04 mg/L	97.2	70.0	130	----
<b>Dissolved Metals (QCLot: 358749)</b>										
CG2106038-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000906 mg/L	0.0001 mg/L	90.6	70.0	130	----



## Qualifiers

Qualifier	Description
MSTN	<i>TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.</i>

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<b>COC ID:</b>	20211125Q4GW			<b>TURNAROUND TIME:</b>		<b>RUSH:</b>	
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>	
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary		Report Format / Distribution
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets		Excel PDF EDD
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com		Email 1: chris.emslie@teck.com X X X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE		Email 2: colby.bracken@teck.com X X X
Address	RR#1 HWY# 3						Email 3: Jennifer.Dane@teck.com X X X
							Email 4: Teck.Lab.Results@sharepoint.teck.com X X X
							Email 5: teckcoal@equisonline.com X
City	Sparwood	Province	BC	City	Calgary	Province	AB
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada
Phone Number	1-250-865-5289			Phone Number	403-407-1800		PO number
							VPO00798016

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cent.	TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL, Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_BRGW_WG_2021_Q4_NP	EV_BRGW	WG	N	11/25/21	12:30	G	5	1	1	1	1	1	1	1				1		
EV_WH50GW_WG_2021_Q4_NP	EV_WH50GW	WG	N	11/25/21	12:59	G	5	1	1	1	1	1	1	1				1		
<b>Total</b>							<b>10</b>													

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
	J. Batstone	November 25, 2021	<i>[Signature]</i>	11/26 9:10
<b>SERVICE REQUEST (rush - subject to availability)</b>	<b>Sampler's Name</b>	<b>Mobile #</b>		
Regular (default) X	J. Batstone			
Priority (2-3 business days) - 50% surcharge	<b>Sampler's Signature</b>	<b>Date/Time</b>	November 25, 2021 <i>[Signature]</i>	
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Wee				

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2106068**



Telephone : + 1 403 407 1800



## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>CG2106601</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Jennifer Dane <b>Address</b> : RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1 <b>Telephone</b> : ---- <b>Project</b> : ELKVIEW OPERATIONS <b>PO</b> : VPO00798016 <b>C-O-C number</b> : 20211209Q4GW <b>Sampler</b> : SH/BC <b>Site</b> : ---- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 1 <b>No. of samples analysed</b> : 1	<b>Page</b> : 1 of 6  <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Lyudmyla Shvets <b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5 <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 10-Dec-2021 09:20 <b>Date Analysis Commenced</b> : 10-Dec-2021 <b>Issue Date</b> : 07-Feb-2022 11:26
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### **Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_WF_SW_W	----	----	----	----
(Matrix: Water)					G_2021_Q4_NP					
					Client sampling date / time	09-Dec-2021 11:32	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106601-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	105	----	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	128	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	105	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	512	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	256	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	280	----	----	----	----	----
pH	----	E108	0.10	pH units	8.07	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	310	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	19.4	----	----	----	----	----
turbidity	----	E121	0.10	NTU	13.5	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.117	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.88	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.123	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0103	----	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0035	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	174	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.200	----	----	----	----	----
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.200	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.76	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID	EV_WF_SW_W	----	----	----	----
(Matrix: Water)					G_2021_Q4_NP					
					Client sampling date / time	09-Dec-2021 11:32	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2106601-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.59	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	5.81	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	5.39	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.8	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	3.75	----	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	----	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00307	----	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	----	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	25.5	----	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00047	----	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.627	----	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0124	----	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	46.6	----	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.222	----	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00134	----	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00098	----	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.90	----	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.187	----	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	0.274	----	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----



### Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	EV_WF_SW_W G_2021_Q4_NP	----	----	----	----
					Client sampling date / time	09-Dec-2021 11:32	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106601-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Dissolved Metals</b>										
sodium, dissolved	7440-23-5	E421	0.050	mg/L	3.91	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0240	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	60.4	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000376	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2106601</b>	Page	: 1 of 11
Amendment	: 1		
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jennifer Dane	Account Manager	: Lyudmyla Shvets
Address	: RR#1 HIGHWAY #3 Sparwood BC Canada V0B 2G1	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: ELKVIEW OPERATIONS	Date Samples Received	: 10-Dec-2021 09:20
PO	: VPO00798016	Issue Date	: 07-Feb-2022 11:26
C-O-C number	: 20211209Q4GW		
Sampler	: SH/BC		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q4_NP	E298	09-Dec-2021	11-Dec-2021	----	----		11-Dec-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_WF_SW_WG_2021_Q4_NP	E235.Br-L	09-Dec-2021	----	----	----		12-Dec-2021	28 days	3 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_WF_SW_WG_2021_Q4_NP	E235.Cl-L	09-Dec-2021	----	----	----		12-Dec-2021	28 days	3 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> EV_WF_SW_WG_2021_Q4_NP	E378-U	09-Dec-2021	----	----	----		11-Dec-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> EV_WF_SW_WG_2021_Q4_NP	E235.F	09-Dec-2021	----	----	----		12-Dec-2021	28 days	3 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_WF_SW_WG_2021_Q4_NP	E235.NO3-L	09-Dec-2021	----	----	----		12-Dec-2021	3 days	3 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> EV_WF_SW_WG_2021_Q4_NP	E235.NO2-L	09-Dec-2021	----	----	----		12-Dec-2021	3 days	3 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> EV_WF_SW_WG_2021_Q4_NP	E235.SO4	09-Dec-2021	----	----	----		12-Dec-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (Trace Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_WF_SW_WG_2021_Q4_NP	E375-T	09-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q4_NP	E318	09-Dec-2021	17-Dec-2021	----	----		20-Dec-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q4_NP	E372-U	09-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> EV_WF_SW_WG_2021_Q4_NP	E421.Cr-L	09-Dec-2021	14-Dec-2021	----	----		14-Dec-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> EV_WF_SW_WG_2021_Q4_NP	E509	09-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> EV_WF_SW_WG_2021_Q4_NP	E421	09-Dec-2021	14-Dec-2021	----	----		14-Dec-2021	180 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> EV_WF_SW_WG_2021_Q4_NP	E358-L	09-Dec-2021	10-Dec-2021	----	----		11-Dec-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EV_WF_SW_WG_2021_Q4_NP	E355-L	09-Dec-2021	10-Dec-2021	----	----		11-Dec-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : Acidity by Titration</b>											
HDPE EV_WF_SW_WG_2021_Q4_NP	E283	09-Dec-2021	----	----	----		13-Dec-2021	14 days	4 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE EV_WF_SW_WG_2021_Q4_NP	E290	09-Dec-2021	----	----	----		14-Dec-2021	14 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE EV_WF_SW_WG_2021_Q4_NP	E100	09-Dec-2021	----	----	----		14-Dec-2021	28 days	5 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE EV_WF_SW_WG_2021_Q4_NP	E125	09-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	198 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE EV_WF_SW_WG_2021_Q4_NP	E108	09-Dec-2021	----	----	----		14-Dec-2021	0.25 hrs	119 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE EV_WF_SW_WG_2021_Q4_NP	E162	09-Dec-2021	----	----	----		15-Dec-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] EV_WF_SW_WG_2021_Q4_NP	E160-L	09-Dec-2021	----	----	----		15-Dec-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE EV_WF_SW_WG_2021_Q4_NP	E121	09-Dec-2021	----	----	----		12-Dec-2021	3 days	3 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	366547	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	367205	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	365392	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	365681	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	365682	1	18	5.5	5.0	✓
Conductivity in Water	E100	367204	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	367378	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	369979	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	367379	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	364958	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	365474	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	365685	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	365683	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	365684	1	18	5.5	5.0	✓
ORP by Electrode	E125	370680	1	10	10.0	5.0	✓
pH by Meter	E108	367203	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	365680	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	367168	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	366712	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	371114	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	364962	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	365600	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	365590	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	366547	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	367205	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	365392	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	365681	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	365682	1	18	5.5	5.0	✓
Conductivity in Water	E100	367204	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	367378	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	369979	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	367379	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	364958	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	365474	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	365685	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	365683	1	18	5.5	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	365684	1	18	5.5	5.0	✓
ORP by Electrode	E125	370680	1	10	10.0	5.0	✓
pH by Meter	E108	367203	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	365680	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	367168	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	366712	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	371114	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	364962	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	365600	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	366765	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	365590	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	366547	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	367205	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	365392	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	365681	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	365682	1	18	5.5	5.0	✓
Conductivity in Water	E100	367204	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	367378	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	369979	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	367379	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	364958	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	365474	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	365685	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	365683	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	365684	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	365680	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	367168	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	366712	1	1	100.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	371114	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	364962	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	365600	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	366765	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	365590	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	365392	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	365681	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	365682	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	367378	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	369979	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Metals in Water by CRC ICPMS	E421	367379	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	364958	1	11	9.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	365474	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	365685	1	18	5.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	365683	1	18	5.5	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	365684	1	18	5.5	5.0	✔
Sulfate in Water by IC	E235.SO4	365680	1	18	5.5	5.0	✔
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T	366712	0	1	0.0	5.0	✖
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	371114	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	364962	1	11	9.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	365600	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (Trace Level)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.





## QUALITY CONTROL REPORT

**Work Order** : **CG2106601**  
**Amendment** : **1**

Page : 1 of 13

Client : Teck Coal Limited  
 Contact : Jennifer Dane  
 Address : RR#1 HIGHWAY #3  
 Sparwood BC Canada V0B 2G1  
 Telephone : ----  
 Project : ELKVIEW OPERATIONS  
 PO : VPO00798016  
 C-O-C number : 20211209Q4GW  
 Sampler : SH/BC  
 Site : ----  
 Quote number : Teck Coal Master Quote  
 No. of samples received : 1  
 No. of samples analysed : 1

Laboratory : Calgary - Environmental  
 Account Manager : Lyudmyla Shvets  
 Address : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
 Telephone : +1 403 407 1800  
 Date Samples Received : 10-Dec-2021 09:20  
 Date Analysis Commenced : 10-Dec-2021  
 Issue Date : 07-Feb-2022 11:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 365590)</b>											
CG2106573-005	Anonymous	turbidity	----	E121	0.10	NTU	6.50	6.57	1.07%	15%	----
<b>Physical Tests (QC Lot: 366547)</b>											
CG2106593-001	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	29.8	29.0	0.8	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 367168)</b>											
CG2106596-011	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	997	1030	3.40%	20%	----
<b>Physical Tests (QC Lot: 367203)</b>											
CG2106596-012	Anonymous	pH	----	E108	0.10	pH units	5.31	5.45	2.60%	4%	----
<b>Physical Tests (QC Lot: 367204)</b>											
CG2106597-001	Anonymous	conductivity	----	E100	2.0	µS/cm	412	420	1.92%	10%	----
<b>Physical Tests (QC Lot: 367205)</b>											
CG2106597-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	150	150	0.00%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	150	150	0.00%	20%	----
<b>Physical Tests (QC Lot: 370680)</b>											
CG2106596-004	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	294	296	0.610%	15%	----
<b>Anions and Nutrients (QC Lot: 365392)</b>											
CG2106540-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	12.5	mg/L	641	648	1.01%	20%	----
<b>Anions and Nutrients (QC Lot: 365474)</b>											
CG2106595-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 365600)</b>											
CG2106597-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0023	0.0022	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 365680)</b>											
CG2106573-013	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	796	795	0.232%	20%	----
<b>Anions and Nutrients (QC Lot: 365681)</b>											
CG2106573-013	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 365682)</b>											
CG2106573-013	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	8.32	7.94	4.62%	20%	----
<b>Anions and Nutrients (QC Lot: 365683)</b>											
CG2106573-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	1.27	1.24	2.13%	20%	----
<b>Anions and Nutrients (QC Lot: 365684)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 365684) - continued</b>											
CG2106573-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0118	0.0106	0.0012	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 365685)</b>											
CG2106573-013	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.283	0.276	0.007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 366712)</b>											
CG2106601-001	EV_WF_SW_WG_2021_Q4_NP	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0035	0.0030	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 371114)</b>											
CG2106593-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.250	mg/L	5.27	5.68	7.49%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 364958)</b>											
CG2106580-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.84	0.87	0.03	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 364962)</b>											
CG2106580-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	5.26	5.18	1.58%	20%	----
<b>Dissolved Metals (QC Lot: 367378)</b>											
CG2106544-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00014	0.00013	0.000005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 367379)</b>											
CG2106544-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0019	0.0018	0.00007	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	0.00011	0.0000008	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0158	0.0157	0.596%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0108 µg/L	0.0000106	0.00000010	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	47.6	46.1	3.34%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0026	0.0025	0.00004	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	12.9	12.6	2.29%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00103	0.00106	3.40%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.274	0.270	0.004	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	1.23 µg/L	0.00126	2.38%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.63	1.65	0.982%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 367379) - continued</b>											
CG2106544-001	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	0.508	0.498	1.91%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.139	0.134	3.89%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	17.3	17.0	1.62%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00144	0.00140	3.23%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0034	0.0034	0.00004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 369979)</b>											
CG2106596-004	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 365590)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 366547)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 366765)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 367168)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 367204)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 367205)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 365392)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 365474)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 365600)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 365680)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 365681)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 365682)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 365683)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 365684)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 365685)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 366712)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 366712) - continued</b>						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 371114)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 364958)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 364962)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 367378)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 367379)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---





Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 367379) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 369979)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 365590)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	93.6	85.0	115	---
<b>Physical Tests (QCLot: 366547)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 366765)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 367168)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	92.9	85.0	115	---
<b>Physical Tests (QCLot: 367203)</b>									
pH	---	E108	---	pH units	7 pH units	99.8	98.6	101	---
<b>Physical Tests (QCLot: 367204)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	104	90.0	110	---
<b>Physical Tests (QCLot: 367205)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 370680)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Anions and Nutrients (QCLot: 365392)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.8	85.0	115	---
<b>Anions and Nutrients (QCLot: 365474)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	96.4	80.0	120	---
<b>Anions and Nutrients (QCLot: 365600)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	84.1	80.0	120	---
<b>Anions and Nutrients (QCLot: 365680)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 365681)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 365682)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.3	90.0	110	---
<b>Anions and Nutrients (QCLot: 365683)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 365684)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 365685)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 365685) - continued</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.8	90.0	110	----
<b>Anions and Nutrients (QCLot: 366712)</b>									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	97.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 371114)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	100	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 364958)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	87.4	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 364962)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	91.1	80.0	120	----
<b>Dissolved Metals (QCLot: 367378)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 367379)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.3	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.7	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.1	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.8	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	102	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 367379) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	95.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.4	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	95.3	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.0	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 365392)</b>										
CG2106545-014	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.107 mg/L	0.1 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 365474)</b>										
CG2106595-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0509 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 365600)</b>										
CG2106597-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0503 mg/L	0.0676 mg/L	74.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 365680)</b>										
CG2106573-014	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	95.1 mg/L	100 mg/L	95.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 365681)</b>										
CG2106573-014	Anonymous	bromide	24959-67-9	E235.Br-L	0.508 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 365682)</b>										
CG2106573-014	Anonymous	chloride	16887-00-6	E235.Cl-L	95.2 mg/L	100 mg/L	95.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 365683)</b>										
CG2106573-014	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.38 mg/L	2.5 mg/L	95.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 365684)</b>										
CG2106573-014	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.480 mg/L	0.5 mg/L	96.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 365685)</b>										
CG2106573-014	Anonymous	fluoride	16984-48-8	E235.F	0.961 mg/L	1 mg/L	96.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 371114)</b>										
CG2106593-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	ND mg/L	2.5 mg/L	ND	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 364958)</b>										
CG2106580-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	21.9 mg/L	23.9 mg/L	91.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 364962)</b>										
CG2106580-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.2 mg/L	23.9 mg/L	92.7	70.0	130	----
<b>Dissolved Metals (QCLot: 367378)</b>										
CG2106580-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
<b>Dissolved Metals (QCLot: 367379)</b>										
CG2106580-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.192 mg/L	0.2 mg/L	96.0	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 367379) - continued</b>										
CG2106580-001	Anonymous	arsenic, dissolved	7440-38-2	E421	0.0213 mg/L	0.02 mg/L	107	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0392 mg/L	0.04 mg/L	98.1	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00879 mg/L	0.01 mg/L	87.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.098 mg/L	0.1 mg/L	97.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00420 mg/L	0.004 mg/L	105	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.14 mg/L	4 mg/L	103	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.93 mg/L	10 mg/L	89.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00413 mg/L	0.004 mg/L	103	70.0	130	----
		sodium, dissolved	7440-23-5	E421	1.83 mg/L	2 mg/L	91.6	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.1 mg/L	20 mg/L	95.4	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00376 mg/L	0.004 mg/L	94.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.387 mg/L	0.4 mg/L	96.7	70.0	130	----
<b>Dissolved Metals (QCLot: 369979)</b>										
CG2106596-005	Anonymous	mercury, dissolved	7439-97-6	E509	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----

COC ID: 20211209Q4GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution				
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	chris.emsle@teck.com	X	X	X
Project Manager	Jennifer Dane			Email	lyudmyla.shvets@alsglobal.com			Email 2:	colby.bracken@teck.com	X	X	X
Email	jennifer.dane@teck.com			Address	2559 29 Street NE			Email 3:	shaylee.cornors-aucopin@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharapoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 6:	Jennifer.Dane@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00741597			

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PRESERV.		Yes		No		Yes		No		Yes		No	
								TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CVI		
EV_WF_SW_WG_2021_Q4_NP	EV_WF_SW	WG	N	12/09/21	11:32	G	5			Nitric		Sulphuric		Sulphuric			NO	Sodium Bisulphate	HCl	NaOH	
							Total														5

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	S. Hansen/B. Clarke	December 9, 2021	<i>Refused</i>	12/10
				9:20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	S. Hansen/B. Clarke	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Sampler's Signature <td></td> <th>Date/Time</th>		Date/Time
Priority (2-3 business days) - 50% surcharge			December 9, 2021
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2106601**

60





SNC-Lavalin  
ATTN: KIM HARRER  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 02-OCT-21  
Report Date: 07-FEB-22 12:50 (MT)  
Version: FINAL REV. 3

Client Phone: 250-464-9108

## Certificate of Analysis

Lab Work Order #: L2646667  
Project P.O. #: 683032  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers:  
Legal Site Desc:

Opeyemi Adetola  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2646667-1 GW 01-OCT-21 12:30 RG_MW_GCA_W G_2021_10_01_NP	L2646667-2 GW 01-OCT-21 14:45 RG_MW_AC1A_W G_2021_10_01_NP	L2646667-3 GW 01-OCT-21 15:10 RG_MW_AC1B_W G_2021_10_01_NP	L2646667-4 GW 01-OCT-21 12:00 RG_MW_MC10B_ WG_2021_10_01_ NP	L2646667-5 GW 01-OCT-21 12:00 RG_MW_MC10C_ WG_2021_10_01_ NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1180	314	307	<2.0	<2.0
	Hardness (as CaCO3) (mg/L)	14.0	157	165	<0.50	<0.50
	pH (pH)	8.77	8.09	8.02	4.70	4.71
	ORP (mV)	406	448	463	525	500
	Total Suspended Solids (mg/L)	10.7	7.1	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	1290	245	193	11	22
	Turbidity (NTU)	556	2.78	0.30	<0.10	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	1.2	1.3
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	600	136	163	<1.0	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	57.6	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	657	136	163	<1.0	<1.0
	Ammonia as N (mg/L)	0.493	0.0318	0.0094	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	732	165	198	<5.0	<5.0
	Bromide (Br) (mg/L)	<0.25	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	34.6	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	8.42	0.88	0.70	<0.10	<0.10
	Fluoride (F) (mg/L)	2.90	0.260	0.146	<0.020	<0.020
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	97.3	94.6	93.1	0.0	0.0
	Nitrate and Nitrite (as N) (mg/L)	0.050	0.0689	0.0215	<0.0051	<0.0051
	Nitrate (as N) (mg/L)	0.042	0.0618	0.0215	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	0.0085	0.0071	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.631	0.081	0.078	<0.050	<0.050
	Total Nitrogen (mg/L)	0.682	0.150	0.099	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0362	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0578	0.0096	0.0032	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	69.7	47.5	16.9	<0.30	<0.30
	Anion Sum (meq/L)	15.0	3.74	3.63	<0.10	<0.10
	Cation Sum (meq/L)	14.6	3.54	3.38	<0.10	<0.10
	Cation - Anion Balance (%)	-1.3	-2.8	-3.6	0.0	0.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.21	2.69 <sup>DTC</sup>	2.19 <sup>DTC</sup>	<0.50	<0.50
	Total Organic Carbon (mg/L)	3.31	1.99 <sup>DTC</sup>	0.74 <sup>DTC</sup>	<0.50	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	LAB	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	4.50	0.0204	0.0016	<0.0010	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2646667-1 GW 01-OCT-21 12:30 RG_MW_GCA_W G_2021_10_01_NP	L2646667-2 GW 01-OCT-21 14:45 RG_MW_AC1A_W G_2021_10_01_NP	L2646667-3 GW 01-OCT-21 15:10 RG_MW_AC1B_W G_2021_10_01_NP	L2646667-4 GW 01-OCT-21 12:00 RG_MW_MC10B_ WG_2021_10_01_ NP	L2646667-5 GW 01-OCT-21 12:00 RG_MW_MC10C_ WG_2021_10_01_ NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	0.00218	0.00114	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00454	0.00157	0.00012	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.100	0.0508	0.0709	<0.00010	<0.00010
	Beryllium (Be)-Dissolved (mg/L)	0.000163	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.783	0.031	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000282	0.0000066	0.0000088	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	3.52	44.7	45.8	<0.050	<0.050
	Chromium (Cr)-Dissolved (mg/L)	0.00480	<0.00010	0.00017	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00037	0.00016	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00240	0.00029	0.00021	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	1.58	0.018	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	0.000375	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.906	0.0077	0.0039	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	1.27	11.0	12.3	<0.0050	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.0111	0.0397	0.00195	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00703	0.0120	0.000772	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00226	0.00063	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	0.110	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	3.07	0.91	0.44	<0.10	<0.10
	Selenium (Se)-Dissolved (mg/L)	0.00142	0.000553	0.000679	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	11.5	5.49	2.23	<0.050	<0.050
	Silver (Ag)-Dissolved (mg/L)	0.000014	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	313	8.52	1.57	<0.050	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.213	0.218	0.115	<0.00020	<0.00020
	Sulfur (S)-Dissolved (mg/L)	24.7	16.2	6.35	<0.50	<0.50
	Thallium (Tl)-Dissolved (mg/L)	0.000068	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	0.00040	0.00024	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.150	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.00205	0.000386	0.000594	<0.000010	<0.000010
	Vanadium (V)-Dissolved (mg/L)	0.00966	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0038	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	0.00594	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
SPL	Sample was Preserved at the laboratory - D-METALS: PRESERVED AT THE LAB

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Ammonia as N	MS-B	L2646667-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-L-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 1 of 15

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: KIM HARRER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5609256</b>							
<b>WG3631692-6</b>	<b>DUP</b>	<b>L2646667-5</b>						
Acidity (as CaCO3)		1.3	1.7	J	mg/L	0.4	2	04-OCT-21
<b>WG3631692-3</b>	<b>LCS</b>		105.2		%		85-115	04-OCT-21
Acidity (as CaCO3)			102.1		%		85-115	04-OCT-21
<b>WG3631692-4</b>	<b>LCS</b>							
Acidity (as CaCO3)			1.4		mg/L		2	04-OCT-21
<b>WG3631692-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	04-OCT-21
<b>WG3631692-2</b>	<b>MB</b>							
Acidity (as CaCO3)								
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616760</b>							
<b>WG3636605-4</b>	<b>LCS</b>		103.0		%		85-115	11-OCT-21
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-OCT-21
<b>WG3636605-2</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)								
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-3</b>	<b>DUP</b>	<b>L2646667-4</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	12-OCT-21
<b>WG3635658-2</b>	<b>LCS</b>		110.5		%		80-120	12-OCT-21
Beryllium (Be)-Dissolved			113.2		%		80-120	12-OCT-21
<b>WG3635658-6</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-OCT-21
<b>WG3635658-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-OCT-21
<b>WG3635658-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			106.4		%		70-130	12-OCT-21
<b>WG3635658-4</b>	<b>MS</b>	<b>L2646667-4</b>						
Beryllium (Be)-Dissolved								
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616760</b>							
<b>WG3636605-2</b>	<b>MB</b>		<5.0		mg/L		5	11-OCT-21
Bicarbonate (HCO3)								
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 2 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5614537</b>							
<b>WG3634371-7</b>	<b>DUP</b>	<b>L2646667-4</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	04-OCT-21
<b>WG3634371-2</b>	<b>LCS</b>							
Bromide (Br)			104.7		%		85-115	04-OCT-21
<b>WG3634371-6</b>	<b>LCS</b>							
Bromide (Br)			104.4		%		85-115	04-OCT-21
<b>WG3634371-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	04-OCT-21
<b>WG3634371-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	04-OCT-21
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5617773</b>							
<b>WG3638112-7</b>	<b>DUP</b>	<b>L2646667-4</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	14-OCT-21
<b>WG3638112-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			93.4		%		80-120	14-OCT-21
<b>WG3638112-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-OCT-21
<b>WG3638112-8</b>	<b>MS</b>	<b>L2646667-5</b>						
Dissolved Organic Carbon			77.9		%		70-130	14-OCT-21
<b>Batch</b>	<b>R5619767</b>							
<b>WG3638718-7</b>	<b>DUP</b>	<b>L2646667-1</b>						
Dissolved Organic Carbon		1.21	1.32		mg/L	9.3	20	14-OCT-21
<b>WG3638718-16</b>	<b>LCS</b>							
Dissolved Organic Carbon			87.0		%		80-120	14-OCT-21
<b>WG3638718-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			86.0		%		80-120	14-OCT-21
<b>WG3638718-15</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-OCT-21
<b>WG3638718-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-OCT-21
<b>WG3638718-8</b>	<b>MS</b>	<b>L2646667-2</b>						
Dissolved Organic Carbon			83.2		%		70-130	14-OCT-21
<b>Batch</b>	<b>R5623458</b>							
<b>WG3640014-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			87.9		%		80-120	14-OCT-21
<b>WG3640014-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-OCT-21



## Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 3 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5617773</b>							
<b>WG3638112-7</b>	<b>DUP</b>	<b>L2646667-4</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	14-OCT-21
<b>WG3638112-6</b>	<b>LCS</b>							
Total Organic Carbon			92.5		%		80-120	14-OCT-21
<b>WG3638112-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	14-OCT-21
<b>WG3638112-8</b>	<b>MS</b>	<b>L2646667-5</b>						
Total Organic Carbon			84.2		%		70-130	14-OCT-21
<b>Batch</b>	<b>R5619767</b>							
<b>WG3638718-16</b>	<b>LCS</b>							
Total Organic Carbon			85.6		%		80-120	14-OCT-21
<b>WG3638718-6</b>	<b>LCS</b>							
Total Organic Carbon			87.0		%		80-120	14-OCT-21
<b>WG3638718-15</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	14-OCT-21
<b>Batch</b>	<b>R5623458</b>							
<b>WG3640014-3</b>	<b>DUP</b>	<b>L2646667-1</b>						
Total Organic Carbon		3.31	3.35		mg/L	1.2	20	15-OCT-21
<b>WG3640014-2</b>	<b>LCS</b>							
Total Organic Carbon			93.1		%		80-120	14-OCT-21
<b>WG3640014-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	14-OCT-21
<b>WG3640014-4</b>	<b>MS</b>	<b>L2646667-2</b>						
Total Organic Carbon			88.7		%		70-130	14-OCT-21
Total Organic Carbon			88.7		%		70-130	14-OCT-21
Total Organic Carbon			89.6		%		70-130	15-OCT-21
<b>CL-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5614537</b>							
<b>WG3634371-7</b>	<b>DUP</b>	<b>L2646667-4</b>						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	04-OCT-21
<b>WG3634371-2</b>	<b>LCS</b>							
Chloride (Cl)			103.2		%		85-115	04-OCT-21
<b>WG3634371-6</b>	<b>LCS</b>							
Chloride (Cl)			103.0		%		85-115	04-OCT-21
<b>WG3634371-1</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	04-OCT-21
<b>WG3634371-5</b>	<b>MB</b>							
Chloride (Cl)			<0.10		mg/L		0.1	04-OCT-21





## Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 4 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CO3-CL</b>								
<b>Water</b>								
Batch R5616760								
WG3636605-2 MB								
Carbonate (CO3)								
			<5.0		mg/L		5	11-OCT-21
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch R5616760								
WG3636605-4 LCS								
Conductivity (@ 25C)								
			98.2		%		90-110	11-OCT-21
WG3636605-2 MB								
Conductivity (@ 25C)								
			<2.0		uS/cm		2	11-OCT-21
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch R5614537								
WG3634371-7 DUP								
Fluoride (F)								
		L2646667-4	<0.020	RPD-NA	mg/L	N/A	20	04-OCT-21
WG3634371-2 LCS								
Fluoride (F)								
			101.8		%		90-110	04-OCT-21
WG3634371-6 LCS								
Fluoride (F)								
			102.0		%		90-110	04-OCT-21
WG3634371-1 MB								
Fluoride (F)								
			<0.020		mg/L		0.02	04-OCT-21
WG3634371-5 MB								
Fluoride (F)								
			<0.020		mg/L		0.02	04-OCT-21
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
Batch R5609738								
WG3631495-10 LCS								
Mercury (Hg)-Dissolved								
			97.4		%		80-120	05-OCT-21
WG3631495-9 MB								
Mercury (Hg)-Dissolved								
			<0.000005C		mg/L		0.000005	05-OCT-21
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
Batch R5616504								
WG3635658-3 DUP								
Aluminum (Al)-Dissolved								
		L2646667-4	<0.0010	RPD-NA	mg/L	N/A	20	12-OCT-21
Antimony (Sb)-Dissolved								
			<0.00010	RPD-NA	mg/L	N/A	20	12-OCT-21
Arsenic (As)-Dissolved								
			<0.00010	RPD-NA	mg/L	N/A	20	12-OCT-21
Barium (Ba)-Dissolved								
			<0.00010	RPD-NA	mg/L	N/A	20	12-OCT-21
Bismuth (Bi)-Dissolved								
			<0.000050	RPD-NA	mg/L	N/A	20	12-OCT-21
Boron (B)-Dissolved								
			<0.010	RPD-NA	mg/L	N/A	20	12-OCT-21
Cadmium (Cd)-Dissolved								
			<0.0000050	RPD-NA	mg/L	N/A	20	12-OCT-21



## Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 5 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-3</b>	<b>DUP</b>	<b>L2646667-4</b>						
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	12-OCT-21
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-OCT-21
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-OCT-21
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	12-OCT-21
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	12-OCT-21
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	12-OCT-21
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	12-OCT-21
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	12-OCT-21
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-OCT-21
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	12-OCT-21
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	12-OCT-21
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	12-OCT-21
Potassium (K)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	12-OCT-21
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	12-OCT-21
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	12-OCT-21
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	12-OCT-21
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	12-OCT-21
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	12-OCT-21
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	12-OCT-21
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	12-OCT-21
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-OCT-21
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	12-OCT-21
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	12-OCT-21
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	12-OCT-21
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	12-OCT-21
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	12-OCT-21
<b>WG3635658-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			107.0		%		80-120	12-OCT-21
Antimony (Sb)-Dissolved			111.0		%		80-120	12-OCT-21
Arsenic (As)-Dissolved			104.3		%		80-120	12-OCT-21
Barium (Ba)-Dissolved			107.2		%		80-120	12-OCT-21
Bismuth (Bi)-Dissolved			110.2		%		80-120	12-OCT-21
Boron (B)-Dissolved			104.0		%		80-120	12-OCT-21
Cadmium (Cd)-Dissolved			105.2		%		80-120	12-OCT-21



## Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 6 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-2</b>	<b>LCS</b>							
Calcium (Ca)-Dissolved			109.7		%		80-120	12-OCT-21
Chromium (Cr)-Dissolved			105.7		%		80-120	12-OCT-21
Cobalt (Co)-Dissolved			105.4		%		80-120	12-OCT-21
Copper (Cu)-Dissolved			102.3		%		80-120	12-OCT-21
Iron (Fe)-Dissolved			108.7		%		80-120	12-OCT-21
Lead (Pb)-Dissolved			110.6		%		80-120	12-OCT-21
Lithium (Li)-Dissolved			112.0		%		80-120	12-OCT-21
Magnesium (Mg)-Dissolved			102.7		%		80-120	12-OCT-21
Manganese (Mn)-Dissolved			103.9		%		80-120	12-OCT-21
Molybdenum (Mo)-Dissolved			112.7		%		80-120	12-OCT-21
Nickel (Ni)-Dissolved			102.2		%		80-120	12-OCT-21
Phosphorus (P)-Dissolved			104.6		%		70-130	12-OCT-21
Potassium (K)-Dissolved			102.7		%		80-120	12-OCT-21
Selenium (Se)-Dissolved			108.3		%		80-120	12-OCT-21
Silicon (Si)-Dissolved			108.7		%		60-140	12-OCT-21
Silver (Ag)-Dissolved			117.6		%		80-120	12-OCT-21
Sodium (Na)-Dissolved			102.9		%		80-120	12-OCT-21
Strontium (Sr)-Dissolved			109.5		%		80-120	12-OCT-21
Sulfur (S)-Dissolved			114.0		%		80-120	12-OCT-21
Thallium (Tl)-Dissolved			107.2		%		80-120	12-OCT-21
Tin (Sn)-Dissolved			106.9		%		80-120	12-OCT-21
Titanium (Ti)-Dissolved			99.9		%		80-120	12-OCT-21
Uranium (U)-Dissolved			116.8		%		80-120	12-OCT-21
Vanadium (V)-Dissolved			106.3		%		80-120	12-OCT-21
Zinc (Zn)-Dissolved			98.0		%		80-120	12-OCT-21
Zirconium (Zr)-Dissolved			116.6		%		80-120	12-OCT-21
<b>WG3635658-6</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			107.4		%		80-120	12-OCT-21
Antimony (Sb)-Dissolved			109.4		%		80-120	12-OCT-21
Arsenic (As)-Dissolved			109.1		%		80-120	12-OCT-21
Barium (Ba)-Dissolved			111.3		%		80-120	12-OCT-21
Bismuth (Bi)-Dissolved			98.3		%		80-120	12-OCT-21
Boron (B)-Dissolved			101.2		%		80-120	12-OCT-21
Cadmium (Cd)-Dissolved			109.7		%		80-120	12-OCT-21



## Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 7 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-6</b>		<b>LCS</b>						
Calcium (Ca)-Dissolved			110.3		%		80-120	12-OCT-21
Chromium (Cr)-Dissolved			104.9		%		80-120	12-OCT-21
Cobalt (Co)-Dissolved			105.1		%		80-120	12-OCT-21
Copper (Cu)-Dissolved			104.1		%		80-120	12-OCT-21
Iron (Fe)-Dissolved			106.9		%		80-120	12-OCT-21
Lead (Pb)-Dissolved			106.8		%		80-120	12-OCT-21
Lithium (Li)-Dissolved			108.5		%		80-120	12-OCT-21
Magnesium (Mg)-Dissolved			101.9		%		80-120	12-OCT-21
Manganese (Mn)-Dissolved			105.0		%		80-120	12-OCT-21
Molybdenum (Mo)-Dissolved			109.5		%		80-120	12-OCT-21
Nickel (Ni)-Dissolved			103.1		%		80-120	12-OCT-21
Phosphorus (P)-Dissolved			106.2		%		70-130	12-OCT-21
Potassium (K)-Dissolved			107.0		%		80-120	12-OCT-21
Selenium (Se)-Dissolved			118.0		%		80-120	12-OCT-21
Silicon (Si)-Dissolved			106.9		%		60-140	12-OCT-21
Silver (Ag)-Dissolved			113.7		%		80-120	12-OCT-21
Sodium (Na)-Dissolved			105.6		%		80-120	12-OCT-21
Strontium (Sr)-Dissolved			104.3		%		80-120	12-OCT-21
Sulfur (S)-Dissolved			104.0		%		80-120	12-OCT-21
Thallium (Tl)-Dissolved			105.3		%		80-120	12-OCT-21
Tin (Sn)-Dissolved			103.5		%		80-120	12-OCT-21
Titanium (Ti)-Dissolved			103.5		%		80-120	12-OCT-21
Uranium (U)-Dissolved			114.4		%		80-120	12-OCT-21
Vanadium (V)-Dissolved			107.9		%		80-120	12-OCT-21
Zinc (Zn)-Dissolved			104.1		%		80-120	12-OCT-21
Zirconium (Zr)-Dissolved			111.9		%		80-120	12-OCT-21
<b>WG3635658-1</b>		<b>MB</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-OCT-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-OCT-21
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	12-OCT-21



## Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 8 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-1 MB</b>								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-OCT-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-OCT-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-OCT-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-OCT-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-OCT-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-OCT-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	12-OCT-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-OCT-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-OCT-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-OCT-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	12-OCT-21
<b>WG3635658-5 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-OCT-21
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-OCT-21
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-OCT-21



## Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 9 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-5</b>	<b>MB</b>							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-OCT-21
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-OCT-21
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-OCT-21
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-OCT-21
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-OCT-21
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-21
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-21
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-OCT-21
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-OCT-21
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	12-OCT-21
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-21
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-21
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-OCT-21
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-21
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-OCT-21
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-OCT-21
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	12-OCT-21
<b>WG3635658-4</b>	<b>MS</b>	<b>L2646667-4</b>						
Aluminum (Al)-Dissolved			110.6		%		70-130	12-OCT-21
Antimony (Sb)-Dissolved			106.6		%		70-130	12-OCT-21
Arsenic (As)-Dissolved			107.2		%		70-130	12-OCT-21
Barium (Ba)-Dissolved			109.4		%		70-130	12-OCT-21
Bismuth (Bi)-Dissolved			111.3		%		70-130	12-OCT-21
Boron (B)-Dissolved			104.1		%		70-130	12-OCT-21
Cadmium (Cd)-Dissolved			110.1		%		70-130	12-OCT-21



## Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 10 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5616504</b>							
<b>WG3635658-4</b>	<b>MS</b>	<b>L2646667-4</b>						
Calcium (Ca)-Dissolved			106.9		%		70-130	12-OCT-21
Chromium (Cr)-Dissolved			106.8		%		70-130	12-OCT-21
Cobalt (Co)-Dissolved			107.2		%		70-130	12-OCT-21
Copper (Cu)-Dissolved			108.3		%		70-130	12-OCT-21
Iron (Fe)-Dissolved			107.9		%		70-130	12-OCT-21
Lead (Pb)-Dissolved			112.3		%		70-130	12-OCT-21
Lithium (Li)-Dissolved			109.4		%		70-130	12-OCT-21
Magnesium (Mg)-Dissolved			106.4		%		70-130	12-OCT-21
Manganese (Mn)-Dissolved			107.2		%		70-130	12-OCT-21
Molybdenum (Mo)-Dissolved			103.7		%		70-130	12-OCT-21
Nickel (Ni)-Dissolved			106.9		%		70-130	12-OCT-21
Phosphorus (P)-Dissolved			103.9		%		70-130	12-OCT-21
Potassium (K)-Dissolved			108.8		%		70-130	12-OCT-21
Selenium (Se)-Dissolved			113.1		%		70-130	12-OCT-21
Silicon (Si)-Dissolved			99.8		%		70-130	12-OCT-21
Silver (Ag)-Dissolved			116.3		%		70-130	12-OCT-21
Sodium (Na)-Dissolved			107.2		%		70-130	12-OCT-21
Strontium (Sr)-Dissolved			111.5		%		70-130	12-OCT-21
Thallium (Tl)-Dissolved			109.2		%		70-130	12-OCT-21
Tin (Sn)-Dissolved			103.6		%		70-130	12-OCT-21
Titanium (Ti)-Dissolved			101.7		%		70-130	12-OCT-21
Uranium (U)-Dissolved			111.7		%		70-130	12-OCT-21
Vanadium (V)-Dissolved			108.5		%		70-130	12-OCT-21
Zinc (Zn)-Dissolved			104.9		%		70-130	12-OCT-21
Zirconium (Zr)-Dissolved			103.4		%		70-130	12-OCT-21
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5620876</b>							
<b>WG3639116-16</b>	<b>DUP</b>	<b>L2646667-1</b>						
Ammonia as N		0.493	0.486		mg/L	1.4	20	16-OCT-21
<b>WG3639116-14</b>	<b>LCS</b>							
Ammonia as N			111.9		%		85-115	16-OCT-21
<b>WG3639116-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	16-OCT-21
<b>WG3639116-15</b>	<b>MS</b>	<b>L2646667-1</b>						
Ammonia as N			N/A	MS-B	%		-	16-OCT-21



## Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 11 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5614537</b>							
<b>WG3634371-7</b>	<b>DUP</b>	<b>L2646667-4</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-OCT-21
<b>WG3634371-2</b>	<b>LCS</b>							
Nitrite (as N)			101.2		%		90-110	04-OCT-21
<b>WG3634371-6</b>	<b>LCS</b>							
Nitrite (as N)			100.7		%		90-110	04-OCT-21
<b>WG3634371-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	04-OCT-21
<b>WG3634371-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	04-OCT-21
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5614537</b>							
<b>WG3634371-7</b>	<b>DUP</b>	<b>L2646667-4</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	04-OCT-21
<b>WG3634371-2</b>	<b>LCS</b>							
Nitrate (as N)			103.8		%		90-110	04-OCT-21
<b>WG3634371-6</b>	<b>LCS</b>							
Nitrate (as N)			103.4		%		90-110	04-OCT-21
<b>WG3634371-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	04-OCT-21
<b>WG3634371-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	04-OCT-21
<b>OH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5616760</b>							
<b>WG3636605-2</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	11-OCT-21
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5615974</b>							
<b>WG3636004-4</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	12-OCT-21
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5614573</b>							
<b>WG3634419-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			102.7		%		80-120	08-OCT-21
<b>WG3634419-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-OCT-21





## Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 12 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>								
<b>Water</b>								
Batch R5616760								
WG3636605-4 LCS								
pH								
			7.03		pH		6.9-7.1	11-OCT-21
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch R5607583								
WG3630932-2 LCS								
Orthophosphate-Dissolved (as P)								
			101.0		%		80-120	04-OCT-21
WG3630932-6 LCS								
Orthophosphate-Dissolved (as P)								
			92.7		%		80-120	04-OCT-21
WG3630932-1 MB								
Orthophosphate-Dissolved (as P)								
			<0.0010		mg/L		0.001	04-OCT-21
WG3630932-5 MB								
Orthophosphate-Dissolved (as P)								
			<0.0010		mg/L		0.001	04-OCT-21
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch R5614537								
WG3634371-7 DUP								
Sulfate (SO4)								
		L2646667-4 <0.30	<0.30	RPD-NA	mg/L	N/A	20	04-OCT-21
WG3634371-2 LCS								
Sulfate (SO4)								
			104.6		%		90-110	04-OCT-21
WG3634371-6 LCS								
Sulfate (SO4)								
			107.4		%		90-110	04-OCT-21
WG3634371-1 MB								
Sulfate (SO4)								
			<0.30		mg/L		0.3	04-OCT-21
WG3634371-5 MB								
Sulfate (SO4)								
			<0.30		mg/L		0.3	04-OCT-21
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch R5614736								
WG3633133-2 LCS								
Total Dissolved Solids								
			98.7		%		85-115	07-OCT-21
WG3633133-1 MB								
Total Dissolved Solids								
			<10		mg/L		10	07-OCT-21
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch R5616643								
WG3636658-3 DUP								
Total Kjeldahl Nitrogen								
		L2646667-4 <0.050	<0.050	RPD-NA	mg/L	N/A	20	21-OCT-21
WG3636658-10 LCS								
Total Kjeldahl Nitrogen								
			84.0		%		75-125	12-OCT-21
WG3636658-11 LCS								



## Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 13 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5616643</b>							
<b>WG3636658-11</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			77.0		%		75-125	12-OCT-21
<b>WG3636658-12</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			81.0		%		75-125	12-OCT-21
<b>WG3636658-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-OCT-21
<b>WG3636658-8</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-OCT-21
<b>WG3636658-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-OCT-21
<b>WG3636658-4</b>	<b>MS</b>	<b>L2646667-5</b>						
Total Kjeldahl Nitrogen			80.0		%		70-130	12-OCT-21
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5614675</b>							
<b>WG3633132-2</b>	<b>LCS</b>							
Total Suspended Solids			90.2		%		85-115	07-OCT-21
<b>WG3633132-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	07-OCT-21
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R5607292</b>							
<b>WG3630786-3</b>	<b>DUP</b>	<b>L2646667-1</b>						
Turbidity		556	573		NTU	3.0	15	04-OCT-21
<b>WG3630786-2</b>	<b>LCS</b>							
Turbidity			92.7		%		85-115	04-OCT-21
<b>WG3630786-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	04-OCT-21

# Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 14 of 15

## Legend:

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Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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# Quality Control Report

Workorder: L2646667

Report Date: 07-FEB-22

Page 15 of 15

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	01-OCT-21 12:30	12-OCT-21 13:15	0.25	265	hours	EHTR-FM
	2	01-OCT-21 14:45	12-OCT-21 13:15	0.25	263	hours	EHTR-FM
	3	01-OCT-21 15:10	12-OCT-21 13:15	0.25	262	hours	EHTR-FM
	4	01-OCT-21 12:00	12-OCT-21 13:15	0.25	265	hours	EHTR-FM
	5	01-OCT-21 12:00	12-OCT-21 13:15	0.25	265	hours	EHTR-FM
pH							
	1	01-OCT-21 12:30	11-OCT-21 00:00	0.25	228	hours	EHTR-FM
	2	01-OCT-21 14:45	11-OCT-21 00:00	0.25	225	hours	EHTR-FM
	3	01-OCT-21 15:10	11-OCT-21 00:00	0.25	225	hours	EHTR-FM
	4	01-OCT-21 12:00	11-OCT-21 00:00	0.25	228	hours	EHTR-FM
	5	01-OCT-21 12:00	11-OCT-21 00:00	0.25	228	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2646667 were received on 02-OCT-21 10:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



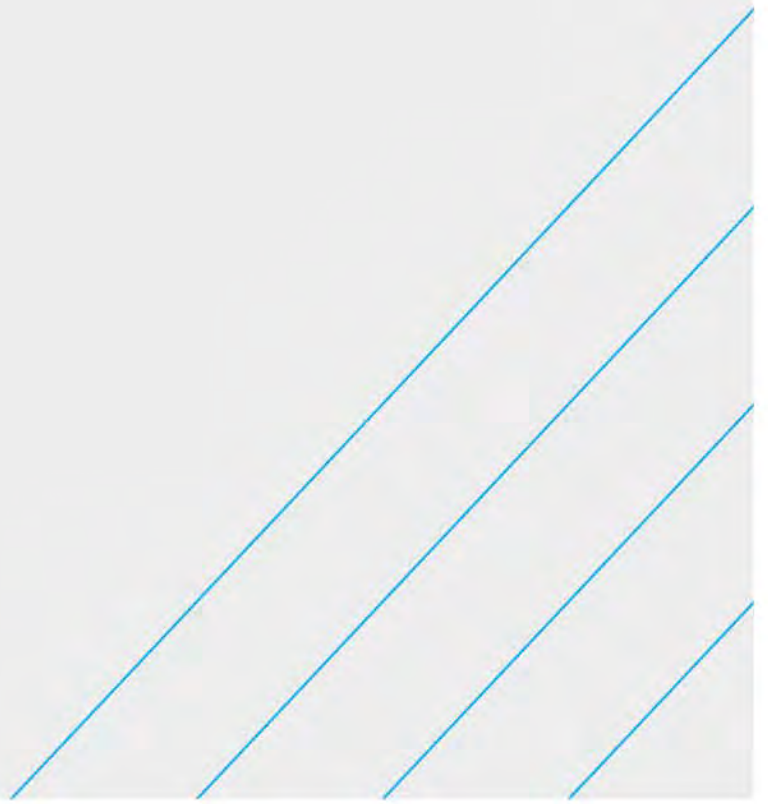
L2646667-COFC

Report To		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																																																																																																																																													
Company: SNC-Lavalin ~Nelson		Select Report Format: <input type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																																																																																																																																													
Contact: Kim Harrer		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> <input type="checkbox"/> NO		PRIORITY (Business Days)			EMERGENCY																																																																																																																																										
Phone: Tel.:250-464-9108		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%] <input type="checkbox"/>			1 Business day [E1 - 100%] <input type="checkbox"/>																																																																																																																																										
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>			Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>																																																																																																																																										
Street: 520 Lake Street		Emails: SNC - 'Kim.Harrer', 'Alex.Heathcott'		Date and Time Required for all E&P TATs:																																																																																																																																													
City/Province: Nelson, BC		Vicky.Lipinski@snc.lavalin.com		For tests that can not be performed according to the service level selected, you will be contacted.																																																																																																																																													
Postal Code: V1L 4C6		Teck: Cam.Jaeger@teck.com, teck.lab.results@teck.com		Analysis Request																																																																																																																																													
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																																																																																																													
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL - <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		F/P P F/P																																																																																																																																													
Company:		Emails: Kim.Harrer@snc.lavalin.com		<table border="1"> <thead> <tr> <th>DOC (C-DIS-ORG-LOW-CL)</th> <th>TOC (C-TOT-ORG-LOW-CL)</th> <th>BC MDG D-Met + Hg (MET-D-BCMDGG-CL)</th> <th>Total N Calc. (N-T-CALC-CL)</th> <th>Nitrate + Nitrite Calc. (N2N3-CALC-CL)</th> <th>Teck Routine (TECKCOAL-ROUTINE-CL)</th> <th>TKN (TKN-L-F-CL)</th> <th>Bicarbonate (BIC-CL)</th> <th>Carbonate (CO3-CL)</th> <th>Hydroxide (OH-CL)</th> <th>SAMPLES ON HOLD</th> <th>Sample is hazardous (please provide further details)</th> <th>NUMBER OF CONTAINERS</th> </tr> </thead> <tbody> <tr> <td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td></td><td></td><td>5</td> </tr> <tr> <td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td></td><td></td><td>5</td> </tr> <tr> <td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td></td><td></td><td>5</td> </tr> <tr> <td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td></td><td></td><td>5</td> </tr> <tr> <td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td>R</td><td></td><td></td><td>5</td> </tr> <tr> <td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td></td><td></td><td><del>5</del></td> </tr> <tr> <td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td></td><td></td><td><del>5</del></td> </tr> <tr> <td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td></td><td></td><td><del>5</del></td> </tr> <tr> <td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td><del>R</del></td><td></td><td></td><td><del>5</del></td> </tr> </tbody> </table>												DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met + Hg (MET-D-BCMDGG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS	R	R	R	R	R	R	R	R	R	R			5	R	R	R	R	R	R	R	R	R	R			5	R	R	R	R	R	R	R	R	R	R			5	R	R	R	R	R	R	R	R	R	R			5	R	R	R	R	R	R	R	R	R	R			5	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>			<del>5</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>			<del>5</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>			<del>5</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>			<del>5</del>
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Company Contact:		payables@snc.lavalin.com																																																																																																																																															
Project Information		Oil and Gas Required Fields (client use)																																																																																																																																															
ALS Account # / Quote #: MOR125 / Q78198		AFE/Cost Center: PO#																																																																																																																																															
Job #: RGMP		Major/Minor Code: Routing Code:																																																																																																																																															
PO / AFE: 683032		Requisitioner:																																																																																																																																															
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ALS Lab Work Order # (lab use only):		ALS Contact: Patrick																																																																																																																																															
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ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type																																																																																																																																												
	RG.MW-GCA-WL-2021-10-01-NP	RG.MW-GCA	01-Oct-21	1230	GW																																																																																																																																												
	RG.MW-ACIA-WL-2021-10-01-NP	RG.MW-ACIA	01-Oct-21	1445	GW																																																																																																																																												
	RG.MW-ACIB-WL-2021-10-01-NP	RG.MW-ACIB	01-Oct-21	1510	GW																																																																																																																																												
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Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)																																																																																																																																													
Are samples taken from a Regulated DW System? <input type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																																																																																																																																													
Are samples for human consumption/ use? <input type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																																																																																																																																													
		No preservative in D-metals - Hg vial preserved.		Cooling Initiated <input type="checkbox"/>																																																																																																																																													
		REP: Regional Effects Program FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		INITIAL COOLER TEMPERATURES °C																																																																																																																																													
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SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)																																																																																																																																													
Released by: Shawn Edwitt		Received by:		Received by:																																																																																																																																													
Date: 1 Oct 2021		Date:		Date: 02/10																																																																																																																																													
Time: 1700		Time:		Time: 10:10 AM																																																																																																																																													

7.8c

# Certificates of Analysis 2021 SSGMP and RGMP Report

- › Coal Mountain Mine



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100193**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Jay Jones  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : 250 425 6305 / 250-425-2555  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q1\_20210204-MW6  
**Sampler** : SH  
**Site** : ---  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 25-Feb-2021 08:50  
**Date Analysis Commenced** : 25-Feb-2021  
**Issue Date** : 15-Nov-2021 12:52

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW6-DP_ WG_2021-01-1 1_N	CM_MW6-SH_ WG_2021-01-1 1_N	----	----	----
Client sampling date / time					24-Feb-2021 14:50	24-Feb-2021 13:35	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100193-001 Result	CG2100193-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	686	214	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	836	262	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	16.4	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	9.8	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	702	214	----	----	----	
conductivity	----	E100	2.0	µS/cm	1200	413	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	32.6	83.4	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	261	250	----	----	----	
pH	----	E108	0.10	pH units	8.36	8.08	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	798 <sup>DLHC</sup>	270 <sup>DLHC</sup>	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	15.8	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	16.1	1.09	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.748 <sup>DLM</sup>	0.0211	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.086	0.084	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	35.1	20.2	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.341	1.27	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.678	<0.050	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.111	0.468	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0011	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0235	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0379	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	6.32	3.61	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.76	2.09	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.93	2.14	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW6-DP_ WG_2021-01-1 1_N	CM_MW6-SH_ WG_2021-01-1 1_N	---	---	---
Client sampling date / time					24-Feb-2021 14:50	24-Feb-2021 13:35	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2100193-001 Result	CG2100193-002 Result	----- ---	----- ---	----- ---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	15.2	5.02	----	----	----	
cation sum	----	EC101	0.10	meq/L	14.1	4.64	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.8	92.4	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.75	3.93	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0040	0.0028	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00071	0.00066	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.316	0.128	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.248	0.036	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	8.60	21.3	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.088	0.181	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.386	0.0416	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.69	7.33	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0664	0.252	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00157	0.00538	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.06	0.297	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.00	3.28	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	306	67.9	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW6-DP_ WG_2021-01-1 1_N	CM_MW6-SH_ WG_2021-01-1 1_N	----	----	----
Client sampling date / time					24-Feb-2021 14:50	24-Feb-2021 13:35	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100193-001 Result	CG2100193-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.04	0.210	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.59	0.93	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00011	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000759	0.000497	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100199**  
**Client** : **Teck Coal Limited**  
**Contact** : Jay Jones  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : 250 425 6305  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q1\_20210225-MW4,7-8  
**Sampler** : SH/JD  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Feb-2021 08:45  
**Date Analysis Commenced** : 26-Feb-2021  
**Issue Date** : 08-Mar-2021 15:42

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebeccah Baker	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
IB:INT	Ion Balance Reviewed: Imbalance is due to interference or non-measured component.



## Analytical Results

Sub-Matrix: Water  
 (Matrix: Water)

Client sample ID

					CM_MW4-SH_ WG_2021-01-1 1_N	CM_MW4-DP_ WG_2021-01-1 1_N	CM_MW7-DP_ WG_2021-01-1 1_N	CM_MW7-SH_ WG_2021-01-1 1_N	CM_MW8_WG_ 2021-01-11_N
Client sampling date / time					25-Feb-2021 14:30	25-Feb-2021 14:20	25-Feb-2021 12:00	25-Feb-2021 11:40	25-Feb-2021 12:35
Analyte	CAS Number	Method	LOR	Unit	CG2100199-001	CG2100199-002	CG2100199-003	CG2100199-004	CG2100199-005
					Result	Result	Result	Result	Result
<b>Physical Tests</b>									
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	<2.0	14.5	7.4	6.1
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	622	939	387	286	339
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	12.2	11.6	<1.0	<1.0	<1.0
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	635	951	387	286	339
conductivity	---	E100	2.0	µS/cm	1500	3050	2160	902	679
hardness (as CaCO3), dissolved	---	EC100	0.60	mg/L	28.7	31.1	1550	553	327
oxidation-reduction potential [ORP]	---	E125	0.10	mV	306	413	338	348	327
pH	---	E108	0.10	pH units	8.33	8.31	7.49	7.65	7.97
solids, total dissolved [TDS]	---	E162	10	mg/L	900 <sup>DLHC</sup>	1810 <sup>DLHC</sup>	1860 <sup>DLHC</sup>	613 <sup>DLHC</sup>	448 <sup>DLHC</sup>
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	1.4	1.4	2.5	405 <sup>DLHC</sup>	307
turbidity	---	E121	0.10	NTU	1.18	7.36	0.41	226	170
bicarbonate	71-52-3	E290	1.0	mg/L	759	1140	472	349	414
carbonate	3812-32-6	E290	1.0	mg/L	7.3	7.0	<1.0	<1.0	<1.0
hydroxide	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.423	0.657 <sup>DLM</sup>	0.637 <sup>DLM</sup>	0.133	0.981 <sup>DLM</sup>
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.532 <sup>DLHC</sup>	1.90 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.050
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	164 <sup>DLHC</sup>	550 <sup>DLHC</sup>	3.99 <sup>DLHC</sup>	10.8 <sup>DLHC</sup>	1.47
fluoride	16984-48-8	E235.F	0.020	mg/L	0.336 <sup>DLHC</sup>	0.319 <sup>DLHC</sup>	<0.100 <sup>DLHC</sup>	0.199 <sup>DLHC</sup>	0.258
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.437	0.584	0.242	0.413	1.07 <sup>DLM</sup>
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0949 <sup>DLHC</sup>	0.0302 <sup>DLHC</sup>	0.595 <sup>DLHC</sup>	0.0881 <sup>DLHC</sup>	0.0145
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	0.0250 <sup>DLHC</sup>	0.0074 <sup>DLHC</sup>	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0099	0.0102	0.0052	<0.0010	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0100	0.0105	0.0026	0.0905 <sup>DLHC</sup>	0.216 <sup>DLHC</sup>
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<1.50 <sup>DLHC</sup>	<1.50 <sup>DLHC</sup>	1100 <sup>DLHC</sup>	237 <sup>DLHC</sup>	83.8
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	<0.50	<0.50	<0.50	2.02	0.61
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	<0.50	<0.50	<0.50	7.25	6.79



## Analytical Results

Sub-Matrix: Water  
 (Matrix: Water)

Client sample ID

					CM_MW4-SH_ WG_2021-01-1 1_N	CM_MW4-DP_ WG_2021-01-1 1_N	CM_MW7-DP_ WG_2021-01-1 1_N	CM_MW7-SH_ WG_2021-01-1 1_N	CM_MW8_WG_ 2021-01-11_N
Client sampling date / time					25-Feb-2021 14:30	25-Feb-2021 14:20	25-Feb-2021 12:00	25-Feb-2021 11:40	25-Feb-2021 12:35
Analyte	CAS Number	Method	LOR	Unit	CG2100199-001	CG2100199-002	CG2100199-003	CG2100199-004	CG2100199-005
					Result	Result	Result	Result	Result
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	17.3	34.5	30.8	11.0	8.58
cation sum	----	EC101	0.10	meq/L	15.5	31.0	32.1	11.7	8.56
ion balance (cations/anions ratio)	----	EC101	0.010	%	89.6 <sup>IB:INT</sup>	89.8 <sup>IB:INT</sup>	104	106	99.8
ion balance (cation-anion difference)	----	EC101	0.010	%	5.49	5.34	2.07	3.08	0.117
<b>Dissolved Metals</b>									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0026	<0.0050 <sup>DLA</sup>	0.0220	0.0012	0.0025
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	0.00043	0.00013	<0.00020 <sup>DLA</sup>
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	0.00132	0.00035
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.325	0.580	0.0144	0.0294	0.110
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.100 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	<0.020	<0.040 <sup>DLA</sup>
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000250 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.322	0.392	0.052	0.017	0.241
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0100 <sup>DLA</sup>	<0.0250 <sup>DLA</sup>	0.0920	<0.0050	<0.0100 <sup>DLA</sup>
calcium, dissolved	7440-70-2	E421	0.050	mg/L	7.38	8.91	387	149	89.9
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.50 <sup>DLA</sup>	0.48	0.44	<0.20 <sup>DLA</sup>
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	0.00078	<0.00020	<0.00040 <sup>DLA</sup>
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.083	0.087	<0.020 <sup>DLA</sup>	2.33	2.19
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000250 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.481	1.17	0.0555	0.0065	0.0619
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.50	2.16	141	44.0	25.0
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00459	0.00341	0.208	0.156	0.142
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000669	0.000406	0.000280	0.00116	0.000423
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00250 <sup>DLA</sup>	0.0152	0.00172	<0.00100 <sup>DLA</sup>
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.02	1.34	2.58	1.71	2.95
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.100 <sup>DLA</sup>	<0.250 <sup>DLA</sup>	1.59	0.067	0.100
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.97	4.02	2.66	4.95	6.77
silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000023	0.000062	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>
sodium, dissolved	17341-25-2	E421	0.050	mg/L	341	696	24.2	12.4	41.1





## Analytical Results

Sub-Matrix: Water  
 (Matrix: Water)

Client sample ID

					CM_MW4-SH_WG_2021-01-11_N	CM_MW4-DP_WG_2021-01-11_N	CM_MW7-DP_WG_2021-01-11_N	CM_MW7-SH_WG_2021-01-11_N	CM_MW8_WG_2021-01-11_N
Client sampling date / time					25-Feb-2021 14:30	25-Feb-2021 14:20	25-Feb-2021 12:00	25-Feb-2021 11:40	25-Feb-2021 12:35
Analyte	CAS Number	Method	LOR	Unit	CG2100199-001	CG2100199-002	CG2100199-003	CG2100199-004	CG2100199-005
					Result	Result	Result	Result	Result
<b>Dissolved Metals</b>									
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.868	1.36	0.913	0.468	6.05
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<1.00 <sup>DLA</sup>	<2.50 <sup>DLA</sup>	395	80.9	31.0
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000050 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	0.00024	<0.00010	<0.00020 <sup>DLA</sup>
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00150 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00030	<0.00060 <sup>DLA</sup>
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000050 <sup>DLA</sup>	0.00485	0.000610	0.000351
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00250 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	<0.00050	<0.00100 <sup>DLA</sup>
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0020 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	0.0173	<0.0010	<0.0020 <sup>DLA</sup>
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100199</b>	Page	: 1 of 23
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jay Jones	Account Manager	: Inayat Dhaliwal
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 6305	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 26-Feb-2021 08:45
PO	: VPO00741264	Issue Date	: 08-Mar-2021 15:42
C-O-C number	: COC_WG_Q1_20210225-MW4,7-8		
Sampler	: SH/JD		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.





**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Method Blank (MB) Values</b>								
Dissolved Metals	QC-MRG2-1568300 01	----	sodium, dissolved	17341-25-2	E421	0.084 <sup>B</sup> mg/L	0.05 mg/L	Blank result exceeds permitted value

**Result Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-DP_WG_2021-01-11_N	E298	25-Feb-2021	01-Mar-2021	28 days	3 days	✓	01-Mar-2021	24 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-SH_WG_2021-01-11_N	E298	25-Feb-2021	01-Mar-2021	28 days	3 days	✓	01-Mar-2021	24 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-01-11_N	E298	25-Feb-2021	01-Mar-2021	28 days	3 days	✓	01-Mar-2021	24 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-01-11_N	E298	25-Feb-2021	01-Mar-2021	28 days	3 days	✓	01-Mar-2021	24 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-01-11_N	E298	25-Feb-2021	01-Mar-2021	28 days	3 days	✓	01-Mar-2021	24 days	0 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW4-DP_WG_2021-01-11_N	E235.Br-L	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW4-SH_WG_2021-01-11_N	E235.Br-L	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE CM_MW7-DP_WG_2021-01-11_N	E235.Br-L	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE CM_MW7-SH_WG_2021-01-11_N	E235.Br-L	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE CM_MW8_WG_2021-01-11_N	E235.Br-L	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW4-DP_WG_2021-01-11_N	E235.Cl-L	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW4-SH_WG_2021-01-11_N	E235.Cl-L	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW7-DP_WG_2021-01-11_N	E235.Cl-L	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW7-SH_WG_2021-01-11_N	E235.Cl-L	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW8_WG_2021-01-11_N	E235.Cl-L	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW4-DP_WG_2021-01-11_N	E378-U	25-Feb-2021	----	----	----		26-Feb-2021	3 days	0 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW4-SH_WG_2021-01-11_N	E378-U	25-Feb-2021	----	----	----		26-Feb-2021	3 days	0 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW7-DP_WG_2021-01-11_N	E378-U	25-Feb-2021	----	----	----		26-Feb-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW7-SH_WG_2021-01-11_N	E378-U	25-Feb-2021	----	----	----		26-Feb-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW8_WG_2021-01-11_N	E378-U	25-Feb-2021	----	----	----		26-Feb-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW4-DP_WG_2021-01-11_N	E235.F	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW4-SH_WG_2021-01-11_N	E235.F	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW7-DP_WG_2021-01-11_N	E235.F	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW7-SH_WG_2021-01-11_N	E235.F	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW8_WG_2021-01-11_N	E235.F	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW4-DP_WG_2021-01-11_N	E235.NO3-L	25-Feb-2021	----	----	----		27-Feb-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW4-SH_WG_2021-01-11_N	E235.NO3-L	25-Feb-2021	----	----	----		27-Feb-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW7-DP_WG_2021-01-11_N	E235.NO3-L	25-Feb-2021	----	----	----		27-Feb-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW7-SH_WG_2021-01-11_N	E235.NO3-L	25-Feb-2021	----	----	----		27-Feb-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW8_WG_2021-01-11_N	E235.NO3-L	25-Feb-2021	----	----	----		27-Feb-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW4-DP_WG_2021-01-11_N	E235.NO2-L	25-Feb-2021	----	----	----		27-Feb-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW4-SH_WG_2021-01-11_N	E235.NO2-L	25-Feb-2021	----	----	----		27-Feb-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW7-DP_WG_2021-01-11_N	E235.NO2-L	25-Feb-2021	----	----	----		27-Feb-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW7-SH_WG_2021-01-11_N	E235.NO2-L	25-Feb-2021	----	----	----		27-Feb-2021	3 days	2 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW8_WG_2021-01-11_N	E235.NO2-L	25-Feb-2021	----	----	----		27-Feb-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_MW4-DP_WG_2021-01-11_N	E235.SO4	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_MW4-SH_WG_2021-01-11_N	E235.SO4	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_MW7-DP_WG_2021-01-11_N	E235.SO4	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_MW7-SH_WG_2021-01-11_N	E235.SO4	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_MW8_WG_2021-01-11_N	E235.SO4	25-Feb-2021	----	----	----		27-Feb-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-DP_WG_2021-01-11_N	E318	25-Feb-2021	03-Mar-2021	28 days	5 days	✓	03-Mar-2021	22 days	0 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-SH_WG_2021-01-11_N	E318	25-Feb-2021	03-Mar-2021	28 days	5 days	✓	03-Mar-2021	22 days	0 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-01-11_N	E318	25-Feb-2021	03-Mar-2021	28 days	6 days	✓	03-Mar-2021	21 days	0 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-01-11_N	E318	25-Feb-2021	03-Mar-2021	28 days	6 days	✔	03-Mar-2021	21 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-01-11_N	E318	25-Feb-2021	03-Mar-2021	28 days	6 days	✔	03-Mar-2021	21 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-DP_WG_2021-01-11_N	E372-U	25-Feb-2021	27-Feb-2021	28 days	1 days	✔	01-Mar-2021	26 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-SH_WG_2021-01-11_N	E372-U	25-Feb-2021	27-Feb-2021	28 days	1 days	✔	01-Mar-2021	26 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-01-11_N	E372-U	25-Feb-2021	27-Feb-2021	28 days	1 days	✔	01-Mar-2021	26 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-01-11_N	E372-U	25-Feb-2021	27-Feb-2021	28 days	1 days	✔	01-Mar-2021	26 days	2 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-01-11_N	E372-U	25-Feb-2021	27-Feb-2021	28 days	1 days	✔	01-Mar-2021	26 days	2 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW4-DP_WG_2021-01-11_N	E421.Cr-L	25-Feb-2021	01-Mar-2021	180 days	4 days	✔	02-Mar-2021	175 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW4-SH_WG_2021-01-11_N	E421.Cr-L	25-Feb-2021	01-Mar-2021	180 days	4 days	✔	02-Mar-2021	175 days	1 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> CM_MW7-DP_WG_2021-01-11_N	E421.Cr-L	25-Feb-2021	01-Mar-2021	180 days	4 days	✔	02-Mar-2021	175 days	1 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> CM_MW7-SH_WG_2021-01-11_N	E421.Cr-L	25-Feb-2021	01-Mar-2021	180 days	4 days	✔	02-Mar-2021	175 days	1 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> CM_MW8_WG_2021-01-11_N	E421.Cr-L	25-Feb-2021	01-Mar-2021	180 days	4 days	✔	02-Mar-2021	175 days	1 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Amber glass dissolved (hydrochloric acid)</b> CM_MW4-DP_WG_2021-01-11_N	E509	25-Feb-2021	04-Mar-2021	28 days	6 days	✔	04-Mar-2021	21 days	0 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Amber glass dissolved (hydrochloric acid)</b> CM_MW4-SH_WG_2021-01-11_N	E509	25-Feb-2021	04-Mar-2021	28 days	6 days	✔	04-Mar-2021	21 days	0 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Amber glass dissolved (hydrochloric acid)</b> CM_MW7-DP_WG_2021-01-11_N	E509	25-Feb-2021	04-Mar-2021	28 days	6 days	✔	04-Mar-2021	21 days	0 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Amber glass dissolved (hydrochloric acid)</b> CM_MW7-SH_WG_2021-01-11_N	E509	25-Feb-2021	04-Mar-2021	28 days	6 days	✔	04-Mar-2021	21 days	0 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Amber glass dissolved (hydrochloric acid)</b> CM_MW8_WG_2021-01-11_N	E509	25-Feb-2021	04-Mar-2021	28 days	6 days	✔	04-Mar-2021	21 days	0 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> CM_MW4-DP_WG_2021-01-11_N	E421	25-Feb-2021	01-Mar-2021	180 days	4 days	✔	02-Mar-2021	175 days	1 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> CM_MW4-SH_WG_2021-01-11_N	E421	25-Feb-2021	01-Mar-2021	180 days	4 days	✔	02-Mar-2021	175 days	1 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> CM_MW7-DP_WG_2021-01-11_N	E421	25-Feb-2021	01-Mar-2021	180 days	4 days	✔	02-Mar-2021	175 days	1 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> CM_MW7-SH_WG_2021-01-11_N	E421	25-Feb-2021	01-Mar-2021	180 days	4 days	✔	02-Mar-2021	175 days	1 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> CM_MW8_WG_2021-01-11_N	E421	25-Feb-2021	01-Mar-2021	180 days	4 days	✔	02-Mar-2021	175 days	1 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW4-DP_WG_2021-01-11_N	E358-L	25-Feb-2021	04-Mar-2021	28 days	6 days	✔	04-Mar-2021	21 days	0 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW4-SH_WG_2021-01-11_N	E358-L	25-Feb-2021	04-Mar-2021	28 days	6 days	✔	04-Mar-2021	21 days	0 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW7-DP_WG_2021-01-11_N	E358-L	25-Feb-2021	04-Mar-2021	28 days	7 days	✔	04-Mar-2021	20 days	0 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW7-SH_WG_2021-01-11_N	E358-L	25-Feb-2021	04-Mar-2021	28 days	7 days	✔	04-Mar-2021	20 days	0 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW8_WG_2021-01-11_N	E358-L	25-Feb-2021	04-Mar-2021	28 days	7 days	✔	04-Mar-2021	20 days	0 days	✔



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-DP_WG_2021-01-11_N	E355-L	25-Feb-2021	04-Mar-2021	28 days	6 days	✓	04-Mar-2021	21 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-SH_WG_2021-01-11_N	E355-L	25-Feb-2021	04-Mar-2021	28 days	6 days	✓	04-Mar-2021	21 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-01-11_N	E355-L	25-Feb-2021	04-Mar-2021	28 days	7 days	✓	04-Mar-2021	20 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-01-11_N	E355-L	25-Feb-2021	04-Mar-2021	28 days	7 days	✓	04-Mar-2021	20 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-01-11_N	E355-L	25-Feb-2021	04-Mar-2021	28 days	7 days	✓	04-Mar-2021	20 days	0 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW4-DP_WG_2021-01-11_N	E283	25-Feb-2021	----	----	----		05-Mar-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW4-SH_WG_2021-01-11_N	E283	25-Feb-2021	----	----	----		05-Mar-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW7-DP_WG_2021-01-11_N	E283	25-Feb-2021	----	----	----		05-Mar-2021	14 days	8 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW7-SH_WG_2021-01-11_N	E283	25-Feb-2021	----	----	----		05-Mar-2021	14 days	8 days	✓	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE CM_MW8_WG_2021-01-11_N	E283	25-Feb-2021	----	----	----		05-Mar-2021	14 days	8 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW4-DP_WG_2021-01-11_N	E290	25-Feb-2021	----	----	----		02-Mar-2021	14 days	4 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW4-SH_WG_2021-01-11_N	E290	25-Feb-2021	----	----	----		02-Mar-2021	14 days	4 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW7-DP_WG_2021-01-11_N	E290	25-Feb-2021	----	----	----		02-Mar-2021	14 days	4 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW7-SH_WG_2021-01-11_N	E290	25-Feb-2021	----	----	----		02-Mar-2021	14 days	4 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW8_WG_2021-01-11_N	E290	25-Feb-2021	----	----	----		02-Mar-2021	14 days	4 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW4-DP_WG_2021-01-11_N	E100	25-Feb-2021	----	----	----		02-Mar-2021	28 days	4 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW4-SH_WG_2021-01-11_N	E100	25-Feb-2021	----	----	----		02-Mar-2021	28 days	4 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW7-DP_WG_2021-01-11_N	E100	25-Feb-2021	----	----	----		02-Mar-2021	28 days	4 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW7-SH_WG_2021-01-11_N	E100	25-Feb-2021	----	----	----		02-Mar-2021	28 days	4 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW8_WG_2021-01-11_N	E100	25-Feb-2021	----	----	----		02-Mar-2021	28 days	4 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW4-DP_WG_2021-01-11_N	E125	25-Feb-2021	----	----	----		02-Mar-2021	0.34 hrs	111 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW4-SH_WG_2021-01-11_N	E125	25-Feb-2021	----	----	----		02-Mar-2021	0.34 hrs	111 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW8_WG_2021-01-11_N	E125	25-Feb-2021	----	----	----		02-Mar-2021	0.34 hrs	113 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW7-DP_WG_2021-01-11_N	E125	25-Feb-2021	----	----	----		02-Mar-2021	0.34 hrs	114 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW7-SH_WG_2021-01-11_N	E125	25-Feb-2021	----	----	----		02-Mar-2021	0.34 hrs	114 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW4-DP_WG_2021-01-11_N	E108	25-Feb-2021	----	----	----		02-Mar-2021	0.25 hrs	116 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW4-SH_WG_2021-01-11_N	E108	25-Feb-2021	----	----	----		02-Mar-2021	0.25 hrs	116 hrs		* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW7-DP_WG_2021-01-11_N	E108	25-Feb-2021	----	----	----		02-Mar-2021	0.25 hrs	118 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW8_WG_2021-01-11_N	E108	25-Feb-2021	----	----	----		02-Mar-2021	0.25 hrs	118 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW7-SH_WG_2021-01-11_N	E108	25-Feb-2021	----	----	----		02-Mar-2021	0.25 hrs	119 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW4-DP_WG_2021-01-11_N	E162	25-Feb-2021	----	----	----		03-Mar-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW4-SH_WG_2021-01-11_N	E162	25-Feb-2021	----	----	----		03-Mar-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW7-DP_WG_2021-01-11_N	E162	25-Feb-2021	----	----	----		03-Mar-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW7-SH_WG_2021-01-11_N	E162	25-Feb-2021	----	----	----		03-Mar-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW8_WG_2021-01-11_N	E162	25-Feb-2021	----	----	----		03-Mar-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW4-DP_WG_2021-01-11_N	E160-L	25-Feb-2021	----	----	----		03-Mar-2021	7 days	5 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW4-SH_WG_2021-01-11_N	E160-L	25-Feb-2021	----	----	----		03-Mar-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW7-DP_WG_2021-01-11_N	E160-L	25-Feb-2021	----	----	----		03-Mar-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW7-SH_WG_2021-01-11_N	E160-L	25-Feb-2021	----	----	----		03-Mar-2021	7 days	5 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW8_WG_2021-01-11_N	E160-L	25-Feb-2021	----	----	----		03-Mar-2021	7 days	5 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW4-DP_WG_2021-01-11_N	E121	25-Feb-2021	----	----	----		28-Feb-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW4-SH_WG_2021-01-11_N	E121	25-Feb-2021	----	----	----		28-Feb-2021	3 days	2 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW7-DP_WG_2021-01-11_N	E121	25-Feb-2021	----	----	----		28-Feb-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW7-SH_WG_2021-01-11_N	E121	25-Feb-2021	----	----	----		28-Feb-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW8_WG_2021-01-11_N	E121	25-Feb-2021	----	----	----		28-Feb-2021	3 days	3 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 17 of 23  
Work Order : CG2100199  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	159045	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	157140	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	156577	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	156359	1	9	11.1	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	156360	1	9	11.1	5.0	✔
Conductivity in Water	E100	157138	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	156830	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	158138	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	156831	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	158548	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	155902	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	156363	1	9	11.1	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	156361	1	10	10.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	156362	1	10	10.0	5.0	✔
ORP by Electrode	E125	156995	1	20	5.0	5.0	✔
pH by Meter	E108	157139	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	156358	1	9	11.1	5.0	✔
TDS by Gravimetry	E162	157554	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	157343	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	158543	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	156247	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	157552	0	20	0.0	5.0	✖
Turbidity by Nephelometry	E121	156523	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	159045	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	157140	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	156577	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	156359	1	9	11.1	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	156360	1	9	11.1	5.0	✔
Conductivity in Water	E100	157138	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	156830	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	158138	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	156831	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	158548	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	155902	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	156363	1	9	11.1	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	156361	1	10	10.0	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	156362	1	10	10.0	5.0	✓
ORP by Electrode	E125	156995	1	20	5.0	5.0	✓
pH by Meter	E108	157139	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	156358	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	157554	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	157343	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	158543	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	156247	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	157552	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	156523	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	159045	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	157140	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	156577	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	156359	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	156360	1	9	11.1	5.0	✓
Conductivity in Water	E100	157138	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	156830	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	158138	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	156831	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	158548	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	155902	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	156363	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	156361	1	10	10.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	156362	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	156358	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	157554	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	157343	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	158543	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	156247	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	157552	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	156523	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	156577	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	156359	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	156360	1	9	11.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	156830	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	158138	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	156831	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	158548	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	155902	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	156363	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	156361	1	10	10.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	156362	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	156358	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	157343	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	158543	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	156247	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2100199**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jay Jones  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : 250 425 6305  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q1\_20210225-MW4,7-8  
**Sampler** : SH/JD  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Feb-2021 08:45  
**Date Analysis Commenced** : 26-Feb-2021  
**Issue Date** : 08-Mar-2021 15:42

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2100199  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 156523)</b>											
CG2100199-001	CM_MW4-SH_WG_2021-01-11_N	turbidity	----	E121	0.10	NTU	1.18	1.21	0.03	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 156995)</b>											
CG2100193-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	261	254	2.48%	15%	----
<b>Physical Tests (QC Lot: 157138)</b>											
CG2100193-002	Anonymous	conductivity	----	E100	2.0	µS/cm	413	413	0.00%	10%	----
<b>Physical Tests (QC Lot: 157139)</b>											
CG2100193-002	Anonymous	pH	----	E108	0.10	pH units	8.08	8.11	0.370%	4%	----
<b>Physical Tests (QC Lot: 157140)</b>											
CG2100193-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	214	207	3.56%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	214	207	3.56%	20%	----
<b>Physical Tests (QC Lot: 157554)</b>											
CG2100199-001	CM_MW4-SH_WG_2021-01-11_N	solids, total dissolved [TDS]	----	E162	20	mg/L	900	910	1.22%	20%	----
<b>Physical Tests (QC Lot: 159045)</b>											
CG2100200-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 155902)</b>											
CG2100199-001	CM_MW4-SH_WG_2021-01-11_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0099	0.0096	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 156247)</b>											
CG2100193-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0379	0.0417	9.49%	20%	----
<b>Anions and Nutrients (QC Lot: 156358)</b>											
CG2100199-001	CM_MW4-SH_WG_2021-01-11_N	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	<1.50	<1.50	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 156359)</b>											
CG2100199-001	CM_MW4-SH_WG_2021-01-11_N	bromide	24959-67-9	E235.Br-L	0.250	mg/L	0.532	0.520	0.012	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 156360)</b>											
CG2100199-001	CM_MW4-SH_WG_2021-01-11_N	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	164	162	1.12%	20%	----
<b>Anions and Nutrients (QC Lot: 156361)</b>											
CG2100199-001	CM_MW4-SH_WG_2021-01-11_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.0949	0.0976	0.0027	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 156362)</b>											
CG2100199-001	CM_MW4-SH_WG_2021-01-11_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 156363)</b>											
CG2100199-001	CM_MW4-SH_WG_2021-01-11_N	fluoride	16984-48-8	E235.F	0.100	mg/L	0.336	0.293	0.042	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 156577)</b>											
CG2100197-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0636	0.0660	3.70%	20%	----
<b>Anions and Nutrients (QC Lot: 157343)</b>											
CG2100193-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.678	0.657	3.16%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 158543)</b>											
CG2100197-002	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.48	1.49	0.004	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 158548)</b>											
CG2100197-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.50	1.53	0.03	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 156830)</b>											
CG2100193-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 156831)</b>											
CG2100193-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0040	0.0043	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00071	0.00076	0.00005	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.316	0.323	1.90%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.0200	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.248	0.277	10.9%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.00500	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	8.60	8.97	4.24%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.100	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.088	0.091	0.002	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.386	0.385	0.193%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.69	2.77	2.64%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0664	0.0679	2.11%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00157	0.00158	0.558%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.06	2.16	4.87%	20%	----
		selenium, dissolved	7782-49-2	E421	0.0500	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 156831) - continued</b>											
CG2100193-001	Anonymous	silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.00	4.18	4.25%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	306	320	4.34%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.04	1.02	1.12%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.59	1.64	0.05	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00011	0.00011	0.000002	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000759	0.000791	4.07%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 158138)</b>											
CG2100199-001	CM_MW4-SH_WG_2021-01-11_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 156523)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 157138)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 157140)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 157552)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 157554)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 159045)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 155902)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 156247)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 156358)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 156359)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 156360)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 156361)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 156362)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 156363)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 156577)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 157343)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 157343) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 158543)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 158548)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 156830)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 156831)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	# 0.084	B
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 156831) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 158138)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

**Qualifiers**

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 156523)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 156995)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.1	95.4	104	---
<b>Physical Tests (QCLot: 157138)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.9	90.0	110	---
<b>Physical Tests (QCLot: 157139)</b>									
pH	---	E108	---	pH units	7 pH units	99.1	98.6	101	---
<b>Physical Tests (QCLot: 157140)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 157552)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	96.8	85.0	115	---
<b>Physical Tests (QCLot: 157554)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	95.4	85.0	115	---
<b>Physical Tests (QCLot: 159045)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 155902)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 156247)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	88.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 156358)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 156359)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.6	85.0	115	---
<b>Anions and Nutrients (QCLot: 156360)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 156361)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 156362)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 156363)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 156577)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 156577) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	106	85.0	115	----
<b>Anions and Nutrients (QCLot: 157343)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	90.4	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 158543)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	94.7	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 158548)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.6	80.0	120	----
<b>Dissolved Metals (QCLot: 156830)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 156831)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	110	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	112	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	84.9	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	109	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	109	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	97.5	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.5	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 156831) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	112	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	105	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	109	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	109	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.4	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 155902)</b>										
CG2100199-002	CM_MW4-DP_WG_2021-01-11_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0563 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 156247)</b>										
CG2100193-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0579 mg/L	0.0676 mg/L	85.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 156358)</b>										
CG2100199-005	CM_MW8_WG_2021-01-11_N	sulfate (as SO4)	14808-79-8	E235.SO4	94.2 mg/L	100 mg/L	94.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 156359)</b>										
CG2100199-005	CM_MW8_WG_2021-01-11_N	bromide	24959-67-9	E235.Br-L	0.485 mg/L	0.5 mg/L	97.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 156360)</b>										
CG2100199-005	CM_MW8_WG_2021-01-11_N	chloride	16887-00-6	E235.Cl-L	98.2 mg/L	100 mg/L	98.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 156361)</b>										
CG2100199-005	CM_MW8_WG_2021-01-11_N	nitrate (as N)	14797-55-8	E235.NO3-L	2.45 mg/L	2.5 mg/L	98.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 156362)</b>										
CG2100199-005	CM_MW8_WG_2021-01-11_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.475 mg/L	0.5 mg/L	95.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 156363)</b>										
CG2100199-005	CM_MW8_WG_2021-01-11_N	fluoride	16984-48-8	E235.F	0.937 mg/L	1 mg/L	93.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 156577)</b>										
CG2100197-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 157343)</b>										
CG2100193-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.31 mg/L	2.5 mg/L	92.3	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 158543)</b>										
CG2100199-001	CM_MW4-SH_WG_2021-01-11_N	carbon, total organic [TOC]	----	E355-L	24.3 mg/L	23.9 mg/L	102	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 158548)</b>										
CG2100199-001	CM_MW4-SH_WG_2021-01-11_N	carbon, dissolved organic [DOC]	----	E358-L	22.6 mg/L	23.9 mg/L	94.4	70.0	130	----
<b>Dissolved Metals (QCLot: 156830)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 156830) - continued</b>										
CG2100193-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
<b>Dissolved Metals (QCLot: 156831)</b>										
CG2100193-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.219 mg/L	0.2 mg/L	109	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00897 mg/L	0.01 mg/L	89.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00409 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0189 mg/L	0.02 mg/L	94.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.00 mg/L	2 mg/L	100	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0393 mg/L	0.04 mg/L	98.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.40 mg/L	4 mg/L	110	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.67 mg/L	10 mg/L	96.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00618 mg/L	0.008 mg/L	77.2	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	22.4 mg/L	20 mg/L	112	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.407 mg/L	0.4 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 158138)</b>										
CG2100199-002	CM_MW4-DP_WG_2021-01-11_N	mercury, dissolved	7439-97-6	E509	0.0000814 mg/L	0.0001 mg/L	81.4	70.0	130	----



COC ID: <b>COC_WG_Q1_20210225-MW4,7-8</b>		TURNAROUND TIME: REGULAR			RUSH: NO						
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>				
Facility Name / Job# Coal Mountain Operations		Lab Name ALS Calgary			Report Format / Distribution			Excel	PDF	EDD	
Project Manager Jay Jones		Lab Contact Inayat Dhaliwal			Email 1: Victoria.Sharpe@teck.com			X	X	X	
Email Jay.Jones@teck.com		Email Inayat.Dhaliwal@alsglobal.com			Email 2: teckcoal@equisonline.com					X	
Address PO Box 3000		Address 2559 29th St. NE			Email 3: jay.jones@teck.com			X	X	X	
City Sparwood		Province BC	City Calgary		Province AB	Email 4: don.sacino@teck.com			X	X	X
Postal Code V0B 2G0		Country Canada	Postal Code T1Y 7B5		Country Canada	Email 5: shelby.holden@teck.com			X	X	X
Phone Number 1-250-425-7321		Phone Number 403 407 1800			PO number			00741264			

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None				
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA					
CM_MW4-SH_WG_2021-01-11_N	CM_MW4-SH	WG	No	2021/02/25	14:30	G	5	1	1	1	1	1					
CM_MW4-DP_WG_2021-01-11_N	CM_MW4-DP	WG	No	2021/02/25	14:20	G	5	1	1	1	1	1					
CM_MW7-DP_WG_2021-01-11_N	CM_MW7-DP	WG	No	2021/02/25	12:00	G	5	1	1	1	1	1					
CM_MW7-SH_WG_2021-01-11_N	CM_MW7-SH	WG	No	2021/02/25	11:40	G	5	1	1	1	1	1					
CM_MW8_WG_2021-01-11_N	CM_MW8	WG	No	2021/02/25	12:35	G	5	1	1	1	1	1					

Environmental Division  
Calgary  
Work Order Reference  
**CG2100199**



Telephone : +1 403 407 1800

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>		<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>	
Request analyses of bicarbonate and HCO <sub>3</sub> , hydroxide as OH and carbonate as CO <sub>3</sub> rather than bicarbonate as CaCO <sub>3</sub> , Carbonate as CaCO <sub>3</sub> and hydroxide as CaCO <sub>3</sub> . Routine bottle for CM_MW8 is only filled half way. * *						<i>[Signature]</i>		2/26/25	
SERVICE REQUEST (rush - subject to availability)									
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS		Sampler's Name		SH/JD		Mobile #		250-425-7522	
		Sampler's Signature		<i>[Signature]</i>		Date/Time		2021/02/25	

*[Handwritten mark]*

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100247**  
**Client** : **Teck Coal Limited**  
**Contact** : Jay Jones  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : 250 425 6305  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q1\_20210303-MW2  
**Sampler** : SH/JD  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 04-Mar-2021 08:50  
**Date Analysis Commenced** : 04-Mar-2021  
**Issue Date** : 18-Mar-2021 16:04

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID	CM_MW2-SH_	---	---	---	---
(Matrix: Water)					WG_2021-01-1	---	---	---	---	---
					Client sampling date / time	03-Mar-2021	---	---	---	---
					13:50	---	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100247-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	5.9	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	342	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	342	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	1130	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.60	mg/L	692	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	451	---	---	---	---	---
pH	---	E108	0.10	pH units	7.95	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	872 <sup>DLHC</sup>	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	2.4	---	---	---	---	---
turbidity	---	E121	0.10	NTU	0.73	---	---	---	---	---
bicarbonate	71-52-3	E290	1.0	mg/L	417	---	---	---	---	---
carbonate	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
hydroxide	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.92	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.122	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	<0.050	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.128	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0065	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0024	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	357	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	2.37 <sup>DTC</sup>	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	0.79 <sup>DTC</sup>	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW2-SH_	----	----	----	----
					WG_2021-01-1					
					1_N					
					Client sampling date / time	03-Mar-2021	----	----	----	----
					13:50					
Analyte	CAS Number	Method	LOR	Unit	CG2100247-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	14.4	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	15.9	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	110	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	4.95	----	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0974	----	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.046	----	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.119	----	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	195	----	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00018	----	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00721	----	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000050	----	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0378	----	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	49.7	----	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00012	----	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000116	----	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00058	----	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.62	----	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.105	----	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.87	----	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	47.4	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW2-SH_	---	---	---	---
					WG_2021-01-1					
					1_N					
					Client sampling date / time	03-Mar-2021	---	---	---	---
					13:50					
Analyte	CAS Number	Method	LOR	Unit	CG2100247-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.519	---	---	---	---	---
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	119	---	---	---	---	---
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	---	---	---	---	---
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	---	---	---	---	---
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000203	---	---	---	---	---
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	---	---	---	---	---
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0078	---	---	---	---	---
dissolved mercury filtration location	---	EP509	-	-	Field	---	---	---	---	---
dissolved metals filtration location	---	EP421	-	-	Field	---	---	---	---	---

Please refer to the General Comments section for an explanation of any qualifiers detected.



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100251**  
**Client** : **Teck Coal Limited**  
**Contact** : Jay Jones  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
Sparwood BC Canada V0B 2G0  
**Telephone** : 250 425 6305  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q1\_20210304-MW3  
**Sampler** : SH/JD  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 05-Mar-2021 09:05  
**Date Analysis Commenced** : 06-Mar-2021  
**Issue Date** : 16-Mar-2021 15:26

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW3-DP_ WG_2021-01-1 1_N	CM_MW3-SH_ WG_2021-01-1 1_N	----	----	----
Client sampling date / time					04-Mar-2021 13:50	04-Mar-2021 13:50	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100251-001 Result	CG2100251-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	208	156	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	5.2	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	208	161	----	----	----	
conductivity	----	E100	2.0	µS/cm	2700	309	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	51.4	176	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	434	425	----	----	----	
pH	----	E108	0.10	pH units	8.27	8.31	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	1340 <sup>DLHC</sup>	148 <sup>DLHC</sup>	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	5.0	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	0.68	<0.10	----	----	----	
bicarbonate	71-52-3	E290	1.0	mg/L	254	190	----	----	----	
carbonate	3812-32-6	E290	1.0	mg/L	<1.0	3.1	----	----	----	
hydroxide	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.682 <sup>DLM</sup>	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	2.78 <sup>DLHC</sup>	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	784 <sup>DLHC</sup>	1.40	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.370 <sup>DLHC</sup>	0.085	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.059	<0.050	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.178 <sup>DLHC</sup>	0.0223	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0018	0.0020	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0123	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	15.7 <sup>DLHC</sup>	17.1	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	0.57	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	0.56	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW3-DP_ WG_2021-01-1 1_N	CM_MW3-SH_ WG_2021-01-1 1_N	---	---	---
Client sampling date / time					04-Mar-2021 13:50	04-Mar-2021 13:50	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2100251-001 Result	CG2100251-002 Result	----- ---	----- ---	----- ---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	26.6	3.62	----	----	----	
cation sum	----	EC101	0.10	meq/L	27.6	3.74	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	104	103	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.84	1.63	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0072	0.0017	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00067	0.00012	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.835	0.0788	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.479	0.020	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0100 <sup>DLA</sup>	0.0070	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	12.5	50.6	----	----	----	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000022	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00025	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	0.00196	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.020	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	1.49	0.0079	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.90	12.2	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0300	0.00398	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00183	0.000819	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.39	0.713	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.100 <sup>DLA</sup>	0.297	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.29	2.31	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW3-DP_ WG_2021-01-1 1_N	CM_MW3-SH_ WG_2021-01-1 1_N	----	----	----
Client sampling date / time					04-Mar-2021 13:50	04-Mar-2021 13:50	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100251-001 Result	CG2100251-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
sodium, dissolved	17341-25-2	E421	0.050	mg/L	608	4.34	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.13	0.268	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<1.00 <sup>DLA</sup>	5.43	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000358	0.000208	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0020 <sup>DLA</sup>	0.0038	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100251</b>	Page	: 1 of 14
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jay Jones	Account Manager	: Inayat Dhaliwal
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 6305	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 05-Mar-2021 09:05
PO	: VPO00741264	Issue Date	: 16-Mar-2021 15:26
C-O-C number	: COC_WG_Q1_20210304-MW3		
Sampler	: SH/JD		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

RIGHT SOLUTIONS | RIGHT PARTNER



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-DP_WG_2021-01-11_N	E298	04-Mar-2021	09-Mar-2021	28 days	4 days	✓	09-Mar-2021	23 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-SH_WG_2021-01-11_N	E298	04-Mar-2021	09-Mar-2021	28 days	4 days	✓	09-Mar-2021	23 days	0 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-01-11_N	E235.Br-L	04-Mar-2021	----	----	----		06-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW3-SH_WG_2021-01-11_N	E235.Br-L	04-Mar-2021	----	----	----		06-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-01-11_N	E235.Cl-L	04-Mar-2021	----	----	----		06-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW3-SH_WG_2021-01-11_N	E235.Cl-L	04-Mar-2021	----	----	----		06-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-01-11_N	E378-U	04-Mar-2021	----	----	----		07-Mar-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW3-SH_WG_2021-01-11_N	E378-U	04-Mar-2021	----	----	----		07-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW3-DP_WG_2021-01-11_N	E235.F	04-Mar-2021	----	----	----		06-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW3-SH_WG_2021-01-11_N	E235.F	04-Mar-2021	----	----	----		06-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW3-DP_WG_2021-01-11_N	E235.NO3-L	04-Mar-2021	----	----	----		06-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW3-SH_WG_2021-01-11_N	E235.NO3-L	04-Mar-2021	----	----	----		06-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW3-DP_WG_2021-01-11_N	E235.NO2-L	04-Mar-2021	----	----	----		06-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW3-SH_WG_2021-01-11_N	E235.NO2-L	04-Mar-2021	----	----	----		06-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW3-DP_WG_2021-01-11_N	E235.SO4	04-Mar-2021	----	----	----		06-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW3-SH_WG_2021-01-11_N	E235.SO4	04-Mar-2021	----	----	----		06-Mar-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-DP_WG_2021-01-11_N	E318	04-Mar-2021	10-Mar-2021	28 days	5 days	✔	10-Mar-2021	22 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-SH_WG_2021-01-11_N	E318	04-Mar-2021	10-Mar-2021	28 days	5 days	✔	10-Mar-2021	22 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-DP_WG_2021-01-11_N	E372-U	04-Mar-2021	10-Mar-2021	28 days	5 days	✔	10-Mar-2021	22 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-SH_WG_2021-01-11_N	E372-U	04-Mar-2021	10-Mar-2021	28 days	5 days	✔	10-Mar-2021	22 days	0 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW3-DP_WG_2021-01-11_N	E421.Cr-L	04-Mar-2021	07-Mar-2021	180 days	3 days	✔	08-Mar-2021	176 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW3-SH_WG_2021-01-11_N	E421.Cr-L	04-Mar-2021	07-Mar-2021	180 days	3 days	✔	08-Mar-2021	176 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW3-DP_WG_2021-01-11_N	E509	04-Mar-2021	10-Mar-2021	28 days	5 days	✔	10-Mar-2021	22 days	0 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW3-SH_WG_2021-01-11_N	E509	04-Mar-2021	10-Mar-2021	28 days	5 days	✔	10-Mar-2021	22 days	0 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW3-DP_WG_2021-01-11_N	E421	04-Mar-2021	07-Mar-2021	180 days	3 days	✔	08-Mar-2021	176 days	1 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW3-SH_WG_2021-01-11_N	E421	04-Mar-2021	07-Mar-2021	180 days	3 days	✓	08-Mar-2021	176 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW3-DP_WG_2021-01-11_N	E358-L	04-Mar-2021	10-Mar-2021	28 days	5 days	✓	10-Mar-2021	22 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW3-SH_WG_2021-01-11_N	E358-L	04-Mar-2021	10-Mar-2021	28 days	5 days	✓	10-Mar-2021	22 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-DP_WG_2021-01-11_N	E355-L	04-Mar-2021	10-Mar-2021	28 days	5 days	✓	10-Mar-2021	22 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-SH_WG_2021-01-11_N	E355-L	04-Mar-2021	10-Mar-2021	28 days	5 days	✓	10-Mar-2021	22 days	0 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-01-11_N	E283	04-Mar-2021	----	----	----		15-Mar-2021	14 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW3-SH_WG_2021-01-11_N	E283	04-Mar-2021	----	----	----		15-Mar-2021	14 days	11 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-01-11_N	E290	04-Mar-2021	----	----	----		12-Mar-2021	14 days	8 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW3-SH_WG_2021-01-11_N	E290	04-Mar-2021	----	----	----		12-Mar-2021	14 days	8 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW3-DP_WG_2021-01-11_N	E100	04-Mar-2021	----	----	----		12-Mar-2021	28 days	8 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW3-SH_WG_2021-01-11_N	E100	04-Mar-2021	----	----	----		12-Mar-2021	28 days	8 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW3-DP_WG_2021-01-11_N	E125	04-Mar-2021	----	----	----		12-Mar-2021	0.34 hrs	184 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW3-SH_WG_2021-01-11_N	E125	04-Mar-2021	----	----	----		12-Mar-2021	0.34 hrs	184 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW3-DP_WG_2021-01-11_N	E108	04-Mar-2021	----	----	----		12-Mar-2021	0.25 hrs	197 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW3-SH_WG_2021-01-11_N	E108	04-Mar-2021	----	----	----		12-Mar-2021	0.25 hrs	197 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW3-DP_WG_2021-01-11_N	E162	04-Mar-2021	----	----	----		10-Mar-2021	7 days	5 days		✓
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW3-SH_WG_2021-01-11_N	E162	04-Mar-2021	----	----	----		10-Mar-2021	7 days	5 days		✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] CM_MW3-DP_WG_2021-01-11_N	E160-L	04-Mar-2021	----	----	----		10-Mar-2021	7 days	5 days		✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> CM_MW3-SH_WG_2021-01-11_N	E160-L	04-Mar-2021	----	----	----		10-Mar-2021	7 days	5 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW3-DP_WG_2021-01-11_N	E121	04-Mar-2021	----	----	----		07-Mar-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW3-SH_WG_2021-01-11_N	E121	04-Mar-2021	----	----	----		07-Mar-2021	3 days	2 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	163764	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	162745	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	160550	2	40	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	159624	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	159625	1	20	5.0	5.0	✔
Conductivity in Water	E100	162743	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	159867	1	11	9.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	161224	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	159868	1	11	9.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	161288	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	159325	1	13	7.6	5.0	✔
Fluoride in Water by IC	E235.F	159628	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	159626	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	159627	1	20	5.0	5.0	✔
ORP by Electrode	E125	162246	1	20	5.0	5.0	✔
pH by Meter	E108	162744	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	159623	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	161030	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	160889	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	161289	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	160678	1	19	5.2	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	161028	0	20	0.0	5.0	✖
Turbidity by Nephelometry	E121	159679	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	163764	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	162745	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	160550	2	40	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	159624	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	159625	1	20	5.0	5.0	✔
Conductivity in Water	E100	162743	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	159867	1	11	9.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	161224	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	159868	1	11	9.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	161288	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	159325	1	13	7.6	5.0	✔
Fluoride in Water by IC	E235.F	159628	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	159626	1	20	5.0	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	159627	1	20	5.0	5.0	✓
ORP by Electrode	E125	162246	1	20	5.0	5.0	✓
pH by Meter	E108	162744	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	159623	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	161030	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	160889	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	161289	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	160678	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	161028	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	159679	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	163764	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	162745	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	160550	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	159624	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	159625	1	20	5.0	5.0	✓
Conductivity in Water	E100	162743	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	159867	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	161224	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	159868	1	11	9.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	161288	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	159325	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	159628	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	159626	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	159627	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	159623	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	161030	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	160889	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	161289	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	160678	1	19	5.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	161028	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	159679	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	160550	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	159624	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	159625	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	159867	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	161224	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	159868	1	11	9.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	161288	1	19	5.2	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	159325	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	159628	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	159626	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	159627	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	159623	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	160889	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	161289	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	160678	1	19	5.2	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: CG2100251</b>	<b>Page</b>	<b>: 1 of 14</b>
<b>Client</b>	: Teck Coal Limited	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Jay Jones	<b>Account Manager</b>	: Inayat Dhaliwal
<b>Address</b>	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	<b>Address</b>	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
<b>Telephone</b>	: 250 425 6305	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: COAL MOUNTAIN OPERATIONS	<b>Date Samples Received</b>	: 05-Mar-2021 09:05
<b>PO</b>	: VPO00741264	<b>Date Analysis Commenced</b>	: 06-Mar-2021
<b>C-O-C number</b>	: COC_WG_Q1_20210304-MW3	<b>Issue Date</b>	: 16-Mar-2021 15:26
<b>Sampler</b>	: SH/JD		
<b>Site</b>	: ----		
<b>Quote number</b>	: Teck Coal Master Quote		
<b>No. of samples received</b>	: 2		
<b>No. of samples analysed</b>	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
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Page : 2 of 14  
Work Order : CG2100251  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 159679)</b>											
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	turbidity	----	E121	0.10	NTU	0.68	0.67	0.008	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 161030)</b>											
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	solids, total dissolved [TDS]	----	E162	40	mg/L	1340	1400	4.08%	20%	----
<b>Physical Tests (QC Lot: 162246)</b>											
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	434	447	2.88%	15%	----
<b>Physical Tests (QC Lot: 162743)</b>											
CG2100254-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2970	2980	0.336%	10%	----
<b>Physical Tests (QC Lot: 162744)</b>											
CG2100254-001	Anonymous	pH	----	E108	0.10	pH units	7.87	7.87	0.00%	4%	----
<b>Physical Tests (QC Lot: 162745)</b>											
CG2100254-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	286	285	0.490%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	286	285	0.490%	20%	----
<b>Physical Tests (QC Lot: 163764)</b>											
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 159325)</b>											
CG2100251-002	CM_MW3-SH_WG_2021-01-11_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0020	0.0022	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 159623)</b>											
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	15.7	14.6	7.63%	20%	----
<b>Anions and Nutrients (QC Lot: 159624)</b>											
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	bromide	24959-67-9	E235.Br-L	0.250	mg/L	2.78	2.72	2.22%	20%	----
<b>Anions and Nutrients (QC Lot: 159625)</b>											
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	784	784	0.0696%	20%	----
<b>Anions and Nutrients (QC Lot: 159626)</b>											
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.178	0.170	0.0083	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 159627)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 159627) - continued</b>											
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 159628)</b>											
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	fluoride	16984-48-8	E235.F	0.100	mg/L	0.370	0.331	0.039	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 160550)</b>											
CG2100243-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0174	0.0160	0.0014	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 160551)</b>											
CG2100258-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 160678)</b>											
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0123	0.0122	0.00006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 160889)</b>											
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.059	0.056	0.003	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 161288)</b>											
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 161289)</b>											
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 159867)</b>											
CG2100246-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 159868)</b>											
CG2100246-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0075	0.0065	0.0010	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00076	0.00075	0.00001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00019	0.00017	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0366	0.0359	1.79%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.0200	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.093	0.088	0.005	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.00500	mg/L	0.176 µg/L	0.000163	7.94%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	358	328	8.59%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000077	0.000073	0.000004	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.100	mg/L	31.3 µg/L	0.0301	3.82%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0914	0.0821	10.7%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 159868) - continued</b>											
CG2100246-001	Anonymous	magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	158	152	4.28%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.192	0.187	2.77%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00282	0.00277	1.67%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.154	0.149	3.14%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	6.30	6.23	1.15%	20%	----
		selenium, dissolved	7782-49-2	E421	0.0500	mg/L	13.2 µg/L	0.0131	0.904%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.27	2.21	2.39%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	59.8	57.1	4.72%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.18	1.18	0.0713%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	372	367	1.36%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000072	0.000066	0.000006	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0117	0.0114	2.63%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0292	0.0285	2.48%	20%	----
<b>Dissolved Metals (QC Lot: 161224)</b>											
CG2100246-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 159679)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 161028)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 161030)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 162743)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 162745)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 163764)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 159325)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 159623)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 159624)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 159625)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 159626)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 159627)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 159628)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 160550)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 160551)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 160678)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 160678) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 160889)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 161288)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 161289)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 159867)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 159868)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---





Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 159868) - continued</b>						
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 161224)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 159679)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 161028)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	89.7	85.0	115	---
<b>Physical Tests (QCLot: 161030)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	92.3	85.0	115	---
<b>Physical Tests (QCLot: 162246)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 162743)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.0	90.0	110	---
<b>Physical Tests (QCLot: 162744)</b>									
pH	---	E108	---	pH units	7 pH units	99.6	98.6	101	---
<b>Physical Tests (QCLot: 162745)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 163764)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	107	85.0	115	---
<b>Anions and Nutrients (QCLot: 159325)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	96.0	80.0	120	---
<b>Anions and Nutrients (QCLot: 159623)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 159624)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	95.9	85.0	115	---
<b>Anions and Nutrients (QCLot: 159625)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 159626)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 159627)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 159628)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 160550)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 160551)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 160551) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	96.9	85.0	115	----
<b>Anions and Nutrients (QCLot: 160678)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	99.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 160889)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	86.4	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 161288)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	99.5	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 161289)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	97.8	80.0	120	----
<b>Dissolved Metals (QCLot: 159867)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 159868)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.7	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.6	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	93.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	90.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.3	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	111	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.6	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.2	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.4	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.3	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 159868) - continued</b>									
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.6	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	107	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.4	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	106	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.5	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 159325)</b>										
CG2100258-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0523 mg/L	0.05 mg/L	105	70.0	130	----
<b>Anions and Nutrients (QCLot: 159623)</b>										
CG2100256-007	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 159624)</b>										
CG2100256-007	Anonymous	bromide	24959-67-9	E235.Br-L	0.502 mg/L	0.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 159625)</b>										
CG2100256-007	Anonymous	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 159626)</b>										
CG2100256-007	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.76 mg/L	2.5 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 159627)</b>										
CG2100256-007	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.539 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 159628)</b>										
CG2100256-007	Anonymous	fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 160550)</b>										
CG2100243-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 160551)</b>										
CG2100258-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.114 mg/L	0.1 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 160678)</b>										
CG2100251-002	CM_MW3-SH_WG_2021-01-11_N	phosphorus, total	7723-14-0	E372-U	0.0593 mg/L	0.0676 mg/L	87.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 160889)</b>										
CG2100251-001	CM_MW3-DP_WG_2021-01-11_N	Kjeldahl nitrogen, total [TKN]	----	E318	2.75 mg/L	2.5 mg/L	110	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 161288)</b>										
CG2100251-002	CM_MW3-SH_WG_2021-01-11_N	carbon, dissolved organic [DOC]	----	E358-L	24.2 mg/L	23.9 mg/L	101	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 161289)</b>										
CG2100251-002	CM_MW3-SH_WG_2021-01-11_N	carbon, total organic [TOC]	----	E355-L	23.4 mg/L	23.9 mg/L	97.8	70.0	130	----
<b>Dissolved Metals (QCLot: 159867)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 159867) - continued</b>										
CG2100246-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 159868)</b>										
CG2100246-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.216 mg/L	0.2 mg/L	108	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0226 mg/L	0.02 mg/L	113	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00774 mg/L	0.01 mg/L	77.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.078 mg/L	0.1 mg/L	78.4	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00372 mg/L	0.004 mg/L	93.1	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.0105 mg/L	0.01 mg/L	105	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0178 mg/L	0.02 mg/L	88.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.99 mg/L	2 mg/L	99.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0183 mg/L	0.02 mg/L	91.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0905 mg/L	0.1 mg/L	90.5	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0213 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0505 mg/L	0.04 mg/L	126	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.37 mg/L	10 mg/L	93.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00374 mg/L	0.004 mg/L	93.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00354 mg/L	0.004 mg/L	88.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.375 mg/L	0.4 mg/L	93.8	70.0	130	----
<b>Dissolved Metals (QCLot: 161224)</b>										
CG2100246-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----



<b>COC ID:</b> COC_WG_Q1_20210304-MW3		<b>TURNAROUND TIME:</b>			REGULAR		<b>RUSH: NO</b>			
<b>PROJECT/CLIENT INFO</b>					<b>LABORATORY</b>			<b>OTHER INFO</b>		
Facility Name / Job# Coal Mountain Operations					Lab Name ALS Calgary			Report Format / Distribution		
Project Manager Jay Jones					Lab Contact Inayat Dhaliwal			Excel PDF EDD		
Email Jay.Jones@teck.com					Email Inayat.Dhaliwal@alsglobal.com			Email 1: Victoria.Sharpe@teck.com X X X		
Address PO Box 3000					Address 2559 29th St. NE			Email 2: teckcoal@equisonline.com X X X		
City Sparwood Province BC					City Calgary Province AB			Email 3: jay.jones@teck.com X X X		
Postal Code V0B 2G0 Country Canada					Postal Code T1Y 7B5 Country Canada			Email 4: don.sacino@teck.com X X X		
Phone Number 1-250-425-7321					Phone Number 403 407 1800			Email 5: sholden@teck.com X X X		
					PO number			00741264		

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE PRESERV.	F	N	F	F	N										
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA											
CM_MW3-DP_WG_2021-01-11_N	CM_MW3-DP	WG		2021/03/04	1350	G	5	1	1	1	1	1											
CM_MW3-SH_WG_2021-01-11_N	CM_MW3-SH	WG		2021/03/04	1350	G	5	1	1	1	1	1											

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>		<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>	
Request analyses of bicarbonate and HCO <sub>3</sub> , hydroxide as OH and carbonate as CO <sub>3</sub> rather than bicarbonate as CaCO <sub>3</sub> , Carbonate as CaCO <sub>3</sub> and hydroxide as CaCO <sub>3</sub> .						YJA		05/03 9:50	

<b>SERVICE REQUEST (rush - subject to availability)</b>			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Sampler's Name	SH/JD
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time
			250-425-7522
			2021/03/04

Environmental Division  
Calgary  
Work Order Reference  
**CG2100251**



70



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100264**  
**Client** : **Teck Coal Limited**  
**Contact** : Jay Jones  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : 250 425 6305  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q1\_20210305-MW1  
**Sampler** : VS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 06-Mar-2021 09:00  
**Date Analysis Commenced** : 07-Mar-2021  
**Issue Date** : 19-Mar-2021 16:51

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Assistant	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW1-OB_WG_2021-01-11_N	CM_NNP2_WG_2021-01-11_N	CM_TRP_WG_2021-01-11_N	----	----
Client sampling date / time					05-Mar-2021 11:49	05-Mar-2021	05-Mar-2021	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100264-001	CG2100264-002	CG2100264-003	-----	-----	
					Result	Result	Result	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	2.1	<2.0	<2.0	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	279	291	<1.0	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	279	291	<1.0	----	----	
conductivity	----	E100	2.0	µS/cm	1090	1080	<2.0	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	519	519	<0.60	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	418	503	490	----	----	
pH	----	E108	0.10	pH units	8.24	8.23	5.52	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	710 <sup>DLHC</sup>	758 <sup>DLHC</sup>	<10	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
turbidity	----	E121	0.10	NTU	1.50	1.13	<0.10	----	----	
bicarbonate	71-52-3	E290	1.0	mg/L	341	355	<1.0	----	----	
carbonate	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
hydroxide	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0228	<0.0050	<0.0050	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.250 <sup>DLHC</sup>	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	60.1 <sup>DLHC</sup>	59.7 <sup>DLHC</sup>	<0.10	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLHC</sup>	<0.100 <sup>DLHC</sup>	<0.020	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.481	0.564	<0.050	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.64 <sup>DLHC</sup>	1.17 <sup>DLHC</sup>	<0.0050	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0111 <sup>DLHC</sup>	0.0053 <sup>DLHC</sup>	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0025	0.0041	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	271 <sup>DLHC</sup>	265 <sup>DLHC</sup>	<0.30	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.09	1.12	<0.50	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.98	1.22	<0.50	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW1-OB_WG_2021-01-11_N	CM_NNP2_WG_2021-01-11_N	CM_TRP_WG_2021-01-11_N	----	----
Client sampling date / time					05-Mar-2021 11:49	05-Mar-2021	05-Mar-2021	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100264-001	CG2100264-002	CG2100264-003	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	13.1	13.1	<0.10	----	----	
cation sum	----	EC101	0.10	meq/L	13.7	13.5	<0.10	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	104	103	100	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.24	1.50	<0.010	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00011	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0806	0.0839	<0.00010	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.027	0.027	<0.010	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0504	0.0492	<0.0050	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	138	138	<0.050	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00045	0.00050	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00153	0.00162	<0.00020	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0172	0.0172	<0.0010	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	42.4	42.4	<0.0050	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00012	0.00019	<0.00010	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000302	0.000294	<0.000050	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00051	0.00051	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.76	1.74	<0.050	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	5.33	5.40	<0.050	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.73	2.78	<0.050	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	74.5	71.8	<0.050	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW1-OB_WG_2021-01-11_N	CM_NNP2_WG_2021-01-11_N	CM_TRP_WG_2021-01-11_N	----	----
Client sampling date / time					05-Mar-2021 11:49	05-Mar-2021	05-Mar-2021	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100264-001	CG2100264-002	CG2100264-003	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.322	0.330	<0.00020	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	99.1	97.4	<0.50	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000012	0.000012	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00125	0.00129	<0.000010	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0501	0.0440	0.0022 <sup>RRV</sup>	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100264</b>	Page	: 1 of 16
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jay Jones	Account Manager	: Inayat Dhaliwal
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 6305	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 06-Mar-2021 09:00
PO	: VPO00741264	Issue Date	: 19-Mar-2021 16:51
C-O-C number	: COC_WG_Q1_20210305-MW1		
Sampler	: VS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

RIGHT SOLUTIONS | RIGHT PARTNER





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-01-11_N	E298	05-Mar-2021	10-Mar-2021	28 days	4 days	✓	10-Mar-2021	23 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WG_2021-01-11_N	E298	05-Mar-2021	10-Mar-2021	28 days	5 days	✓	10-Mar-2021	22 days	0 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WG_2021-01-11_N	E298	05-Mar-2021	10-Mar-2021	28 days	5 days	✓	10-Mar-2021	22 days	0 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-01-11_N	E235.Br-L	05-Mar-2021	----	----	----		07-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_NNP2_WG_2021-01-11_N	E235.Br-L	05-Mar-2021	----	----	----		07-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_TRP_WG_2021-01-11_N	E235.Br-L	05-Mar-2021	----	----	----		07-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-01-11_N	E235.Cl-L	05-Mar-2021	----	----	----		07-Mar-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_NNP2_WG_2021-01-11_N	E235.Cl-L	05-Mar-2021	----	----	----		07-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_TRP_WG_2021-01-11_N	E235.Cl-L	05-Mar-2021	----	----	----		07-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW1-OB_WG_2021-01-11_N	E378-U	05-Mar-2021	----	----	----		07-Mar-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_NNP2_WG_2021-01-11_N	E378-U	05-Mar-2021	----	----	----		07-Mar-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_TRP_WG_2021-01-11_N	E378-U	05-Mar-2021	----	----	----		07-Mar-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW1-OB_WG_2021-01-11_N	E235.F	05-Mar-2021	----	----	----		07-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_NNP2_WG_2021-01-11_N	E235.F	05-Mar-2021	----	----	----		07-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_TRP_WG_2021-01-11_N	E235.F	05-Mar-2021	----	----	----		07-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW1-OB_WG_2021-01-11_N	E235.NO3-L	05-Mar-2021	----	----	----		07-Mar-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_NNP2_WG_2021-01-11_N	E235.NO3-L	05-Mar-2021	----	----	----		07-Mar-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_TRP_WG_2021-01-11_N	E235.NO3-L	05-Mar-2021	----	----	----		07-Mar-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW1-OB_WG_2021-01-11_N	E235.NO2-L	05-Mar-2021	----	----	----		07-Mar-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_NNP2_WG_2021-01-11_N	E235.NO2-L	05-Mar-2021	----	----	----		07-Mar-2021	3 days	2 days	✔
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_TRP_WG_2021-01-11_N	E235.NO2-L	05-Mar-2021	----	----	----		07-Mar-2021	3 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW1-OB_WG_2021-01-11_N	E235.SO4	05-Mar-2021	----	----	----		07-Mar-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_NNP2_WG_2021-01-11_N	E235.SO4	05-Mar-2021	----	----	----		07-Mar-2021	28 days	2 days	✔
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_TRP_WG_2021-01-11_N	E235.SO4	05-Mar-2021	----	----	----		07-Mar-2021	28 days	2 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-01-11_N	E318	05-Mar-2021	11-Mar-2021	28 days	5 days	✔	11-Mar-2021	22 days	0 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WG_2021-01-11_N	E318	05-Mar-2021	11-Mar-2021	28 days	6 days	✔	11-Mar-2021	21 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WG_2021-01-11_N	E318	05-Mar-2021	11-Mar-2021	28 days	6 days	✔	11-Mar-2021	21 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-01-11_N	E372-U	05-Mar-2021	11-Mar-2021	28 days	5 days	✔	11-Mar-2021	22 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WG_2021-01-11_N	E372-U	05-Mar-2021	11-Mar-2021	28 days	6 days	✔	11-Mar-2021	21 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WG_2021-01-11_N	E372-U	05-Mar-2021	11-Mar-2021	28 days	6 days	✔	11-Mar-2021	21 days	0 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-OB_WG_2021-01-11_N	E421.Cr-L	05-Mar-2021	10-Mar-2021	180 days	4 days	✔	10-Mar-2021	175 days	0 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNP2_WG_2021-01-11_N	E421.Cr-L	05-Mar-2021	10-Mar-2021	180 days	5 days	✔	10-Mar-2021	174 days	0 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_TRP_WG_2021-01-11_N	E421.Cr-L	05-Mar-2021	10-Mar-2021	180 days	5 days	✔	10-Mar-2021	174 days	0 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW1-OB_WG_2021-01-11_N	E509	05-Mar-2021	11-Mar-2021	28 days	6 days	✔	11-Mar-2021	21 days	0 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_NNP2_WG_2021-01-11_N	E509	05-Mar-2021	11-Mar-2021	28 days	6 days	✓	11-Mar-2021	21 days	0 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_TRP_WG_2021-01-11_N	E509	05-Mar-2021	11-Mar-2021	28 days	6 days	✓	11-Mar-2021	21 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-OB_WG_2021-01-11_N	E421	05-Mar-2021	10-Mar-2021	180 days	4 days	✓	10-Mar-2021	175 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNP2_WG_2021-01-11_N	E421	05-Mar-2021	10-Mar-2021	180 days	5 days	✓	10-Mar-2021	174 days	0 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_TRP_WG_2021-01-11_N	E421	05-Mar-2021	10-Mar-2021	180 days	5 days	✓	10-Mar-2021	174 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW1-OB_WG_2021-01-11_N	E358-L	05-Mar-2021	13-Mar-2021	28 days	7 days	✓	13-Mar-2021	20 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_NNP2_WG_2021-01-11_N	E358-L	05-Mar-2021	13-Mar-2021	28 days	8 days	✓	13-Mar-2021	19 days	0 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_TRP_WG_2021-01-11_N	E358-L	05-Mar-2021	13-Mar-2021	28 days	8 days	✓	13-Mar-2021	19 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-01-11_N	E355-L	05-Mar-2021	13-Mar-2021	28 days	7 days	✓	13-Mar-2021	20 days	0 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WG_2021-01-11_N	E355-L	05-Mar-2021	13-Mar-2021	28 days	8 days	✓	13-Mar-2021	19 days	0 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WG_2021-01-11_N	E355-L	05-Mar-2021	13-Mar-2021	28 days	8 days	✓	13-Mar-2021	19 days	0 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-01-11_N	E283	05-Mar-2021	----	----	----		18-Mar-2021	14 days	13 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_NNP2_WG_2021-01-11_N	E283	05-Mar-2021	----	----	----		18-Mar-2021	14 days	13 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_TRP_WG_2021-01-11_N	E283	05-Mar-2021	----	----	----		18-Mar-2021	14 days	13 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-01-11_N	E290	05-Mar-2021	----	----	----		19-Mar-2021	14 days	14 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_NNP2_WG_2021-01-11_N	E290	05-Mar-2021	----	----	----		19-Mar-2021	14 days	14 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_TRP_WG_2021-01-11_N	E290	05-Mar-2021	----	----	----		19-Mar-2021	14 days	14 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-01-11_N	E100	05-Mar-2021	----	----	----		19-Mar-2021	28 days	14 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_NNP2_WG_2021-01-11_N	E100	05-Mar-2021	----	----	----		19-Mar-2021	28 days	14 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_TRP_WG_2021-01-11_N	E100	05-Mar-2021	----	----	----		19-Mar-2021	28 days	14 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW1-OB_WG_2021-01-11_N	E125	05-Mar-2021	----	----	----		13-Mar-2021	0.34 hrs	187 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_NNP2_WG_2021-01-11_N	E125	05-Mar-2021	----	----	----		13-Mar-2021	0.34 hrs	199 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_TRP_WG_2021-01-11_N	E125	05-Mar-2021	----	----	----		13-Mar-2021	0.34 hrs	199 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW1-OB_WG_2021-01-11_N	E108	05-Mar-2021	----	----	----		19-Mar-2021	0.25 hrs	336 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE CM_NNP2_WG_2021-01-11_N	E108	05-Mar-2021	----	----	----		19-Mar-2021	0.25 hrs	348 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE CM_TRP_WG_2021-01-11_N	E108	05-Mar-2021	----	----	----		19-Mar-2021	0.25 hrs	348 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW1-OB_WG_2021-01-11_N	E162	05-Mar-2021	----	----	----		11-Mar-2021	7 days	5 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_NNP2_WG_2021-01-11_N	E162	05-Mar-2021	----	----	----		11-Mar-2021	7 days	6 days	✔
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_TRP_WG_2021-01-11_N	E162	05-Mar-2021	----	----	----		11-Mar-2021	7 days	6 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE CM_MW1-OB_WG_2021-01-11_N	E160-L	05-Mar-2021	----	----	----		11-Mar-2021	7 days	5 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE CM_NNP2_WG_2021-01-11_N	E160-L	05-Mar-2021	----	----	----		11-Mar-2021	7 days	6 days	✔
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE CM_TRP_WG_2021-01-11_N	E160-L	05-Mar-2021	----	----	----		11-Mar-2021	7 days	6 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE CM_MW1-OB_WG_2021-01-11_N	E121	05-Mar-2021	----	----	----		07-Mar-2021	3 days	1 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE CM_NNP2_WG_2021-01-11_N	E121	05-Mar-2021	----	----	----		07-Mar-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE CM_TRP_WG_2021-01-11_N	E121	05-Mar-2021	----	----	----		07-Mar-2021	3 days	2 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	165672	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	166166	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	161048	2	40	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	160417	1	13	7.6	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	160418	1	13	7.6	5.0	✔
Conductivity in Water	E100	166165	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	161011	1	12	8.3	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	161955	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	161012	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	162926	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	159688	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	160421	1	13	7.6	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	160419	1	13	7.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	160420	1	13	7.6	5.0	✔
ORP by Electrode	E125	162813	1	14	7.1	5.0	✔
pH by Meter	E108	166164	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	160416	1	13	7.6	5.0	✔
TDS by Gravimetry	E162	161637	1	14	7.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	161299	1	16	6.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	162932	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	161303	1	15	6.6	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	161636	0	17	0.0	5.0	✖
Turbidity by Nephelometry	E121	159680	1	14	7.1	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	165672	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	166166	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	161048	2	40	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	160417	1	13	7.6	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	160418	1	13	7.6	5.0	✔
Conductivity in Water	E100	166165	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	161011	1	12	8.3	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	161955	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	161012	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	162926	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	159688	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	160421	1	13	7.6	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	160419	1	13	7.6	5.0	✔



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	160420	1	13	7.6	5.0	✓
ORP by Electrode	E125	162813	1	14	7.1	5.0	✓
pH by Meter	E108	166164	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	160416	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	161637	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	161299	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	162932	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	161303	1	15	6.6	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	161636	1	17	5.8	5.0	✓
Turbidity by Nephelometry	E121	159680	1	14	7.1	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	165672	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	166166	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	161048	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	160417	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	160418	1	13	7.6	5.0	✓
Conductivity in Water	E100	166165	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	161011	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	161955	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	161012	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	162926	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	159688	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	160421	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	160419	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	160420	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	160416	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	161637	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	161299	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	162932	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	161303	1	15	6.6	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	161636	1	17	5.8	5.0	✓
Turbidity by Nephelometry	E121	159680	1	14	7.1	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	161048	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	160417	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	160418	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	161011	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	161955	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	161012	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	162926	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	159688	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	160421	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	160419	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	160420	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	160416	1	13	7.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	161299	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	162932	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	161303	1	15	6.6	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2100264**

**Page** : 1 of 15

**Client** : Teck Coal Limited  
**Contact** : Jay Jones  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : 250 425 6305  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q1\_20210305-MW1  
**Sampler** : VS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 06-Mar-2021 09:00  
**Date Analysis Commenced** : 07-Mar-2021  
**Issue Date** : 19-Mar-2021 16:51

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
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Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Woochan Song

Lab Assistant

Metals, Burnaby, British Columbia



Page : 3 of 15  
Work Order : CG2100264  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 159680)</b>											
CG2100261-001	Anonymous	turbidity	----	E121	0.10	NTU	59.4	59.7	0.504%	15%	----
<b>Physical Tests (QC Lot: 161637)</b>											
CG2100261-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1530	1280	17.6%	20%	----
<b>Physical Tests (QC Lot: 162813)</b>											
CG2100261-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	432	431	0.278%	15%	----
<b>Physical Tests (QC Lot: 165672)</b>											
CG2100264-001	CM_MW1-OB_WG_2021-01-11_N	acidity (as CaCO3)	----	E283	2.0	mg/L	2.1	2.3	0.2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 166164)</b>											
CG2100264-002	CM_NNP2_WG_2021-01-11_N	pH	----	E108	0.10	pH units	8.23	8.24	0.121%	4%	----
<b>Physical Tests (QC Lot: 166165)</b>											
CG2100264-002	CM_NNP2_WG_2021-01-11_N	conductivity	----	E100	2.0	µS/cm	1080	1090	0.184%	10%	----
<b>Physical Tests (QC Lot: 166166)</b>											
CG2100264-002	CM_NNP2_WG_2021-01-11_N	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	291	284	2.43%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	291	284	2.43%	20%	----
<b>Anions and Nutrients (QC Lot: 159688)</b>											
CG2100255-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0116	0.0112	3.45%	20%	----
<b>Anions and Nutrients (QC Lot: 160416)</b>											
CG2100268-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 160417)</b>											
CG2100268-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 160418)</b>											
CG2100268-002	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 160419)</b>											
CG2100268-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.0070	0.0020	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 160420)</b>											
CG2100268-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 160421)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 160421) - continued</b>											
CG2100268-002	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 161048)</b>											
CG2100255-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0066	0.0016	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 161049)</b>											
CG2100264-002	CM_NNP2_WG_2021-01-11_N	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 161299)</b>											
CG2100261-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.468	0.570	19.6%	20%	----
<b>Anions and Nutrients (QC Lot: 161303)</b>											
CG2100261-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0506	0.0520	2.80%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 162926)</b>											
CG2100261-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.73	0.97	0.24	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 162932)</b>											
CG2100261-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.71	1.03	0.31	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 161011)</b>											
CG2100264-001	CM_MW1-OB_WG_2021-01-11_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00045	0.00046	0.000010	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 161012)</b>											
CG2100264-001	CM_MW1-OB_WG_2021-01-11_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00012	0.000003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0806	0.0770	4.57%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.027	0.027	0.00004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0504 µg/L	0.0000488	0.0000016	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	138	138	0.552%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00153	0.00143	0.00010	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0172	0.0171	0.406%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	42.4	40.4	4.97%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00012	0.00011	0.000008	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000302	0.000319	0.000017	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00051	0.00052	0.000009	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 161012) - continued</b>											
CG2100264-001	CM_MW1-OB_WG_2021-01-11_N	potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.76	1.68	4.92%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	5.33 µg/L	0.00528	1.03%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.73	2.70	1.26%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	74.5	70.4	5.60%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.322	0.325	1.16%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	99.1	95.7	3.42%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000012	0.000013	0.0000005	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00125	0.00125	0.347%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0501	0.0465	7.29%	20%	----
<b>Dissolved Metals (QC Lot: 161955)</b>											
CG2100259-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 159680)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 161636)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 161637)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 165672)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 166165)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 166166)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 159688)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 160416)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 160417)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 160418)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 160419)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 160420)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 160421)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 161048)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 161049)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 161299)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 161299) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 161303)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 162926)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 162932)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 161011)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 161012)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 161012) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 161955)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 159680)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	----
<b>Physical Tests (QCLot: 161636)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	85.7	85.0	115	----
<b>Physical Tests (QCLot: 161637)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.0	85.0	115	----
<b>Physical Tests (QCLot: 162813)</b>									
oxidation-reduction potential [ORP]	---	E125	----	mV	220 mV	100	95.4	104	----
<b>Physical Tests (QCLot: 165672)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	109	85.0	115	----
<b>Physical Tests (QCLot: 166164)</b>									
pH	---	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 166165)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.4	90.0	110	----
<b>Physical Tests (QCLot: 166166)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 159688)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	95.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 160416)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 160417)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	94.0	85.0	115	----
<b>Anions and Nutrients (QCLot: 160418)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 160419)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 160420)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 160421)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 161048)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	96.0	85.0	115	----
<b>Anions and Nutrients (QCLot: 161049)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 161049) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	93.9	85.0	115	----
<b>Anions and Nutrients (QCLot: 161299)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	93.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 161303)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	96.6	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 162926)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	97.6	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 162932)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 161011)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.4	80.0	120	----
<b>Dissolved Metals (QCLot: 161012)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.4	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.0	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	94.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	115	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.5	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	89.6	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	105	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	94.2	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	93.2	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 161012) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	108	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.8	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	110	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 159688)</b>										
CG2100255-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0538 mg/L	0.05 mg/L	108	70.0	130	----
<b>Anions and Nutrients (QCLot: 160416)</b>										
CG2100268-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 160417)</b>										
CG2100268-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.483 mg/L	0.5 mg/L	96.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 160418)</b>										
CG2100268-002	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 160419)</b>										
CG2100268-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 160420)</b>										
CG2100268-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.521 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 160421)</b>										
CG2100268-002	Anonymous	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 161048)</b>										
CG2100255-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 161049)</b>										
CG2100264-003	CM_TRP_WG_2021-01-11_N	ammonia, total (as N)	7664-41-7	E298	0.0991 mg/L	0.1 mg/L	99.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 161299)</b>										
CG2100264-001	CM_MW1-OB_WG_2021-01-11_N	Kjeldahl nitrogen, total [TKN]	----	E318	2.27 mg/L	2.5 mg/L	90.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 161303)</b>										
CG2100264-001	CM_MW1-OB_WG_2021-01-11_N	phosphorus, total	7723-14-0	E372-U	0.0533 mg/L	0.0676 mg/L	78.9	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 162926)</b>										
CG2100264-001	CM_MW1-OB_WG_2021-01-11_N	carbon, dissolved organic [DOC]	----	E358-L	24.8 mg/L	23.9 mg/L	104	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 162932)</b>										
CG2100264-001	CM_MW1-OB_WG_2021-01-11_N	carbon, total organic [TOC]	----	E355-L	26.1 mg/L	23.9 mg/L	109	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 161011)</b>										
CG2100264-001	CM_MW1-OB_WG_2021-01-11_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
<b>Dissolved Metals (QCLot: 161012)</b>										
CG2100264-001	CM_MW1-OB_WG_2021-01-11_N	aluminum, dissolved	7429-90-5	E421	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00869 mg/L	0.01 mg/L	86.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	92.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.93 mg/L	2 mg/L	96.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.98 mg/L	4 mg/L	99.6	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.78 mg/L	10 mg/L	87.8	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00392 mg/L	0.004 mg/L	98.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00399 mg/L	0.004 mg/L	99.8	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.453 mg/L	0.4 mg/L	113	70.0	130	----
<b>Dissolved Metals (QCLot: 161955)</b>										
CG2100259-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000993 mg/L	0.0001 mg/L	99.3	70.0	130	----

Page : 15 of 15  
Work Order : CG2100264  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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COC ID: **COC\_WG\_Q1\_20210305-MW1**    TURNAROUND TIME: **REGULAR**    RUSH: **NO**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jay Jones			Lab Contact	Inayat Dhaliwal			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	Jay.Jones@teck.com			Email	Inayat.Dhaliwal@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	don.sacino@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	sholden@teck.com	X	X	X
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	00741264			

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None					
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA						
CM_MW1-OB_WG_2021-01-11_N	CM_MW1-OB	WG		2021/03/05	11:49	G	5	1	1	1	1	1						
CM_NNP2_WS_2021-01-11_N	CM_NNP2	WG		2021/03/05	-	G	5	1	1	1	1	1						
CM_TRP_WS_2021-01-11_N	CM_TRP	WG		2021/03/05	-	G	5	1	1	1	1	1						

Environmental Division  
Calgary  
Work Order Reference  
**CG2100264**



Telephone : +1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO <sub>3</sub> hydroxide as OH and carbonate as CO <sub>3</sub> rather than bicarbonate as CaCO <sub>3</sub> , Carbonate as CaCO <sub>3</sub> and hydroxide as CaCO <sub>3</sub> .			DK	2/6 5c
				0900

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	VS
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	ES Sharpe
Emergency (1 Business Day) - 100% surcharge		Mobile #	250-425-7522
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Date/Time	2021/03/05



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100319**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q1\_20210310\_MW10  
**Sampler** : SH/JD  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 11-Mar-2021 08:50  
**Date Analysis Commenced** : 11-Mar-2021  
**Issue Date** : 23-Mar-2021 16:40

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).



## Analytical Results

Sub-Matrix: Water					Client sample ID	CM_MW10_WG	----	----	----	----
(Matrix: Water)						_2021-01-11_N				
					Client sampling date / time	10-Mar-2021 11:40	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100319-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	252	----	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	252	----	----	----	----	----
conductivity	----	E100	2.0	µS/cm	600	----	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	306	----	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	392	----	----	----	----	----
pH	----	E108	0.10	pH units	8.24	----	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	355 <sup>DLHC</sup>	----	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	7.5	----	----	----	----	----
turbidity	----	E121	0.10	NTU	24.3	----	----	----	----	----
bicarbonate	71-52-3	E290	1.0	mg/L	308	----	----	----	----	----
carbonate	3812-32-6	E290	1.0	mg/L	<1.0	----	----	----	----	----
hydroxide	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----	----
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0193	----	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.65	----	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	1.01	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.103	----	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	----	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0014	----	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0149	----	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	86.8	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.80	----	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.58	----	----	----	----	----
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water					Client sample ID	CM_MW10_WG	----	----	----	----
(Matrix: Water)						_2021-01-11_N				
					Client sampling date / time	10-Mar-2021	---	---	---	---
						11:40	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100319-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	6.91	---	---	---	---	---
cation sum	----	EC101	0.10	meq/L	7.59	---	---	---	---	---
ion balance (cations/anions ratio)	----	EC101	0.010	%	110	---	---	---	---	---
ion balance (cation-anion difference)	----	EC101	0.010	%	4.69	---	---	---	---	---
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	---	---	---	---	---
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00148	---	---	---	---	---
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.134	---	---	---	---	---
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	---	---	---	---	---
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	---	---	---	---	---
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	---	---	---	---	---
calcium, dissolved	7440-70-2	E421	0.050	mg/L	87.1	---	---	---	---	---
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	---	---	---	---	---
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.48	---	---	---	---	---
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	---	---	---	---	---
iron, dissolved	7439-89-6	E421	0.010	mg/L	1.11	---	---	---	---	---
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0132	---	---	---	---	---
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	21.5	---	---	---	---	---
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0835	---	---	---	---	---
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	---	---	---	---	---
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00394	---	---	---	---	---
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00064	---	---	---	---	---
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.770	---	---	---	---	---
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	---	---	---	---	---
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.50	---	---	---	---	---
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	---	---	---	---	---
sodium, dissolved	17341-25-2	E421	0.050	mg/L	32.5	---	---	---	---	---
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.268	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW10_WG _2021-01-11_N	----	----	----	----
Client sampling date / time					10-Mar-2021 11:40	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2100319-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	31.7	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00141	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2100319</b>	Page	: 1 of 11
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Inayat Dhaliwal
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 11-Mar-2021 08:50
PO	: VPO00741264	Issue Date	: 23-Mar-2021 16:40
C-O-C number	: COC_WG_Q1_20210310_MW10		
Sampler	: SH/JD		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

RIGHT SOLUTIONS | RIGHT PARTNER



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-01-11_N	E298	10-Mar-2021	17-Mar-2021	28 days	6 days	✓	17-Mar-2021	21 days	0 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW10_WG_2021-01-11_N	E235.Br-L	10-Mar-2021	----	----	----		12-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW10_WG_2021-01-11_N	E235.Cl-L	10-Mar-2021	----	----	----		12-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> CM_MW10_WG_2021-01-11_N	E378-U	10-Mar-2021	----	----	----		11-Mar-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE</b> CM_MW10_WG_2021-01-11_N	E235.F	10-Mar-2021	----	----	----		12-Mar-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW10_WG_2021-01-11_N	E235.NO3-L	10-Mar-2021	----	----	----		12-Mar-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW10_WG_2021-01-11_N	E235.NO2-L	10-Mar-2021	----	----	----		12-Mar-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_MW10_WG_2021-01-11_N	E235.SO4	10-Mar-2021	----	----	----		12-Mar-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-01-11_N	E318	10-Mar-2021	13-Mar-2021	28 days	2 days	✔	13-Mar-2021	25 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-01-11_N	E372-U	10-Mar-2021	16-Mar-2021	28 days	5 days	✔	16-Mar-2021	22 days	0 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW10_WG_2021-01-11_N	E421.Cr-L	10-Mar-2021	15-Mar-2021	180 days	5 days	✔	15-Mar-2021	174 days	0 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW10_WG_2021-01-11_N	E509	10-Mar-2021	13-Mar-2021	28 days	2 days	✔	13-Mar-2021	25 days	0 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW10_WG_2021-01-11_N	E421	10-Mar-2021	15-Mar-2021	180 days	5 days	✔	15-Mar-2021	174 days	0 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW10_WG_2021-01-11_N	E358-L	10-Mar-2021	15-Mar-2021	28 days	5 days	✔	15-Mar-2021	22 days	0 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-01-11_N	E355-L	10-Mar-2021	15-Mar-2021	28 days	5 days	✔	15-Mar-2021	22 days	0 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW10_WG_2021-01-11_N	E283	10-Mar-2021	----	----	----		19-Mar-2021	14 days	9 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE CM_MW10_WG_2021-01-11_N	E290	10-Mar-2021	----	----	----		19-Mar-2021	14 days	9 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW10_WG_2021-01-11_N	E100	10-Mar-2021	----	----	----		19-Mar-2021	28 days	9 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW10_WG_2021-01-11_N	E125	10-Mar-2021	----	----	----		17-Mar-2021	0.34 hrs	161 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW10_WG_2021-01-11_N	E108	10-Mar-2021	----	----	----		19-Mar-2021	0.25 hrs	216 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW10_WG_2021-01-11_N	E162	10-Mar-2021	----	----	----		17-Mar-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] CM_MW10_WG_2021-01-11_N	E160-L	10-Mar-2021	----	----	----		17-Mar-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE CM_MW10_WG_2021-01-11_N	E121	10-Mar-2021	----	----	----		12-Mar-2021	3 days	1 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	166767	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	166175	0	20	0.0	5.0	✖
Ammonia by Fluorescence	E298	164680	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	162589	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	162590	1	20	5.0	5.0	✔
Conductivity in Water	E100	166173	0	20	0.0	5.0	✖
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	163535	1	18	5.5	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	162805	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	163536	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	163672	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	161963	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	162593	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	162591	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	162592	1	20	5.0	5.0	✔
ORP by Electrode	E125	164464	1	20	5.0	5.0	✔
pH by Meter	E108	166174	0	20	0.0	5.0	✖
Sulfate in Water by IC	E235.SO4	162588	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	164469	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	162507	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	163677	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	162956	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	164458	0	20	0.0	5.0	✖
Turbidity by Nephelometry	E121	162241	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	166767	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	166175	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	164680	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	162589	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	162590	1	20	5.0	5.0	✔
Conductivity in Water	E100	166173	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	163535	1	18	5.5	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	162805	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	163536	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	163672	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	161963	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	162593	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	162591	1	20	5.0	5.0	✔



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	162592	1	20	5.0	5.0	✓
ORP by Electrode	E125	164464	1	20	5.0	5.0	✓
pH by Meter	E108	166174	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	162588	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	164469	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	162507	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	163677	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	162956	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	164458	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	162241	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	166767	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	166175	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	164680	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	162589	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	162590	1	20	5.0	5.0	✓
Conductivity in Water	E100	166173	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	163535	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	162805	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	163536	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	163672	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	161963	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	162593	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	162591	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	162592	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	162588	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	164469	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	162507	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	163677	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	162956	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	164458	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	162241	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	164680	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	162589	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	162590	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	163535	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	162805	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	163536	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	163672	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	161963	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	162593	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	162591	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	162592	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	162588	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	162507	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	163677	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	162956	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2100319**

**Page** : 1 of 12

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q1\_20210310\_MW10  
**Sampler** : SH/JD  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 11-Mar-2021 08:50  
**Date Analysis Commenced** : 11-Mar-2021  
**Issue Date** : 23-Mar-2021 16:40

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



Page : 2 of 12  
Work Order : CG2100319  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 162241)</b>											
CG2100254-001	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 164464)</b>											
CG2100318-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	358	356	0.532%	15%	----
<b>Physical Tests (QC Lot: 164469)</b>											
CG2100313-001	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1780	1720	3.66%	20%	----
<b>Physical Tests (QC Lot: 166767)</b>											
CG2100323-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	7.7	6.6	1.1	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 161963)</b>											
CG2100318-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0039	0.0034	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 162507)</b>											
CG2100326-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.086	0.036	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 162588)</b>											
CG2100318-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	824	877	6.24%	20%	----
<b>Anions and Nutrients (QC Lot: 162589)</b>											
CG2100318-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 162590)</b>											
CG2100318-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	14.3	15.2	5.82%	20%	----
<b>Anions and Nutrients (QC Lot: 162591)</b>											
CG2100318-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	83.7	89.0	6.05%	20%	----
<b>Anions and Nutrients (QC Lot: 162592)</b>											
CG2100318-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0275	0.0286	0.0011	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 162593)</b>											
CG2100318-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.124	0.135	0.010	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 162956)</b>											
CG2100312-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0034	<0.0020	0.0014	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 164680)</b>											
CG2100312-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 163672)</b>											
CG2100312-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 163677)</b>											
CG2100312-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 162805)</b>											
CG2100306-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 163535)</b>											
CG2100304-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00012	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 163536)</b>											
CG2100304-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.109	0.107	1.81%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.012	0.0001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0374 µg/L	0.0000445	0.0000071	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	194	198	1.94%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0415	0.0434	4.46%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	77.9	77.7	0.295%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00448	0.00448	0.0243%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000650	0.000639	1.76%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00064	0.00058	0.00006	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.81	1.78	1.30%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	129 µg/L	0.123	4.58%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.33	2.25	3.69%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.70	2.82	4.06%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.211	0.206	2.79%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	140	134	4.86%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00398	0.00397	0.129%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 162241)</b>						
turbidity	---	E121	0.1	NTU	<0.10	---
<b>Physical Tests (QCLot: 164458)</b>						
solids, total suspended [TSS]	---	E160-L	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 164469)</b>						
solids, total dissolved [TDS]	---	E162	10	mg/L	<10	---
<b>Physical Tests (QCLot: 166173)</b>						
conductivity	---	E100	1	µS/cm	<1.0	---
<b>Physical Tests (QCLot: 166175)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, carbonate (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, hydroxide (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 166767)</b>						
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	<2.0	---
<b>Anions and Nutrients (QCLot: 161963)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 162507)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 162588)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 162589)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 162590)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
<b>Anions and Nutrients (QCLot: 162591)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 162592)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 162593)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 162956)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 164680)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 164680) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 163672)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 163677)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 162805)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 163535)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 163536)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 163536) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 162241)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 164458)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	89.2	85.0	115	---
<b>Physical Tests (QCLot: 164464)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 164469)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.2	85.0	115	---
<b>Physical Tests (QCLot: 166173)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	97.6	90.0	110	---
<b>Physical Tests (QCLot: 166174)</b>									
pH	---	E108	---	pH units	7 pH units	99.4	98.6	101	---
<b>Physical Tests (QCLot: 166175)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 166767)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	108	85.0	115	---
<b>Anions and Nutrients (QCLot: 161963)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	96.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 162507)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	81.3	75.0	125	---
<b>Anions and Nutrients (QCLot: 162588)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 162589)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	109	85.0	115	---
<b>Anions and Nutrients (QCLot: 162590)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 162591)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 162592)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 162593)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 162956)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 162956) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	86.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 164680)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	94.6	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 163672)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	114	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 163677)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	93.3	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.6	80.0	120	----
<b>Dissolved Metals (QCLot: 163535)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
<b>Dissolved Metals (QCLot: 163536)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.3	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	95.1	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.3	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	100	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 163536) - continued</b>									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.5	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.4	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 161963)</b>										
CG2100318-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0582 mg/L	0.05 mg/L	116	70.0	130	----
<b>Anions and Nutrients (QCLot: 162507)</b>										
CG2100326-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.72 mg/L	2.5 mg/L	109	70.0	130	----
<b>Anions and Nutrients (QCLot: 162588)</b>										
CG2100318-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	97.9 mg/L	100 mg/L	97.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 162589)</b>										
CG2100318-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.579 mg/L	0.5 mg/L	116	75.0	125	----
<b>Anions and Nutrients (QCLot: 162590)</b>										
CG2100318-002	Anonymous	chloride	16887-00-6	E235.Cl-L	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 162591)</b>										
CG2100318-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.01 mg/L	2.5 mg/L	80.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 162592)</b>										
CG2100318-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.550 mg/L	0.5 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 162593)</b>										
CG2100318-002	Anonymous	fluoride	16984-48-8	E235.F	1.11 mg/L	1 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 162956)</b>										
CG2100312-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0566 mg/L	0.0676 mg/L	83.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 164680)</b>										
CG2100312-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0893 mg/L	0.1 mg/L	89.3	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 163672)</b>										
CG2100312-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	21.3 mg/L	23.9 mg/L	89.2	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 163677)</b>										
CG2100312-002	Anonymous	carbon, total organic [TOC]	----	E355-L	27.1 mg/L	23.9 mg/L	113	70.0	130	----
<b>Dissolved Metals (QCLot: 162805)</b>										
CG2100309-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.000987 mg/L	0.0001 mg/L	98.7	70.0	130	----
<b>Dissolved Metals (QCLot: 163535)</b>										
CG2100304-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 163536)</b>										
CG2100304-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00852 mg/L	0.01 mg/L	85.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.098 mg/L	0.1 mg/L	98.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00392 mg/L	0.004 mg/L	98.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0178 mg/L	0.02 mg/L	89.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	96.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.94 mg/L	4 mg/L	98.5	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.30 mg/L	10 mg/L	93.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00385 mg/L	0.004 mg/L	96.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00383 mg/L	0.004 mg/L	95.8	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.393 mg/L	0.4 mg/L	98.2	70.0	130	----

COC ID: **COC\_WG\_Q1\_20210310\_MW10**      TURNAROUND TIME: **REGULAR**      RUSH: **NO**

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Victoria Sharpe			Lab Contact	Inayat Dhaliwal			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	Victoria.Sharpe@teck.com			Email	Inayat.Dhaliwal@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
								Email 4:	don.sacino@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:	shelby.holden@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone				Phone Number	403 407 1800			PO number	00741264			

Environmental Division  
Calgary

Work Order Reference  
**CG2100319**



Telephone : +1 403 407 1800

**ANALYSIS REQUESTED** Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED										
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA						
CM_MW10_WG_2021-01-11_N	CM_MW10	WG	No	2021/03/10	11:40	G	5	1	1	1	1	1						

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b> Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
			<i>[Signature]</i>	3/1/2021

<b>SERVICE REQUEST (rush - subject to availability)</b>	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
<b>Sampler's Name</b>	<b>SH/JD</b>		<b>Mobile #</b>	250-425-7522
<b>Sampler's Signature</b>	<i>[Signature]</i>		<b>Date/Time</b>	3/10/2021 15:00:00 PM



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2100340**  
**Amendment** : **4**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q1\_20210311\_MW5, MW\_AG1  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Page** : 1 of 9  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Lovepreet Kaur  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 12-Mar-2021 08:50  
**Date Analysis Commenced** : 12-Mar-2021  
**Issue Date** : 08-Mar-2022 16:48

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebecca Baker	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
IB:INT	Ion Balance Reviewed: Imbalance is due to interference or non-measured component.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW5-DP_ WG_2021-01-1 1_N	CM_MW_AG1B _WG_2021-01- 11_N	CM_MW5-SH_ WG_2021-01-1 1_N	CM_MW_AG1A _WG_2021-01- 11_N	CM_NNP_WS_2 021-01-11_N
Client sampling date / time					11-Mar-2021 14:25	11-Mar-2021 11:10	11-Mar-2021 14:20	11-Mar-2021 12:10	11-Mar-2021	
Analyte	CAS Number	Method	LOR	Unit	CG2100340-001	CG2100340-002	CG2100340-003	CG2100340-004	CG2100340-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	7.1	17.3	<2.0	10.4	18.5	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	437	469	272	486	506	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	533	572	332	593	617	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	437	469	272	486	506	
conductivity	----	E100	2.0	µS/cm	725	746	1390	770	787	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	273	582	795	444	581	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	395	490	388	387	394	
pH	----	E108	0.10	pH units	8.10	7.75	8.19	7.99	7.65	
solids, total dissolved [TDS]	----	E162	10	mg/L	412 <sup>DLHC</sup>	519 <sup>DLHC</sup>	1100 <sup>DLHC</sup>	510 <sup>DLHC</sup>	550 <sup>DLHC</sup>	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.3	4.7	1.2	19.8	<1.0	
turbidity	----	E121	0.10	NTU	10.9	1.14	<0.10	70.9	0.54	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.612 <sup>DLM</sup>	0.0810	<0.0050	0.0313	0.0135	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.250 <sup>DLHC</sup>	0.069	<0.250 <sup>DLHC</sup>	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	10.8	0.55	3.72 <sup>DLHC</sup>	3.37	0.94 <sup>DLHC</sup>	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.287	0.066	0.199 <sup>DLHC</sup>	0.125	<0.100 <sup>DLHC</sup>	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.530	0.146	0.386	0.162	0.105	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.101	3.60 <sup>DLHC</sup>	0.0076	0.163 <sup>DLHC</sup>	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0010	<0.0010	<0.0050 <sup>DLHC</sup>	0.0012	<0.0050 <sup>DLHC</sup>	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0025	0.0040	<0.0010	0.0013	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0038	0.0053	0.0035	0.0175	0.0038	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1.82	9.10	596 <sup>DLHC</sup>	11.6	16.0 <sup>DLHC</sup>	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	0.99	<0.50	2.41	1.31	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	1.10	<0.50	2.15	1.29	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW5-DP_WG_2021-01-11_N	CM_MW_AG1B_WG_2021-01-11_N	CM_MW5-SH_WG_2021-01-11_N	CM_MW_AG1A_WG_2021-01-11_N	CM_NNP_WS_2021-01-11_N
Client sampling date / time					11-Mar-2021 14:25	11-Mar-2021 11:10	11-Mar-2021 14:20	11-Mar-2021 12:10	11-Mar-2021	
Analyte	CAS Number	Method	LOR	Unit	CG2100340-001	CG2100340-002	CG2100340-003	CG2100340-004	CG2100340-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.09	9.59 <sup>RRV</sup>	18.2	10.0	10.5	
cation sum	----	EC101	0.10	meq/L	8.50	11.8	17.3	9.85	11.7	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.5	123 <sup>IB.INT</sup>	95.0	98.5	111	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.35	10.3	2.54	0.756	5.40	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0014	<0.0010	<0.0010	0.0021	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0.00025	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00016	0.00029	0.00025	0.00251	0.00029	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	1.13	0.220	0.0958	1.34	0.217	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLM</sup>	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.114	0.017	0.040	0.027	0.017	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0573	0.0486	<0.0050	0.0516	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	66.3	150	175	127	148	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00019	0.00029	<0.00010	0.00022	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	0.22	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00022	0.00024	<0.00020	0.00022	
iron, dissolved	7439-89-6	E421	0.010	mg/L	1.00	<0.010	<0.010	6.51	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0625	0.0024	0.0304	0.0198	0.0024	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	26.0	50.4	87.0	30.8	51.3	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0474	0.00059	<0.00010	0.193	0.00058	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000915	0.000125	0.00160	0.00137	0.000131	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00093	0.00056	0.00186	<0.00050	0.00056	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.51	0.932	2.52	1.23	0.909	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.100 <sup>DLM</sup>	0.258	18.5	<0.050	0.228	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.26	5.02	2.56	6.58	4.93	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000015	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	66.3	2.41	30.4	16.3	2.38	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW5-DP_ WG_2021-01-1 1_N	CM_MW_AG1B _WG_2021-01- 11_N	CM_MW5-SH_ WG_2021-01-1 1_N	CM_MW_AG1A _WG_2021-01- 11_N	CM_NNP_WS_2 021-01-11_N
Client sampling date / time					11-Mar-2021 14:25	11-Mar-2021 11:10	11-Mar-2021 14:20	11-Mar-2021 12:10	11-Mar-2021	
Analyte	CAS Number	Method	LOR	Unit	CG2100340-001 Result	CG2100340-002 Result	CG2100340-003 Result	CG2100340-004 Result	CG2100340-005 Result	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.63	0.277	0.528	0.703	0.282	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.93	3.91	228	4.72	3.85	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000012	0.000049	<0.000010	0.000014	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000089	0.000516	0.00406	0.00156	0.000519	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0014	0.0025	0.0011	0.0012	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water					Client sample ID	CM_NNT_WS_2	----	----	----	----
(Matrix: Water)					021-01-11_N					
					Client sampling date / time	11-Mar-2021	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100340-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	---
conductivity	----	E100	2.0	µS/cm	<2.0	---	---	---	---	---
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	<0.60	---	---	---	---	---
oxidation-reduction potential [ORP]	----	E125	0.10	mV	492	---	---	---	---	---
pH	----	E108	0.10	pH units	5.60	---	---	---	---	---
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	---	---	---	---	---
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	---	---	---	---	---
turbidity	----	E121	0.10	NTU	<0.10	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	---	---	---	---	---
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	---	---	---	---	---
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	---	---	---	---	---
cation sum	----	EC101	0.10	meq/L	<0.10	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water					Client sample ID	CM_NNT_WS_2	----	----	----	----
(Matrix: Water)					021-01-11_N					
					Client sampling date / time	11-Mar-2021	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100340-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Ion Balance</b>										
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	---	---	---	---	---
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	---	---	---	---	---
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	---	---	---	---	---
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	---	---	---	---	---
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	---	---	---	---	---
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	---	---	---	---	---
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	---	---	---	---	---
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	---	---	---	---	---
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	---	---	---	---	---
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	---	---	---	---	---
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	---	---	---	---	---
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	---	---	---	---	---
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	---	---	---	---	---
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	---	---	---	---	---
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	---	---	---	---	---
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	---	---	---	---	---
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	---	---	---	---	---
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	---	---	---	---	---
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	---	---	---	---	---
sodium, dissolved	7440-23-5	E421	0.050	mg/L	<0.050	---	---	---	---	---
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	---	---	---	---	---
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	---	---	---	---	---
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	---	---	---	---	---
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	---	---	---	---	---



**Analytical Results**

					Client sample ID	CM_NNT_WS_2	----	----	----	----
					Client sampling date / time	021-01-11_N	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100340-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Dissolved Metals</b>										
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2100340**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q1\_20210311\_MW5, MW\_AG1  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Page** : 1 of 9  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 12-Mar-2021 08:50  
**Date Analysis Commenced** : 12-Mar-2021  
**Issue Date** : 15-Nov-2021 12:53

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Arishna Nand	Lab Assistant	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Rebeccah Baker	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
IB:INT	Ion Balance Reviewed: Imbalance is due to interference or non-measured component.
RRV	Reported result verified by repeat analysis.





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW5-DP_ WG_2021-01-1 1_N	CM_MW5-SH_ WG_2021-01-1 1_N	CM_MW_AG1A _WG_2021-01- 11_N	CM_MW_AG1B _WG_2021-01- 11_N	CM_NNP_WS_2 021-01-11_N
Client sampling date / time					11-Mar-2021 14:25	11-Mar-2021 14:20	11-Mar-2021 12:10	11-Mar-2021 11:10	11-Mar-2021	
Analyte	CAS Number	Method	LOR	Unit	CG2100340-001 Result	CG2100340-002 Result	CG2100340-003 Result	CG2100340-004 Result	CG2100340-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	7.1	17.3	<2.0	10.4	18.5	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	437	469	272	486	506	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	533	572	332	593	617	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	437	469	272	486	506	
conductivity	----	E100	2.0	µS/cm	725	746	1390	770	787	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	273	582	795	444	581	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	395	490	388	387	394	
pH	----	E108	0.10	pH units	8.10	7.75	8.19	7.99	7.65	
solids, total dissolved [TDS]	----	E162	10	mg/L	412 <sup>DLHC</sup>	519 <sup>DLHC</sup>	1100 <sup>DLHC</sup>	510 <sup>DLHC</sup>	550 <sup>DLHC</sup>	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.3	4.7	1.2	19.8	<1.0	
turbidity	----	E121	0.10	NTU	10.9	1.14	<0.10	70.9	0.54	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.612 <sup>DLM</sup>	0.0810	<0.0050	0.0313	0.0135	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.250 <sup>DLHC</sup>	0.069	<0.250 <sup>DLHC</sup>	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	10.8	0.55	3.72 <sup>DLHC</sup>	3.37	0.94 <sup>DLHC</sup>	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.287	0.066	0.199 <sup>DLHC</sup>	0.125	<0.100 <sup>DLHC</sup>	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.530	0.146	0.386	0.162	0.105	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.101	3.60 <sup>DLHC</sup>	0.0076	0.163 <sup>DLHC</sup>	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0010	<0.0010	<0.0050 <sup>DLHC</sup>	0.0012	<0.0050 <sup>DLHC</sup>	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0025	0.0040	<0.0010	0.0013	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0038	0.0053	0.0035	0.0175	0.0038	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1.82	9.10	596 <sup>DLHC</sup>	11.6	16.0 <sup>DLHC</sup>	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	0.99	<0.50	2.41	1.31	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	1.10	<0.50	2.15	1.29	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW5-DP_WG_2021-01-11_N	CM_MW5-SH_WG_2021-01-11_N	CM_MW_AG1A_WG_2021-01-11_N	CM_MW_AG1B_WG_2021-01-11_N	CM_NNP_WS_2021-01-11_N
Client sampling date / time					11-Mar-2021 14:25	11-Mar-2021 14:20	11-Mar-2021 12:10	11-Mar-2021 11:10	11-Mar-2021	
Analyte	CAS Number	Method	LOR	Unit	CG2100340-001	CG2100340-002	CG2100340-003	CG2100340-004	CG2100340-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.09	9.59 <sup>RRV</sup>	18.2	10.0	10.5	
cation sum	----	EC101	0.10	meq/L	8.50	11.8	17.3	9.85	11.7	
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.5	123 <sup>IB.INT</sup>	95.0	98.5	111	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.35	10.3	2.54	0.756	5.40	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0014	<0.0010	<0.0010	0.0021	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0.00025	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00016	0.00029	0.00025	0.00251	0.00029	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	1.13	0.220	0.0958	1.34	0.217	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLM</sup>	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.114	0.017	0.040	0.027	0.017	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0573	0.0486	<0.0050	0.0516	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	66.3	150	175	127	148	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00019	0.00029	<0.00010	0.00022	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	0.22	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00022	0.00024	<0.00020	0.00022	
iron, dissolved	7439-89-6	E421	0.010	mg/L	1.00	<0.010	<0.010	6.51	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0625	0.0024	0.0304	0.0198	0.0024	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	26.0	50.4	87.0	30.8	51.3	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0474	0.00059	<0.00010	0.193	0.00058	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000915	0.000125	0.00160	0.00137	0.000131	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00093	0.00056	0.00186	<0.00050	0.00056	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.51	0.932	2.52	1.23	0.909	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.100 <sup>DLM</sup>	0.258	18.5	<0.050	0.228	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.26	5.02	2.56	6.58	4.93	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000015	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	66.3	2.41	30.4	16.3	2.38	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW5-DP_WG_2021-01-11_N	CM_MW5-SH_WG_2021-01-11_N	CM_MW_AG1A_WG_2021-01-11_N	CM_MW_AG1B_WG_2021-01-11_N	CM_NNP_WS_2021-01-11_N
Client sampling date / time					11-Mar-2021 14:25	11-Mar-2021 14:20	11-Mar-2021 12:10	11-Mar-2021 11:10	11-Mar-2021	
Analyte	CAS Number	Method	LOR	Unit	CG2100340-001	CG2100340-002	CG2100340-003	CG2100340-004	CG2100340-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.63	0.277	0.528	0.703	0.282	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.93	3.91	228	4.72	3.85	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000012	0.000049	<0.000010	0.000014	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000089	0.000516	0.00406	0.00156	0.000519	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0014	0.0025	0.0011	0.0012	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water					Client sample ID	CM_NNT_WS_2	----	----	----	----
(Matrix: Water)						021-01-11_N				
					Client sampling date / time	11-Mar-2021	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100340-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	---	---	---	---	---
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	---	---	---	---	---
conductivity	----	E100	2.0	µS/cm	<2.0	---	---	---	---	---
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	<0.60	---	---	---	---	---
oxidation-reduction potential [ORP]	----	E125	0.10	mV	492	---	---	---	---	---
pH	----	E108	0.10	pH units	5.60	---	---	---	---	---
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	---	---	---	---	---
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	---	---	---	---	---
turbidity	----	E121	0.10	NTU	<0.10	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	---	---	---	---	---
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	---	---	---	---	---
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	<0.10	---	---	---	---	---
cation sum	----	EC101	0.10	meq/L	<0.10	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water					Client sample ID	CM_NNT_WS_2	----	----	----	----
(Matrix: Water)						021-01-11_N				
					Client sampling date / time	11-Mar-2021	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2100340-006	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Ion Balance</b>										
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	---	---	---	---	---
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	---	---	---	---	---
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	---	---	---	---	---
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	---	---	---	---	---
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	---	---	---	---	---
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	---	---	---	---	---
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	---	---	---	---	---
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	---	---	---	---	---
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	---	---	---	---	---
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	---	---	---	---	---
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	---	---	---	---	---
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	---	---	---	---	---
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	---	---	---	---	---
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	---	---	---	---	---
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	---	---	---	---	---
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	---	---	---	---	---
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	---	---	---	---	---
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	---	---	---	---	---
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	---	---	---	---	---
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	---	---	---	---	---
sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	---	---	---	---	---
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	---	---	---	---	---
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	---	---	---	---	---
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	---	---	---	---	---
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	---	---	---	---	---



## Analytical Results

					Client sample ID	CM_NNT_WS_2	----	----	----	----
					Client sampling date / time	11-Mar-2021	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2100340-006	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Dissolved Metals</b>										
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2101386**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q2\_20210512-MW6  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 13-May-2021 09:00  
**Date Analysis Commenced** : 12-May-2021  
**Issue Date** : 31-May-2021 16:59

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW6-DP_ WG_2021-04-1 2_N	CM_MW6-SH_ WG_2021-04-1 2_N	----	----	----
Client sampling date / time					12-May-2021 11:46	12-May-2021 11:20	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101386-001 Result	CG2101386-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<10.0 <sup>DLM</sup>	<10.0 <sup>DLM</sup>	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	599	205	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	30.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	629	205	----	----	----	
conductivity	----	E100	2.0	µS/cm	1190	429	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	36.2	77.9	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	318	276	----	----	----	
pH	----	E108	0.10	pH units	8.55	8.27	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	713	257	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.1	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	0.83	1.12	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	731	250	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	18.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.307	0.0191	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.101	0.065	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	36.6	18.5	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.410	1.38	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.272	<0.050	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0018	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0070	0.0021	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	5.20	1.56	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.04	4.39	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.91	2.35	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					CM_MW6-DP_ WG_2021-04-1 2_N	CM_MW6-SH_ WG_2021-04-1 2_N	----	----	----
Client sampling date / time					12-May-2021 11:46	12-May-2021 11:20	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2101386-001 Result	CG2101386-002 Result	-----	-----	-----
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	13.7	4.72	----	----	----
cation sum	----	EC101	0.10	meq/L	13.2	4.57	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.4	96.8	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	1.86	1.61	----	----	----
<b>Dissolved Metals</b>									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0028	0.0027	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00035	0.00068	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.324	0.133	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.308	0.038	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	9.71	19.5	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.044	0.111	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.399	0.0413	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.90	7.09	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0328	0.255	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00290	0.00547	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.84	0.301	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.91	3.30	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	285	68.8	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW6-DP_ WG_2021-04-1 2_N	CM_MW6-SH_ WG_2021-04-1 2_N	----	----	----
Client sampling date / time					12-May-2021 11:46	12-May-2021 11:20	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101386-001 Result	CG2101386-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.983	0.215	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.21	0.83	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00011	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000712	0.000447	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101386</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Inayat Dhaliwal
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 13-May-2021 09:00
PO	: VPO00741264	Issue Date	: 31-May-2021 16:59
C-O-C number	: COC_WG_Q2_20210512-MW6		
Sampler	: SH/DS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-DP_WG_2021-04-12_N	E298	12-May-2021	25-May-2021	----	13 days	✓	25-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-SH_WG_2021-04-12_N	E298	12-May-2021	25-May-2021	----	14 days	✓	25-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW6-DP_WG_2021-04-12_N	E235.Br-L	12-May-2021	----	----	----		14-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW6-SH_WG_2021-04-12_N	E235.Br-L	12-May-2021	----	----	----		14-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW6-DP_WG_2021-04-12_N	E235.Cl-L	12-May-2021	----	----	----		14-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW6-SH_WG_2021-04-12_N	E235.Cl-L	12-May-2021	----	----	----		14-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> CM_MW6-DP_WG_2021-04-12_N	E378-U	12-May-2021	----	----	----		14-May-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW6-SH_WG_2021-04-12_N	E378-U	12-May-2021	----	----	----		14-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW6-DP_WG_2021-04-12_N	E235.F	12-May-2021	----	----	----		14-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW6-SH_WG_2021-04-12_N	E235.F	12-May-2021	----	----	----		14-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW6-DP_WG_2021-04-12_N	E235.NO3-L	12-May-2021	----	----	----		14-May-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW6-SH_WG_2021-04-12_N	E235.NO3-L	12-May-2021	----	----	----		14-May-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW6-DP_WG_2021-04-12_N	E235.NO2-L	12-May-2021	----	----	----		14-May-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW6-SH_WG_2021-04-12_N	E235.NO2-L	12-May-2021	----	----	----		14-May-2021	3 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW6-DP_WG_2021-04-12_N	E235.SO4	12-May-2021	----	----	----		14-May-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW6-SH_WG_2021-04-12_N	E235.SO4	12-May-2021	----	----	----		14-May-2021	28 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-DP_WG_2021-04-12_N	E318	12-May-2021	19-May-2021	----	7 days	✔	19-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-SH_WG_2021-04-12_N	E318	12-May-2021	19-May-2021	----	7 days	✔	19-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-DP_WG_2021-04-12_N	E372-U	12-May-2021	19-May-2021	----	7 days	✔	19-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-SH_WG_2021-04-12_N	E372-U	12-May-2021	19-May-2021	----	7 days	✔	19-May-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW6-DP_WG_2021-04-12_N	E421.Cr-L	12-May-2021	17-May-2021	----	6 days	✔	18-May-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW6-SH_WG_2021-04-12_N	E421.Cr-L	12-May-2021	17-May-2021	----	6 days	✔	18-May-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW6-DP_WG_2021-04-12_N	E509	12-May-2021	19-May-2021	----	8 days	✔	19-May-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW6-SH_WG_2021-04-12_N	E509	12-May-2021	19-May-2021	----	8 days	✔	19-May-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW6-DP_WG_2021-04-12_N	E421	12-May-2021	17-May-2021	----	6 days	✔	18-May-2021	180 days	1 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW6-SH_WG_2021-04-12_N	E421	12-May-2021	17-May-2021	----	6 days	✓	18-May-2021	180 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW6-DP_WG_2021-04-12_N	E358-L	12-May-2021	12-May-2021	----	1 days	✓	25-May-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW6-SH_WG_2021-04-12_N	E358-L	12-May-2021	12-May-2021	----	1 days	✓	25-May-2021	28 days	13 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-DP_WG_2021-04-12_N	E355-L	12-May-2021	30-May-2021	----	18 days	✓	31-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-SH_WG_2021-04-12_N	E355-L	12-May-2021	30-May-2021	----	18 days	✓	31-May-2021	28 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW6-DP_WG_2021-04-12_N	E283	12-May-2021	----	----	----		21-May-2021	14 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW6-SH_WG_2021-04-12_N	E283	12-May-2021	----	----	----		21-May-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW6-DP_WG_2021-04-12_N	E290	12-May-2021	----	----	----		25-May-2021	14 days	13 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW6-SH_WG_2021-04-12_N	E290	12-May-2021	----	----	----		25-May-2021	14 days	13 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW6-DP_WG_2021-04-12_N	E100	12-May-2021	----	----	----		25-May-2021	28 days	13 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW6-SH_WG_2021-04-12_N	E100	12-May-2021	----	----	----		25-May-2021	28 days	13 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW6-DP_WG_2021-04-12_N	E125	12-May-2021	----	----	----		19-May-2021	0.34 hrs	166 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW6-SH_WG_2021-04-12_N	E125	12-May-2021	----	----	----		19-May-2021	0.34 hrs	167 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW6-DP_WG_2021-04-12_N	E108	12-May-2021	----	----	----		25-May-2021	0.25 hrs	310 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW6-SH_WG_2021-04-12_N	E108	12-May-2021	----	----	----		25-May-2021	0.25 hrs	310 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW6-DP_WG_2021-04-12_N	E162	12-May-2021	----	----	----		17-May-2021	7 days	6 days		✓
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW6-SH_WG_2021-04-12_N	E162	12-May-2021	----	----	----		17-May-2021	7 days	6 days		✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] CM_MW6-DP_WG_2021-04-12_N	E160-L	12-May-2021	----	----	----		17-May-2021	7 days	6 days		✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> CM_MW6-SH_WG_2021-04-12_N	E160-L	12-May-2021	----	----	----		17-May-2021	7 days	6 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW6-DP_WG_2021-04-12_N	E121	12-May-2021	----	----	----		14-May-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW6-SH_WG_2021-04-12_N	E121	12-May-2021	----	----	----		14-May-2021	3 days	3 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	202628	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	204544	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	204309	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	197842	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	197843	1	18	5.5	5.0	✓
Conductivity in Water	E100	204543	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	199598	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	201321	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	199599	2	18	11.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204654	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	197708	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	197846	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	197844	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	197845	1	18	5.5	5.0	✓
ORP by Electrode	E125	200545	1	20	5.0	5.0	✓
pH by Meter	E108	204542	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	197841	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	199217	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	200166	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	208594	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199952	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	197939	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	202628	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	204544	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	204309	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	197842	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	197843	1	18	5.5	5.0	✓
Conductivity in Water	E100	204543	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	199598	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	201321	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	199599	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204654	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	197708	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	197846	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	197844	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	197845	1	18	5.5	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	200545	1	20	5.0	5.0	✓
pH by Meter	E108	204542	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	197841	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	199217	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	200166	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	208594	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199952	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	199209	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	197939	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	202628	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	204544	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	204309	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	197842	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	197843	1	18	5.5	5.0	✓
Conductivity in Water	E100	204543	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	199598	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	201321	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	199599	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204654	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	197708	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	197846	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	197844	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	197845	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	197841	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	199217	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	200166	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	208594	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199952	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	199209	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	197939	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	204309	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	197842	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	197843	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	199598	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	201321	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	199599	2	18	11.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204654	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	197708	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	197846	1	18	5.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	197844	1	18	5.5	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	197845	1	18	5.5	5.0	✔
Sulfate in Water by IC	E235.SO4	197841	1	18	5.5	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	200166	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	208594	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	199952	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Waterloo - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Waterloo - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Waterloo - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Waterloo - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2101386**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q2\_20210512-MW6  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 13-May-2021 09:00  
**Date Analysis Commenced** : 12-May-2021  
**Issue Date** : 31-May-2021 16:59

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2101386  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 197939)</b>											
CG2101384-001	Anonymous	turbidity	----	E121	0.10	NTU	27.3	27.2	0.367%	15%	----
<b>Physical Tests (QC Lot: 199217)</b>											
CG2101354-001	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1550	1650	6.31%	20%	----
<b>Physical Tests (QC Lot: 200545)</b>											
CG2101383-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	193	194	0.207%	15%	----
<b>Physical Tests (QC Lot: 202628)</b>											
CG2101383-001	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	13.8	14.6	0.8	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 204542)</b>											
CG2101383-001	Anonymous	pH	----	E108	0.10	pH units	7.82	8.00	2.28%	4%	----
<b>Physical Tests (QC Lot: 204543)</b>											
CG2101383-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1890	1910	0.949%	10%	----
<b>Physical Tests (QC Lot: 204544)</b>											
CG2101383-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	500	510	2.04%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	500	510	2.04%	20%	----
<b>Anions and Nutrients (QC Lot: 197708)</b>											
CG2101381-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0011	0.0011	0.00002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 197841)</b>											
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	5.20	5.13	1.25%	20%	----
<b>Anions and Nutrients (QC Lot: 197842)</b>											
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.101	0.086	0.015	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 197843)</b>											
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	36.6	36.6	0.0753%	20%	----
<b>Anions and Nutrients (QC Lot: 197844)</b>											
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 197845)</b>											
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 197846)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 197846) - continued</b>											
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	fluoride	16984-48-8	E235.F	0.020	mg/L	0.410	0.427	4.16%	20%	----
<b>Anions and Nutrients (QC Lot: 199952)</b>											
CG2101383-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0144	0.0139	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 200166)</b>											
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.272	0.280	0.008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 204309)</b>											
CG2101381-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0208	0.0210	0.0002	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 204654)</b>											
CG2101383-006	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.47	2.24	0.23	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 208594)</b>											
CG2101388-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.82	1.79	0.04	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 199598)</b>											
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 199599)</b>											
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0028	0.0033	0.0004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00035	0.00040	0.00006	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.324	0.322	0.630%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.308	0.302	2.06%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	9.71	9.72	0.132%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.044	0.040	0.004	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.399	0.382	4.40%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.90	2.95	1.73%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0328	0.0335	1.93%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00290	0.00291	0.338%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.84	1.82	0.896%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 199599) - continued</b>											
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.91	3.84	1.87%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	285	279	2.35%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.983	1.00	2.06%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.21	2.32	0.11	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00011	0.00010	0.000004	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000712	0.000744	4.48%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 201321)</b>											
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 197939)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 199209)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 199217)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 202628)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 204543)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 204544)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 197708)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 197841)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 197842)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 197843)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 197844)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 197845)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 197846)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 199952)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 200166)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 204309)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 204309) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 204654)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 208594)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 199598)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 199599)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 199599) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 201321)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 197939)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.4	85.0	115	----
<b>Physical Tests (QCLot: 199209)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	93.4	85.0	115	----
<b>Physical Tests (QCLot: 199217)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	98.8	85.0	115	----
<b>Physical Tests (QCLot: 200545)</b>									
oxidation-reduction potential [ORP]	---	E125	----	mV	220 mV	101	95.4	104	----
<b>Physical Tests (QCLot: 202628)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	110	85.0	115	----
<b>Physical Tests (QCLot: 204542)</b>									
pH	---	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 204543)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	----
<b>Physical Tests (QCLot: 204544)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 197708)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	100	80.0	120	----
<b>Anions and Nutrients (QCLot: 197841)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 197842)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	95.3	85.0	115	----
<b>Anions and Nutrients (QCLot: 197843)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.6	90.0	110	----
<b>Anions and Nutrients (QCLot: 197844)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.6	90.0	110	----
<b>Anions and Nutrients (QCLot: 197845)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	96.0	90.0	110	----
<b>Anions and Nutrients (QCLot: 197846)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	94.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 199952)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	99.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 200166)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 200166) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 204309)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	109	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 204654)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	117	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 208594)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	99.2	80.0	120	----
<b>Dissolved Metals (QCLot: 199598)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
<b>Dissolved Metals (QCLot: 199599)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	106	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.3	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.6	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	89.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	109	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	94.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	97.6	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.1	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.6	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.0	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 199599) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.3	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.6	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 197708)</b>										
CG2101381-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0534 mg/L	0.05 mg/L	107	70.0	130	----
<b>Anions and Nutrients (QCLot: 197841)</b>										
CG2101387-013	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 197842)</b>										
CG2101387-013	Anonymous	bromide	24959-67-9	E235.Br-L	0.519 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 197843)</b>										
CG2101387-013	Anonymous	chloride	16887-00-6	E235.Cl-L	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 197844)</b>										
CG2101387-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.60 mg/L	2.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 197845)</b>										
CG2101387-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.476 mg/L	0.5 mg/L	95.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 197846)</b>										
CG2101387-013	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 199952)</b>										
CG2101383-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0699 mg/L	0.0676 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 200166)</b>										
CG2101386-002	CM_MW6-SH_WG_2021-04-12_N	Kjeldahl nitrogen, total [TKN]	----	E318	3.18 mg/L	2.5 mg/L	127	70.0	130	----
<b>Anions and Nutrients (QCLot: 204309)</b>										
CG2101381-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 204654)</b>										
CG2101383-006	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	11.5 mg/L	10 mg/L	115	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 208594)</b>										
CG2101388-002	Anonymous	carbon, total organic [TOC]	----	E355-L	10.5 mg/L	10 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 199598)</b>										
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0380 mg/L	0.04 mg/L	95.0	70.0	130	----
<b>Dissolved Metals (QCLot: 199599)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 199599) - continued</b>										
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	copper, dissolved	7440-50-8	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
CG2101386-001	CM_MW6-DP_WG_2021-04-12_N	aluminum, dissolved	7429-90-5	E421	0.212 mg/L	0.2 mg/L	106	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0217 mg/L	0.02 mg/L	108	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00766 mg/L	0.01 mg/L	76.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00387 mg/L	0.004 mg/L	96.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0182 mg/L	0.02 mg/L	91.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.80 mg/L	2 mg/L	90.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0213 mg/L	0.02 mg/L	106	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.05 mg/L	4 mg/L	101	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0437 mg/L	0.04 mg/L	109	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.12 mg/L	10 mg/L	91.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00308 mg/L	0.004 mg/L	77.1	70.0	130	----
sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----		
strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----		
sulfur, dissolved	7704-34-9	E421	20.0 mg/L	20 mg/L	100	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00350 mg/L	0.004 mg/L	87.4	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00372 mg/L	0.004 mg/L	92.9	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.0987 mg/L	0.1 mg/L	98.7	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.369 mg/L	0.4 mg/L	92.2	70.0	130	----		
<b>Dissolved Metals (QCLot: 201321)</b>										
CG2101386-002	CM_MW6-SH_WG_2021-04-12_N	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----

Page : 14 of 14  
Work Order : CG2101386  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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# Teck

COC ID: **COC\_WG\_Q2\_20210512-MW6**

TURNAROUND TIME: REGULAR

RUSH: NO

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	ED	
Project Manager	Victoria Sharpe			Lab Contact	Inayat Dhaliwal			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	victoria.sharpe@teck.com			Email	inayat.dhaliwal@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
								Email 4:	don.sacino@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
				Phone Number	403 407 1800			PO number	00741264			

Environmental Division  
Calgary  
Work Order Reference  
**CG2101386**



Telephone: +1 403 407 1800

SAMPLE DETAILS							ANALYSIS REQUESTED										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA					
CM_MW6-DP_WG_2021-04-12_N	CM_MW6-DP	WG		2021/05/12	11:46	G	5	1	1	1	1	1					
CM_MW6-SH_WG_2021-04-12_N	CM_MW6-SH	WG		2021/05/12	11:20	G	5	1	1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO <sub>3</sub> , hydroxide as OH and carbonate as CO <sub>3</sub> rather than bicarbonate as CaCO <sub>3</sub> , Carbonate as CaCO <sub>3</sub> and hydroxide as CaCO <sub>3</sub> .			<i>[Signature]</i>	5/13/2021

SERVICE REQUEST (rush - subject to availability)	Regular (default)	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	SH/DS	Mobile #	250-425-7522
	X				Sampler's Signature	<i>[Signature]</i>	Date/Time	2021/05/12

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2101415**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q2\_20210513-MW4  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 14-May-2021 09:00  
**Date Analysis Commenced** : 14-May-2021  
**Issue Date** : 27-May-2021 18:47

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW4-SH_ WG_2021-04-1 2_N	CM_MW4-DP_ WG_2021-04-1 2_N	----	----	----
Client sampling date / time					13-May-2021 10:08	13-May-2021 10:05	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101415-001 Result	CG2101415-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	552	698	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	73.0	108	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	625	806	----	----	----	
conductivity	----	E100	2.0	µS/cm	1440	2470	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	27.1	24.1	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	219	164	----	----	----	
pH	----	E108	0.10	pH units	8.81	8.88	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	849	1370	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.3	4.1	----	----	----	
turbidity	----	E121	0.10	NTU	1.13	13.6	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	674	852	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	43.8	64.9	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.446	0.502	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.485	1.33	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	135	376	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.304	0.342	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.398	0.427	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0250 <sup>DLHC</sup>	<0.0250 <sup>DLHC</sup>	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0079	0.0086	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0072	0.0196	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<1.50 <sup>DLHC</sup>	<1.50 <sup>DLHC</sup>	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.77	0.61	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.53	1.12	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW4-SH_ WG_2021-04-1 2_N	CM_MW4-DP_ WG_2021-04-1 2_N	---	---	---
Client sampling date / time					13-May-2021 10:08	13-May-2021 10:05	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2101415-001 Result	CG2101415-002 Result	----- ---	----- ---	----- ---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	16.3	26.7	----	----	----	
cation sum	----	EC101	0.10	meq/L	16.6	27.3	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	102	102	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.912	1.11	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0024	0.0084	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.342	0.448	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.396	0.444	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0100 <sup>DLA</sup>	<0.0100 <sup>DLA</sup>	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	7.14	7.17	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.20 <sup>DLA</sup>	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	<0.00040 <sup>DLA</sup>	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.080	0.056	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000100 <sup>DLA</sup>	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.527	1.04	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.26	1.50	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00444	0.00329	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000680	0.000624	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.01	1.14	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.100 <sup>DLA</sup>	<0.100 <sup>DLA</sup>	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.18	3.98	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	369	616	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW4-SH_ WG_2021-04-1 2_N	CM_MW4-DP_ WG_2021-04-1 2_N	----	----	----
Client sampling date / time					13-May-2021 10:08	13-May-2021 10:05	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101415-001 Result	CG2101415-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.819	0.959	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<1.00 <sup>DLA</sup>	<1.00 <sup>DLA</sup>	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0020 <sup>DLA</sup>	0.0063	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101415</b>	Page	: 1 of 14
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Inayat Dhaliwal
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 14-May-2021 09:00
PO	: VPO00741264	Issue Date	: 27-May-2021 18:47
C-O-C number	: COC_WG_Q2_20210513-MW4		
Sampler	: SH/DS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Laboratory Control Sample (LCS) Recoveries</b>								
Dissolved Metals	QC-MRG2-1992990 02	----	lithium, dissolved	7439-93-2	E421	125 % <sup>MES</sup>	80.0-120%	Recovery greater than upper control limit

**Result Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-DP_WG_2021-04-12_N	E298	13-May-2021	26-May-2021	----	13 days	✓	26-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-SH_WG_2021-04-12_N	E298	13-May-2021	26-May-2021	----	13 days	✓	26-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW4-DP_WG_2021-04-12_N	E235.Br-L	13-May-2021	----	----	----		14-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW4-SH_WG_2021-04-12_N	E235.Br-L	13-May-2021	----	----	----		14-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW4-DP_WG_2021-04-12_N	E235.Cl-L	13-May-2021	----	----	----		14-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW4-SH_WG_2021-04-12_N	E235.Cl-L	13-May-2021	----	----	----		14-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> CM_MW4-DP_WG_2021-04-12_N	E378-U	13-May-2021	----	----	----		14-May-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE CM_MW4-SH_WG_2021-04-12_N	E378-U	13-May-2021	----	----	----		14-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW4-DP_WG_2021-04-12_N	E235.F	13-May-2021	----	----	----		14-May-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW4-SH_WG_2021-04-12_N	E235.F	13-May-2021	----	----	----		14-May-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW4-DP_WG_2021-04-12_N	E235.NO3-L	13-May-2021	----	----	----		14-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW4-SH_WG_2021-04-12_N	E235.NO3-L	13-May-2021	----	----	----		14-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW4-DP_WG_2021-04-12_N	E235.NO2-L	13-May-2021	----	----	----		14-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW4-SH_WG_2021-04-12_N	E235.NO2-L	13-May-2021	----	----	----		14-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW4-DP_WG_2021-04-12_N	E235.SO4	13-May-2021	----	----	----		14-May-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW4-SH_WG_2021-04-12_N	E235.SO4	13-May-2021	----	----	----		14-May-2021	28 days	2 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-DP_WG_2021-04-12_N	E318	13-May-2021	20-May-2021	----	7 days	✔	20-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-SH_WG_2021-04-12_N	E318	13-May-2021	20-May-2021	----	7 days	✔	20-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-DP_WG_2021-04-12_N	E372-U	13-May-2021	20-May-2021	----	7 days	✔	20-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-SH_WG_2021-04-12_N	E372-U	13-May-2021	20-May-2021	----	7 days	✔	20-May-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW4-DP_WG_2021-04-12_N	E421.Cr-L	13-May-2021	17-May-2021	----	5 days	✔	18-May-2021	180 days	2 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW4-SH_WG_2021-04-12_N	E421.Cr-L	13-May-2021	17-May-2021	----	5 days	✔	18-May-2021	180 days	2 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW4-DP_WG_2021-04-12_N	E509	13-May-2021	18-May-2021	----	5 days	✔	18-May-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW4-SH_WG_2021-04-12_N	E509	13-May-2021	18-May-2021	----	5 days	✔	18-May-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW4-DP_WG_2021-04-12_N	E421	13-May-2021	17-May-2021	----	5 days	✔	18-May-2021	180 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW4-SH_WG_2021-04-12_N	E421	13-May-2021	17-May-2021	----	5 days	✓	18-May-2021	180 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW4-DP_WG_2021-04-12_N	E358-L	13-May-2021	24-May-2021	----	12 days	✓	24-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW4-SH_WG_2021-04-12_N	E358-L	13-May-2021	24-May-2021	----	12 days	✓	24-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-DP_WG_2021-04-12_N	E355-L	13-May-2021	24-May-2021	----	12 days	✓	24-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-SH_WG_2021-04-12_N	E355-L	13-May-2021	24-May-2021	----	12 days	✓	24-May-2021	28 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW4-DP_WG_2021-04-12_N	E283	13-May-2021	----	----	----		21-May-2021	14 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW4-SH_WG_2021-04-12_N	E283	13-May-2021	----	----	----		21-May-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW4-DP_WG_2021-04-12_N	E290	13-May-2021	----	----	----		25-May-2021	14 days	12 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW4-SH_WG_2021-04-12_N	E290	13-May-2021	----	----	----		25-May-2021	14 days	12 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW4-DP_WG_2021-04-12_N	E100	13-May-2021	----	----	----		25-May-2021	28 days	12 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW4-SH_WG_2021-04-12_N	E100	13-May-2021	----	----	----		25-May-2021	28 days	12 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW4-DP_WG_2021-04-12_N	E125	13-May-2021	----	----	----		20-May-2021	0.34 hrs	170 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW4-SH_WG_2021-04-12_N	E125	13-May-2021	----	----	----		20-May-2021	0.34 hrs	170 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW4-DP_WG_2021-04-12_N	E108	13-May-2021	----	----	----		25-May-2021	0.25 hrs	287 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW4-SH_WG_2021-04-12_N	E108	13-May-2021	----	----	----		25-May-2021	0.25 hrs	287 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW4-DP_WG_2021-04-12_N	E162	13-May-2021	----	----	----		18-May-2021	7 days	6 days		✓
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW4-SH_WG_2021-04-12_N	E162	13-May-2021	----	----	----		18-May-2021	7 days	6 days		✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] CM_MW4-DP_WG_2021-04-12_N	E160-L	13-May-2021	----	----	----		18-May-2021	7 days	5 days		✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> CM_MW4-SH_WG_2021-04-12_N	E160-L	13-May-2021	----	----	----		18-May-2021	7 days	5 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW4-DP_WG_2021-04-12_N	E121	13-May-2021	----	----	----		15-May-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW4-SH_WG_2021-04-12_N	E121	13-May-2021	----	----	----		15-May-2021	3 days	2 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	203314	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	204576	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	205358	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	198225	1	2	50.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	198226	1	2	50.0	5.0	✓
Conductivity in Water	E100	204575	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	199300	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	199766	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	199299	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204286	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	198160	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	198229	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	198227	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	198228	1	2	50.0	5.0	✓
ORP by Electrode	E125	202088	1	20	5.0	5.0	✓
pH by Meter	E108	204574	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	198224	1	2	50.0	5.0	✓
TDS by Gravimetry	E162	199756	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	201180	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	204288	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	200915	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	198367	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	203314	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	204576	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	205358	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	198225	1	2	50.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	198226	1	2	50.0	5.0	✓
Conductivity in Water	E100	204575	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	199300	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	199766	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	199299	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204286	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	198160	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	198229	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	198227	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	198228	1	2	50.0	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	202088	1	20	5.0	5.0	✔
pH by Meter	E108	204574	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	198224	1	2	50.0	5.0	✔
TDS by Gravimetry	E162	199756	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	201180	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	204288	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	200915	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	199750	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	198367	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	203314	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	204576	1	19	5.2	5.0	✔
Ammonia by Fluorescence	E298	205358	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	198225	1	2	50.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	198226	1	2	50.0	5.0	✔
Conductivity in Water	E100	204575	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	199300	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	199766	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	199299	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204286	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	198160	1	11	9.0	5.0	✔
Fluoride in Water by IC	E235.F	198229	1	2	50.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	198227	1	2	50.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	198228	1	2	50.0	5.0	✔
Sulfate in Water by IC	E235.SO4	198224	1	2	50.0	5.0	✔
TDS by Gravimetry	E162	199756	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	201180	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	204288	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	200915	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	199750	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	198367	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	205358	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	198225	0	2	0.0	5.0	✖
Chloride in Water by IC (Low Level)	E235.Cl-L	198226	0	2	0.0	5.0	✖
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	199300	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	199766	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	199299	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204286	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	198160	1	11	9.0	5.0	✔



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	198229	0	2	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	198227	0	2	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	198228	0	2	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	198224	0	2	0.0	5.0	✘
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	201180	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	204288	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	200915	1	20	5.0	5.0	✔





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101415**

**Page** : 1 of 13

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q2\_20210513-MW4  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 14-May-2021 09:00  
**Date Analysis Commenced** : 14-May-2021  
**Issue Date** : 27-May-2021 18:47

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 13  
Work Order : CG2101415  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 198367)</b>											
CG2101415-001	CM_MW4-SH_WG_2021-04-12_N	turbidity	----	E121	0.10	NTU	1.13	1.12	0.01	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 199756)</b>											
CG2101404-003	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	550	576	4.71%	20%	----
<b>Physical Tests (QC Lot: 202088)</b>											
CG2101404-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	263	262	0.0381%	15%	----
<b>Physical Tests (QC Lot: 203314)</b>											
CG2101404-003	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 204574)</b>											
CG2101394-001	Anonymous	pH	----	E108	0.10	pH units	8.23	8.24	0.121%	4%	----
<b>Physical Tests (QC Lot: 204575)</b>											
CG2101394-001	Anonymous	conductivity	----	E100	2.0	µS/cm	666	666	0.00%	10%	----
<b>Physical Tests (QC Lot: 204576)</b>											
CG2101409-010	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	220	263	18.1%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	220	263	18.1%	20%	----
<b>Anions and Nutrients (QC Lot: 198160)</b>											
CG2101424-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198224)</b>											
CG2101415-001	CM_MW4-SH_WG_2021-04-12_N	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	<1.50	<1.50	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198225)</b>											
CG2101415-001	CM_MW4-SH_WG_2021-04-12_N	bromide	24959-67-9	E235.Br-L	0.250	mg/L	0.485	0.471	0.015	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198226)</b>											
CG2101415-001	CM_MW4-SH_WG_2021-04-12_N	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	135	135	0.0166%	20%	----
<b>Anions and Nutrients (QC Lot: 198227)</b>											
CG2101415-001	CM_MW4-SH_WG_2021-04-12_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198228)</b>											
CG2101415-001	CM_MW4-SH_WG_2021-04-12_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198229)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 198229) - continued</b>											
CG2101415-001	CM_MW4-SH_WG_2021-04-12_N	fluoride	16984-48-8	E235.F	0.100	mg/L	0.304	0.302	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 200915)</b>											
CG2101404-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0024	0.0020	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 201180)</b>											
CG2101404-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 205358)</b>											
CG2101409-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0279	0.0346	0.0067	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 204286)</b>											
CG2101404-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.64	1.74	0.10	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 204288)</b>											
CG2101404-003	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.80	1.77	0.02	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 199299)</b>											
CG2101393-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0025	0.0022	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00017	0.00018	0.000008	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0444	0.0450	1.26%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0138 µg/L	0.0000140	0.0000002	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	79.7	81.3	1.92%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00022	0.00022	0.000002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0066	0.0066	0.00001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	40.7	41.1	1.000%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00081	0.00077	0.00004	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000812	0.000834	2.65%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00074	0.00078	0.00004	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.941	0.969	2.95%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	34.5 µg/L	0.0332	3.78%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.86	1.84	1.08%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.58	1.67	5.74%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 199299) - continued</b>											
CG2101393-001	Anonymous	strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.114	0.116	1.71%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	45.7	44.7	2.38%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00204	0.00208	1.73%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 199300)</b>											
CG2101393-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 199766)</b>											
CG2101407-006	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 198367)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 199750)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 199756)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 203314)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 204575)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 204576)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 198160)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 198224)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 198225)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 198226)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 198227)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 198228)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 198229)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 200915)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 201180)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 205358)</b>						





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 205358) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 204286)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 204288)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 199299)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 199299) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 199300)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 199766)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 198367)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.4	85.0	115	---
<b>Physical Tests (QCLot: 199750)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	89.2	85.0	115	---
<b>Physical Tests (QCLot: 199756)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	98.9	85.0	115	---
<b>Physical Tests (QCLot: 202088)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 203314)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 204574)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 204575)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.0	90.0	110	---
<b>Physical Tests (QCLot: 204576)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	109	85.0	115	---
<b>Anions and Nutrients (QCLot: 198160)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	98.6	80.0	120	---
<b>Anions and Nutrients (QCLot: 198224)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 198225)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.2	85.0	115	---
<b>Anions and Nutrients (QCLot: 198226)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 198227)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 198228)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 198229)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	92.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 200915)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 201180)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 201180) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 205358)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	106	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 204286)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 204288)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 199299)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	116	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	111	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.1	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	108	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	110	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	111	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	93.7	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	111	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	# 125	80.0	120	MES
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	112	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	111	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	106	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	120	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	91.8	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	114	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 199299) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	110	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	111	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 199300)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----

**Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 198160)</b>										
CG2101419-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0517 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 200915)</b>										
CG2101404-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0547 mg/L	0.0676 mg/L	81.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 201180)</b>										
CG2101404-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	3.16 mg/L	2.5 mg/L	126	70.0	130	----
<b>Anions and Nutrients (QCLot: 205358)</b>										
CG2101409-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0887 mg/L	0.1 mg/L	88.7	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 204286)</b>										
CG2101404-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.4 mg/L	23.9 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 204288)</b>										
CG2101404-003	Anonymous	carbon, total organic [TOC]	----	E355-L	25.6 mg/L	23.9 mg/L	107	70.0	130	----
<b>Dissolved Metals (QCLot: 199299)</b>										
CG2101393-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.219 mg/L	0.2 mg/L	109	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0219 mg/L	0.02 mg/L	110	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00803 mg/L	0.01 mg/L	80.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.110 mg/L	0.1 mg/L	110	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00433 mg/L	0.004 mg/L	108	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.98 mg/L	2 mg/L	99.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.121 mg/L	0.1 mg/L	121	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 199299) - continued</b>										
CG2101393-001	Anonymous	potassium, dissolved	7440-09-7	E421	4.12 mg/L	4 mg/L	103	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.45 mg/L	10 mg/L	94.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	2.16 mg/L	2 mg/L	108	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00372 mg/L	0.004 mg/L	93.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0216 mg/L	0.02 mg/L	108	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00380 mg/L	0.004 mg/L	95.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.411 mg/L	0.4 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 199300)</b>										
CG2101393-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 199766)</b>										
CG2101409-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----

COC ID: **COC\_WG\_Q2\_20210513-MW4**

TURNAROUND TIME:

REGULAR

RUSH: **NO**

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excl	PDF	EDD	
Project Manager	Victoria Sharpe			Lab Contact	Inayat Dhaliwal			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	victoria.sharpe@teck.com			Email	Inayat.Dhaliwal@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	don.sacino@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	shelby.holden@teck.com	X	X	X
Phone Number	1-250-425-7522			Phone Number	403 407 1800			PO number	00741264			

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Ycs/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED						
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA		
CM_MW4-SH_WG_2021-04-12_N	CM_MW4-SH	WG	No	2021/05/13	10:08	G	5	1	1	1	1	1		
CM_MW4-DP_WG_2021-04-12_N	CM_MW4-DP	WG	No	2021/05/13	10:05	G	5	1	1	1	1	1		

Environmental Division  
Calgary  
Work Order Reference  
**CG2101415**



Telephone: +1 403 407 1800

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

Request analyses of bicarbonate and HCO<sub>3</sub>, hydroxide as OH and carbonate as CO<sub>3</sub> rather than bicarbonate as CaCO<sub>3</sub>, Carbonate as CaCO<sub>3</sub> and hydroxide as CaCO<sub>3</sub>.

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

*Signature* 5/14/2020

**SERVICE REQUEST (rush - subject to availability)**

Regular (default)  X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

SH/DS

Mobile #

250-425-7522

Sampler's Signature

*Signature: S.Holder*

Date/Time

2021/05/13

*Signature*



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2101437**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q2\_20210512-MW7,8  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 15-May-2021 09:30  
**Date Analysis Commenced** : 15-May-2021  
**Issue Date** : 03-Jun-2021 10:39

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Ping Yeung	Team Leader - Inorganics	Inorganics, Edmonton, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shruti Mudliar	Lab Analyst	Inorganics, Edmonton, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW7-DP_ WG_2021-04-1 2_N	CM_MW7-SH_ WG_2021-04-1 2_N	CM_MW8_WG_ 2021-04-12_N	----	----
Client sampling date / time					14-May-2021 11:17	14-May-2021 11:13	14-May-2021 10:28	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101437-001	CG2101437-002	CG2101437-003	-----	-----	
					Result	Result	Result	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	8.4	4.6	<2.0	----	----	
conductivity	----	E100	2.0	µS/cm	1860	1110	638	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1450	968	338	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	389	410	416	----	----	
pH	----	E108	0.10	pH units	7.92	7.60	8.14	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	1750	879	464	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.5	40.2	3.3	----	----	
turbidity	----	E121	0.10	NTU	0.99	38.7	15.0	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	293	296	280	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	357	361	342	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	436	441	417	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0076	0.106	0.971	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.050	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.69	11.2	1.27	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLHC</sup>	0.159	0.203	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.238	0.291	1.32	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.478	0.0235	0.0367	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0030	<0.0010	<0.0010	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0033	0.0158	0.0092	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1120	380	114	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	1.78	1.70 <sup>DTC</sup>	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.21	3.09	1.21 <sup>DTC</sup>	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW7-DP_ WG_2021-04-1 2_N	CM_MW7-SH_ WG_2021-04-1 2_N	CM_MW8_WG_ 2021-04-12_N	----	----
Client sampling date / time					14-May-2021 11:17	14-May-2021 11:13	14-May-2021 10:28	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101437-001 Result	CG2101437-002 Result	CG2101437-003 Result	----- ----	----- ----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	29.2	14.2	8.02	----	----	
cation sum	----	EC101	0.10	meq/L	30.2	19.8	8.56	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	103	139 <sup>RRV</sup>	107	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.68	16.5	3.26	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0028	0.0010	0.0035	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00028	<0.00010	0.00020	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00162	<0.00020 <sup>DLA</sup>	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0139	0.0434	0.0831	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	<0.040 <sup>DLA</sup>	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.056	0.018	0.266	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0622	<0.0050	<0.0100 <sup>DLA</sup>	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	350	254 <sup>RRV</sup>	90.6	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.92	1.07	0.24	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	<0.00020	<0.00040 <sup>DLA</sup>	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.020 <sup>DLA</sup>	4.00	0.757	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0629	0.0069	0.0608	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	139	81.1 <sup>RRV</sup>	27.2	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.467	0.275	0.102	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000153	0.000684	0.000476	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0147	0.00160	<0.00100 <sup>DLA</sup>	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.79	2.06 <sup>RRV</sup>	2.92	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	1.46	<0.050	<0.100 <sup>DLA</sup>	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.72	5.43	6.79	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	27.5	4.84 <sup>RRV</sup>	37.4	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW7-DP_WG_2021-04-12_N	CM_MW7-SH_WG_2021-04-12_N	CM_MW8_WG_2021-04-12_N	----	----
Client sampling date / time					14-May-2021 11:17	14-May-2021 11:13	14-May-2021 10:28	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101437-001	CG2101437-002	CG2101437-003	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.880	0.691	5.70	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	441	274	40.9	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	0.00022	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	<0.00060 <sup>DLA</sup>	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00461	0.000594	0.000205	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	<0.00100 <sup>DLA</sup>	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0136	<0.0010	0.0034	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101437</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Inayat Dhaliwal
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 15-May-2021 09:30
PO	: VPO00741264	Issue Date	: 03-Jun-2021 10:39
C-O-C number	: COC_WG_Q2_20210512-MW7,8		
Sampler	: SH/DS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-04-12_N	E298	14-May-2021	26-May-2021	----	13 days	✓	26-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-04-12_N	E298	14-May-2021	26-May-2021	----	13 days	✓	26-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-04-12_N	E298	14-May-2021	26-May-2021	----	13 days	✓	26-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW7-DP_WG_2021-04-12_N	E235.Br-L	14-May-2021	----	----	----		15-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW7-SH_WG_2021-04-12_N	E235.Br-L	14-May-2021	----	----	----		15-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW8_WG_2021-04-12_N	E235.Br-L	14-May-2021	----	----	----		15-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW7-DP_WG_2021-04-12_N	E235.Cl-L	14-May-2021	----	----	----		15-May-2021	28 days	2 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE CM_MW7-SH_WG_2021-04-12_N	E235.Cl-L	14-May-2021	----	----	----		15-May-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE CM_MW8_WG_2021-04-12_N	E235.Cl-L	14-May-2021	----	----	----		15-May-2021	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE CM_MW7-DP_WG_2021-04-12_N	E378-U	14-May-2021	----	----	----		16-May-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE CM_MW7-SH_WG_2021-04-12_N	E378-U	14-May-2021	----	----	----		16-May-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE CM_MW8_WG_2021-04-12_N	E378-U	14-May-2021	----	----	----		16-May-2021	3 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW7-DP_WG_2021-04-12_N	E235.F	14-May-2021	----	----	----		15-May-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW7-SH_WG_2021-04-12_N	E235.F	14-May-2021	----	----	----		15-May-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW8_WG_2021-04-12_N	E235.F	14-May-2021	----	----	----		15-May-2021	28 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW7-DP_WG_2021-04-12_N	E235.NO3-L	14-May-2021	----	----	----		15-May-2021	3 days	2 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW7-SH_WG_2021-04-12_N	E235.NO3-L	14-May-2021	----	----	----		15-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW8_WG_2021-04-12_N	E235.NO3-L	14-May-2021	----	----	----		15-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW7-DP_WG_2021-04-12_N	E235.NO2-L	14-May-2021	----	----	----		15-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW7-SH_WG_2021-04-12_N	E235.NO2-L	14-May-2021	----	----	----		15-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW8_WG_2021-04-12_N	E235.NO2-L	14-May-2021	----	----	----		15-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW7-DP_WG_2021-04-12_N	E235.SO4	14-May-2021	----	----	----		15-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW7-SH_WG_2021-04-12_N	E235.SO4	14-May-2021	----	----	----		15-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW8_WG_2021-04-12_N	E235.SO4	14-May-2021	----	----	----		15-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-04-12_N	E318	14-May-2021	21-May-2021	----	7 days	✓	21-May-2021	28 days	0 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-04-12_N	E318	14-May-2021	21-May-2021	----	7 days	✓	21-May-2021	28 days	0 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-04-12_N	E318	14-May-2021	21-May-2021	----	7 days	✓	21-May-2021	28 days	0 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-04-12_N	E372-U	14-May-2021	21-May-2021	----	7 days	✓	21-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-04-12_N	E372-U	14-May-2021	21-May-2021	----	7 days	✓	21-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-04-12_N	E372-U	14-May-2021	21-May-2021	----	7 days	✓	21-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW7-DP_WG_2021-04-12_N	E421.Cr-L	14-May-2021	20-May-2021	----	6 days	✓	20-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW7-SH_WG_2021-04-12_N	E421.Cr-L	14-May-2021	20-May-2021	----	6 days	✓	20-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW8_WG_2021-04-12_N	E421.Cr-L	14-May-2021	20-May-2021	----	6 days	✓	20-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW7-DP_WG_2021-04-12_N	E509	14-May-2021	20-May-2021	----	7 days	✓	20-May-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW7-SH_WG_2021-04-12_N	E509	14-May-2021	20-May-2021	----	7 days	✓	20-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW8_WG_2021-04-12_N	E509	14-May-2021	20-May-2021	----	7 days	✓	20-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW7-DP_WG_2021-04-12_N	E421	14-May-2021	20-May-2021	----	6 days	✓	20-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW7-SH_WG_2021-04-12_N	E421	14-May-2021	20-May-2021	----	6 days	✓	20-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW8_WG_2021-04-12_N	E421	14-May-2021	20-May-2021	----	6 days	✓	20-May-2021	180 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW7-DP_WG_2021-04-12_N	E358-L	14-May-2021	25-May-2021	----	12 days	✓	26-May-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW7-SH_WG_2021-04-12_N	E358-L	14-May-2021	25-May-2021	----	12 days	✓	26-May-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW8_WG_2021-04-12_N	E358-L	14-May-2021	25-May-2021	----	12 days	✓	27-May-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-04-12_N	E355-L	14-May-2021	25-May-2021	----	12 days	✓	27-May-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-04-12_N	E355-L	14-May-2021	25-May-2021	----	12 days	✓	27-May-2021	28 days	2 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-04-12_N	E355-L	14-May-2021	25-May-2021	----	12 days	✓	26-May-2021	28 days	2 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW7-DP_WG_2021-04-12_N	E283	14-May-2021	----	----	----		22-May-2021	14 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW7-SH_WG_2021-04-12_N	E283	14-May-2021	----	----	----		22-May-2021	14 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW8_WG_2021-04-12_N	E283	14-May-2021	----	----	----		22-May-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW7-DP_WG_2021-04-12_N	E290	14-May-2021	----	----	----		25-May-2021	14 days	11 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW7-SH_WG_2021-04-12_N	E290	14-May-2021	----	----	----		25-May-2021	14 days	11 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW8_WG_2021-04-12_N	E290	14-May-2021	----	----	----		25-May-2021	14 days	12 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> CM_MW7-DP_WG_2021-04-12_N	E100	14-May-2021	----	----	----		25-May-2021	28 days	11 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW7-SH_WG_2021-04-12_N	E100	14-May-2021	----	----	----		25-May-2021	28 days	11 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW8_WG_2021-04-12_N	E100	14-May-2021	----	----	----		25-May-2021	28 days	12 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW7-DP_WG_2021-04-12_N	E125	14-May-2021	----	----	----		22-May-2021	0.34 hrs	191 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW7-SH_WG_2021-04-12_N	E125	14-May-2021	----	----	----		22-May-2021	0.34 hrs	191 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW8_WG_2021-04-12_N	E125	14-May-2021	----	----	----		22-May-2021	0.34 hrs	192 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW7-DP_WG_2021-04-12_N	E108	14-May-2021	----	----	----		25-May-2021	0.25 hrs	263 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW7-SH_WG_2021-04-12_N	E108	14-May-2021	----	----	----		25-May-2021	0.25 hrs	263 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW8_WG_2021-04-12_N	E108	14-May-2021	----	----	----		25-May-2021	0.25 hrs	264 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW7-DP_WG_2021-04-12_N	E162	14-May-2021	----	----	----		18-May-2021	7 days	5 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> CM_MW7-SH_WG_2021-04-12_N	E162	14-May-2021	----	----	----		18-May-2021	7 days	5 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> CM_MW8_WG_2021-04-12_N	E162	14-May-2021	----	----	----		18-May-2021	7 days	5 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> CM_MW7-DP_WG_2021-04-12_N	E160-L	14-May-2021	----	----	----		18-May-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> CM_MW7-SH_WG_2021-04-12_N	E160-L	14-May-2021	----	----	----		18-May-2021	7 days	4 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> CM_MW8_WG_2021-04-12_N	E160-L	14-May-2021	----	----	----		18-May-2021	7 days	4 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> CM_MW7-DP_WG_2021-04-12_N	E121	14-May-2021	----	----	----		15-May-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> CM_MW7-SH_WG_2021-04-12_N	E121	14-May-2021	----	----	----		15-May-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> CM_MW8_WG_2021-04-12_N	E121	14-May-2021	----	----	----		15-May-2021	3 days	2 days	✔	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	203723	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	204646	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	205680	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	198619	1	7	14.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	198620	1	7	14.2	5.0	✓
Conductivity in Water	E100	204644	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	201422	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	202387	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	201423	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204988	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	198709	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	198623	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	198621	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	198622	1	7	14.2	5.0	✓
ORP by Electrode	E125	203483	1	20	5.0	5.0	✓
pH by Meter	E108	204645	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	198618	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	199760	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	201729	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	204995	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	202341	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	198603	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	203723	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	204646	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	205680	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	198619	1	7	14.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	198620	1	7	14.2	5.0	✓
Conductivity in Water	E100	204644	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	201422	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	202387	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	201423	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204988	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	198709	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	198623	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	198621	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	198622	1	7	14.2	5.0	✓





Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	203483	1	20	5.0	5.0	✔
pH by Meter	E108	204645	1	17	5.8	5.0	✔
Sulfate in Water by IC	E235.SO4	198618	1	7	14.2	5.0	✔
TDS by Gravimetry	E162	199760	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	201729	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	204995	1	16	6.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	202341	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	199754	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	198603	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	203723	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	204646	1	17	5.8	5.0	✔
Ammonia by Fluorescence	E298	205680	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	198619	1	7	14.2	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	198620	1	7	14.2	5.0	✔
Conductivity in Water	E100	204644	1	17	5.8	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	201422	1	18	5.5	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	202387	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	201423	1	18	5.5	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204988	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	198709	1	14	7.1	5.0	✔
Fluoride in Water by IC	E235.F	198623	1	7	14.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	198621	1	7	14.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	198622	1	7	14.2	5.0	✔
Sulfate in Water by IC	E235.SO4	198618	1	7	14.2	5.0	✔
TDS by Gravimetry	E162	199760	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	201729	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	204995	1	16	6.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	202341	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	199754	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	198603	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	205680	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	198619	0	7	0.0	5.0	✖
Chloride in Water by IC (Low Level)	E235.Cl-L	198620	0	7	0.0	5.0	✖
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	201422	1	18	5.5	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	202387	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	201423	1	18	5.5	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	204988	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	198709	1	14	7.1	5.0	✔



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	198623	0	7	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	198621	0	7	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	198622	0	7	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	198618	0	7	0.0	5.0	✘
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	201729	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	204995	1	16	6.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	202341	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Edmonton - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Edmonton - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3
Alkalinity Species by Titration	E290 Edmonton - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101437**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q2\_20210512-MW7,8  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 15-May-2021 09:30  
**Date Analysis Commenced** : 15-May-2021  
**Issue Date** : 03-Jun-2021 10:39

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
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Ping Yeung	Team Leader - Inorganics	Inorganics, Edmonton, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



Page : 3 of 14  
Work Order : CG2101437  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 198603)</b>											
CG2101434-001	Anonymous	turbidity	----	E121	0.10	NTU	0.15	0.16	0.02	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 199760)</b>											
CG2101434-006	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	730	774	5.92%	20%	----
<b>Physical Tests (QC Lot: 203483)</b>											
CG2101437-001	CM_MW7-DP_WG_2021-0 4-12_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	389	390	0.103%	15%	----
<b>Physical Tests (QC Lot: 203723)</b>											
CG2101434-008	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 204644)</b>											
CG2101447-033	Anonymous	conductivity	----	E100	2.0	µS/cm	1750	1760	0.285%	10%	----
<b>Physical Tests (QC Lot: 204645)</b>											
CG2101447-033	Anonymous	pH	----	E108	0.10	pH units	7.84	7.84	0.00%	3%	----
<b>Physical Tests (QC Lot: 204646)</b>											
CG2101447-033	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	440	431	2.09%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	440	431	2.09%	20%	----
<b>Anions and Nutrients (QC Lot: 198618)</b>											
CG2101437-001	CM_MW7-DP_WG_2021-0 4-12_N	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	1120	1130	0.578%	20%	----
<b>Anions and Nutrients (QC Lot: 198619)</b>											
CG2101437-001	CM_MW7-DP_WG_2021-0 4-12_N	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198620)</b>											
CG2101437-001	CM_MW7-DP_WG_2021-0 4-12_N	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.69	1.65	0.05	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198621)</b>											
CG2101437-001	CM_MW7-DP_WG_2021-0 4-12_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.478	0.486	1.65%	20%	----
<b>Anions and Nutrients (QC Lot: 198622)</b>											
CG2101437-001	CM_MW7-DP_WG_2021-0 4-12_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 198623)</b>											
CG2101437-001	CM_MW7-DP_WG_2021-0 4-12_N	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 198709)</b>											
CG2101435-008	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0012	0.0012	0.00004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 201729)</b>											
CG2101427-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.212	0.131	0.081	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 202341)</b>											
CG2101435-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 205680)</b>											
CG2101435-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0240	0.0217	0.0023	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 204988)</b>											
CG2101437-001	CM_MW7-DP_WG_2021-04-12_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 204995)</b>											
CG2101437-001	CM_MW7-DP_WG_2021-04-12_N	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.21	0.50	0.71	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 201422)</b>											
CG2101427-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00011	0.00013	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 201423)</b>											
CG2101427-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0020	0.0021	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	0.00012	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0116	0.0119	2.22%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0101 µg/L	0.0000118	0.0000017	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	38.8	37.3	4.11%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0011	0.0010	0.00008	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	8.84	8.78	0.691%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000789	0.000822	4.08%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.234	0.232	0.002	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.692 µg/L	0.000713	2.94%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 201423) - continued</b>											
CG2101427-001	Anonymous	silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.46	1.43	2.33%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.342	0.320	0.022	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0756	0.0734	2.95%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	6.97	6.72	3.61%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000804	0.000815	1.40%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0035	0.0036	0.00005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 202387)</b>											
CG2101427-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 198603)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 199754)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 199760)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 203723)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 204644)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 204646)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 198618)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 198619)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 198620)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 198621)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 198622)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 198623)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 198709)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 201729)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 202341)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 205680)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 205680) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 204988)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 204995)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 201422)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 201423)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 201423) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 202387)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 198603)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.4	85.0	115	---
<b>Physical Tests (QCLot: 199754)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 199760)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 203483)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 203723)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	108	85.0	115	---
<b>Physical Tests (QCLot: 204644)</b>									
conductivity	---	E100	1	µS/cm	1412 µS/cm	97.7	90.0	110	---
<b>Physical Tests (QCLot: 204645)</b>									
pH	---	E108	---	pH units	6 pH units	100	97.0	103	---
<b>Physical Tests (QCLot: 204646)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Anions and Nutrients (QCLot: 198618)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 198619)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 198620)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 198621)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 198622)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 198623)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 198709)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	103	80.0	120	---
<b>Anions and Nutrients (QCLot: 201729)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	108	75.0	125	---
<b>Anions and Nutrients (QCLot: 202341)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 202341) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	100	80.0	120	----
<b>Anions and Nutrients (QCLot: 205680)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	114	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 204988)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 204995)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 201422)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 201423)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.0	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.6	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	95.6	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 201423) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.4	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.5	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.


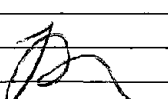
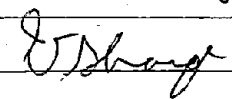
Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 198709)</b>										
CG2101435-009	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0509 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 201729)</b>										
CG2101427-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.28 mg/L	2.5 mg/L	91.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 202341)</b>										
CG2101435-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0527 mg/L	0.0676 mg/L	78.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 205680)</b>										
CG2101447-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 204988)</b>										
CG2101437-001	CM_MW7-DP_WG_2021-04-12_N	carbon, dissolved organic [DOC]	----	E358-L	25.0 mg/L	23.9 mg/L	104	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 204995)</b>										
CG2101437-001	CM_MW7-DP_WG_2021-04-12_N	carbon, total organic [TOC]	----	E355-L	26.0 mg/L	23.9 mg/L	108	70.0	130	----
<b>Dissolved Metals (QCLot: 201422)</b>										
CG2101427-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 201423)</b>										
CG2101427-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00838 mg/L	0.01 mg/L	83.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	99.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00418 mg/L	0.004 mg/L	104	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	96.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 201423) - continued</b>										
CG2101427-001	Anonymous	magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.07 mg/L	4 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0414 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.42 mg/L	10 mg/L	94.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00377 mg/L	0.004 mg/L	94.2	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.98 mg/L	2 mg/L	98.8	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.2 mg/L	20 mg/L	101	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00386 mg/L	0.004 mg/L	96.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00391 mg/L	0.004 mg/L	97.7	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.412 mg/L	0.4 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 202387)</b>										
CG2101427-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----

COC ID:		COC_WG_Q2_20210512-MW7,8		TURNAROUND TIME:		REGULAR		RUSH: NO																					
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO																					
Facility Name / Job# Coal Mountain Operations				Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD																			
Project Manager Victoria Sharpe				Lab Contact Inayat Dhaliwal		Email 1: Victoria.Sharpe@teck.com		X	X	X																			
Email victoria.sharpe@teck.com				Email Inayat.Dhaliwal@alsglobal.com		Email 2: teckcoal@equisonline.com				X																			
Address PO Box 3000				Address 2559 29th St. NE		Email 3: jay.jones@teck.com		X	X	X																			
City Sparwood				City Calgary		Email 4: don.sacino@teck.com		X	X	X																			
Province BC		Province AB		Postal Code T1Y 7B5		Country Canada																							
Postal Code V0B 2G0		Country Canada		Phone Number 403 407 1800		PO number		00741264																					
Environmental Division				ANALYSIS REQUESTED				Filtered: F: Field; L: Lab; FL: Field & Lab; N: None																					
Calgary				<table border="1"> <thead> <tr> <th>FILE</th> <th>F</th> <th>N</th> <th>F</th> <th>F</th> <th>N</th> </tr> </thead> <tbody> <tr> <td>PRESERV.</td> <td>H2SO4</td> <td>H2SO4</td> <td>HCL</td> <td>HNO3</td> <td>NONE</td> </tr> <tr> <td>ANALYSIS</td> <td>ALS_Package-DOC</td> <td>ALS_Package-TKN/TOC</td> <td>HG-D-CVAF-VA</td> <td>TECKCOAL-MET-D-VA</td> <td>TECKCOAL-ROUTINE-VA</td> </tr> </tbody> </table>				FILE	F	N	F	F	N	PRESERV.	H2SO4	H2SO4	HCL	HNO3	NONE	ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA				
FILE	F	N	F	F	N																								
PRESERV.	H2SO4	H2SO4	HCL	HNO3	NONE																								
ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA																								
Work Order Reference CG2101437				<p>G=Grab C=Com p # Of Cont.</p>																									
 <p>Telephone: +1 403 407 1800</p>				<p>Hazardous Material (Yes/No)</p>																									
Sample ID	Sample Location (sys_loc_code)	Field Matrix		Date	Time (24hr)																								
CM_MW7-DP_WG_2021-04-12_N	CM_MW7-DP	WG	No	2021/05/12	11:47	G	5	1	1	1																			
CM_MW7-SH_WG_2021-04-12_N	CM_MW7-SH	WG	No	2021/05/12	<del>10:28</del> 11:13	G	5	1	1	1																			
CM_MW8_WG_2021-04-12_N	CM_MW8	WG	No	2021/05/12	10:28	G	5	1	1	1																			
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS				RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME																			
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.										5/15/20																			
SERVICE REQUEST (rush - subject to availability)																													
Regular (default) X				Sampler's Name		SHDS VS/DS		Mobile #		250-425-7522																			
Priority (2-3 business days) - 50% surcharge				Sampler's Signature				Date/Time		2021/05/12																			
Emergency (1 Business Day) - 100% surcharge																													
For Emergency <1 Day, ASAP or Weekend - Contact ALS																													

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2101535**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q2\_20210519-MW1  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-May-2021 08:40  
**Date Analysis Commenced** : 20-May-2021  
**Issue Date** : 03-Jun-2021 17:16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW1-DP_ WG_2021-04-1 2_N	CM_MW1-OB_ WG_2021-04-1 2_N	CM_MW1-SH_ WG_2021-04-1 2_N	CM_NNT_WS_2 021-04-12_N	CM_NNP_WS_2 021-04-12_N
Client sampling date / time					19-May-2021 13:42	19-May-2021 12:05	19-May-2021 12:55	19-May-2021	19-May-2021	
Analyte	CAS Number	Method	LOR	Unit	CG2101535-001	CG2101535-002	CG2101535-003	CG2101535-004	CG2101535-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	2.4	<2.0	<2.0	<2.0	
conductivity	----	E100	2.0	µS/cm	1310	1080	1080	<2.0	1150	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	147	505	96.9	<0.50	95.4	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	316	501	241	461	214	
pH	----	E108	0.10	pH units	8.44	8.11	8.42	5.34	8.42	
solids, total dissolved [TDS]	----	E162	10	mg/L	668	755	559	<10	579	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	163	<1.0	<1.0	<1.0	<1.0	
turbidity	----	E121	0.10	NTU	91.3	0.21	2.60	<0.10	2.18	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	366	274	200	<2.0	208	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	16.0	<2.0	7.2	<2.0	8.2	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	350	274	193	<2.0	200	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	427	334	235	<1.0	244	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	9.6	<1.0	4.3	<1.0	4.9	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.723	<0.0050	0.0273	<0.0050	0.0219	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.593	<0.250 <sup>DLHC</sup>	0.636	<0.050	0.805	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	225	37.6	228	<0.10	249	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.204	<0.100 <sup>DLHC</sup>	0.810	<0.020	0.898	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.983	0.310	0.058	<0.050	0.098	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.481	1.25	<0.0250 <sup>DLHC</sup>	<0.0050	<0.0250 <sup>DLHC</sup>	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0050 <sup>DLHC</sup>	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0024	0.0016	0.0051	<0.0010	0.0057	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0805	<0.0020	0.0069	<0.0020	0.0056	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	17.4	306	5.09	<0.30	2.60	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.88	0.91 <sup>DTC,RRV</sup>	1.45 <sup>DTC,RRV</sup>	<0.50	0.77 <sup>DTC,RRV</sup>	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.96	0.70 <sup>DTC,RRV</sup>	0.63 <sup>DTC,RRV</sup>	<0.50	0.52 <sup>DTC,RRV</sup>	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW1-DP_ WG_2021-04-1 2_N	CM_MW1-OB_ WG_2021-04-1 2_N	CM_MW1-SH_ WG_2021-04-1 2_N	CM_NNT_WS_2 021-04-12_N	CM_NNP_WS_2 021-04-12_N
Client sampling date / time					19-May-2021 13:42	19-May-2021 12:05	19-May-2021 12:55	19-May-2021	19-May-2021	
Analyte	CAS Number	Method	LOR	Unit	CG2101535-001 Result	CG2101535-002 Result	CG2101535-003 Result	CG2101535-004 Result	CG2101535-005 Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	14.1	13.0	10.6	<0.10	11.3	
cation sum	----	EC101	0.10	meq/L	13.1	12.7	12.0	<0.10	12.2	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.9	97.7	113	100	108	
ion balance (cation-anion difference)	----	EC101	0.010	%	3.68	1.17	6.19	<0.010	3.83	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0044	0.0014	0.0042	<0.0010	0.0036	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00195	0.00011	0.00192	<0.00010	0.00195	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	10.6	0.0467	0.571	<0.00010	0.558	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.232	0.031	0.055	<0.010	0.055	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0100 <sup>DLA</sup>	0.0658	<0.0250 <sup>DLM</sup>	<0.0050	<0.0300 <sup>DLM</sup>	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	30.0	132	22.4	<0.050	22.1	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00048	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.10	0.10	<0.10	<0.10	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	0.00219	<0.00020	<0.00020	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.604	<0.010	0.217	<0.010	0.302	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	0.000082	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.615	0.0181	0.0226	<0.0010	0.0222	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	17.5	42.6	9.94	<0.0050	9.76	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.107	0.00024	0.120	<0.00010	0.120	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00435	0.000210	0.0696	<0.000050	0.0691	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	<0.00050	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.90	1.66	1.01	<0.050	1.00	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.100 <sup>DLA</sup>	5.56	<0.050	<0.050	<0.050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.77	3.02	3.38	<0.050	3.48	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	229	59.4	231	<0.050	236	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW1-DP_WG_2021-04-12_N	CM_MW1-OB_WG_2021-04-12_N	CM_MW1-SH_WG_2021-04-12_N	CM_NNT_WS_2021-04-12_N	CM_NNP_WS_2021-04-12_N
Client sampling date / time					19-May-2021 13:42	19-May-2021 12:05	19-May-2021 12:55	19-May-2021	19-May-2021	
Analyte	CAS Number	Method	LOR	Unit	CG2101535-001	CG2101535-002	CG2101535-003	CG2101535-004	CG2101535-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	2.41	0.327	0.308	<0.00020	0.302	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<1.00 <sup>DLA</sup>	108	1.50	<0.50	1.52	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	0.000018	<0.000010	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000439	0.00108	0.000637	<0.000010	0.000620	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0049	0.0248	<0.0010	<0.0010	<0.0010	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101535</b>	Page	: 1 of 21
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Inayat Dhaliwal
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 20-May-2021 08:40
PO	: VPO00741264	Issue Date	: 03-Jun-2021 17:17
C-O-C number	: COC_WG_Q2_20210519-MW1		
Sampler	: SH/DS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-DP_WG_2021-04-12_N	E298	19-May-2021	02-Jun-2021	----	14 days	✓	02-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-04-12_N	E298	19-May-2021	02-Jun-2021	----	14 days	✓	02-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-SH_WG_2021-04-12_N	E298	19-May-2021	02-Jun-2021	----	14 days	✓	02-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP_WS_2021-04-12_N	E298	19-May-2021	02-Jun-2021	----	15 days	✓	02-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNT_WS_2021-04-12_N	E298	19-May-2021	02-Jun-2021	----	15 days	✓	02-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW1-DP_WG_2021-04-12_N	E235.Br-L	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-04-12_N	E235.Br-L	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE CM_MW1-SH_WG_2021-04-12_N	E235.Br-L	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE CM_NNP_WS_2021-04-12_N	E235.Br-L	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE CM_NNT_WS_2021-04-12_N	E235.Br-L	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW1-DP_WG_2021-04-12_N	E235.Cl-L	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW1-OB_WG_2021-04-12_N	E235.Cl-L	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW1-SH_WG_2021-04-12_N	E235.Cl-L	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_NNP_WS_2021-04-12_N	E235.Cl-L	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_NNT_WS_2021-04-12_N	E235.Cl-L	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW1-DP_WG_2021-04-12_N	E378-U	19-May-2021	----	----	----		21-May-2021	3 days	3 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW1-OB_WG_2021-04-12_N	E378-U	19-May-2021	----	----	----		21-May-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW1-SH_WG_2021-04-12_N	E378-U	19-May-2021	----	----	----		21-May-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_NNP_WS_2021-04-12_N	E378-U	19-May-2021	----	----	----		21-May-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_NNT_WS_2021-04-12_N	E378-U	19-May-2021	----	----	----		21-May-2021	3 days	3 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW1-DP_WG_2021-04-12_N	E235.F	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW1-OB_WG_2021-04-12_N	E235.F	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW1-SH_WG_2021-04-12_N	E235.F	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_NNP_WS_2021-04-12_N	E235.F	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_NNT_WS_2021-04-12_N	E235.F	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW1-DP_WG_2021-04-12_N	E235.NO3-L	19-May-2021	----	----	----		20-May-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW1-OB_WG_2021-04-12_N	E235.NO3-L	19-May-2021	----	----	----		20-May-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW1-SH_WG_2021-04-12_N	E235.NO3-L	19-May-2021	----	----	----		20-May-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_NNP_WS_2021-04-12_N	E235.NO3-L	19-May-2021	----	----	----		20-May-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_NNT_WS_2021-04-12_N	E235.NO3-L	19-May-2021	----	----	----		20-May-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW1-DP_WG_2021-04-12_N	E235.NO2-L	19-May-2021	----	----	----		20-May-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW1-OB_WG_2021-04-12_N	E235.NO2-L	19-May-2021	----	----	----		20-May-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW1-SH_WG_2021-04-12_N	E235.NO2-L	19-May-2021	----	----	----		20-May-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_NNP_WS_2021-04-12_N	E235.NO2-L	19-May-2021	----	----	----		20-May-2021	3 days	2 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_NNT_WS_2021-04-12_N	E235.NO2-L	19-May-2021	----	----	----		20-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW1-DP_WG_2021-04-12_N	E235.SO4	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW1-OB_WG_2021-04-12_N	E235.SO4	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW1-SH_WG_2021-04-12_N	E235.SO4	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_NNP_WS_2021-04-12_N	E235.SO4	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_NNT_WS_2021-04-12_N	E235.SO4	19-May-2021	----	----	----		20-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
Amber glass total (sulfuric acid) CM_MW1-DP_WG_2021-04-12_N	E318	19-May-2021	22-May-2021	----	3 days	✓	22-May-2021	28 days	0 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
Amber glass total (sulfuric acid) CM_MW1-OB_WG_2021-04-12_N	E318	19-May-2021	22-May-2021	----	3 days	✓	22-May-2021	28 days	0 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
Amber glass total (sulfuric acid) CM_MW1-SH_WG_2021-04-12_N	E318	19-May-2021	22-May-2021	----	3 days	✓	22-May-2021	28 days	0 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP_WS_2021-04-12_N	E318	19-May-2021	22-May-2021	----	4 days	✓	22-May-2021	28 days	0 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNT_WS_2021-04-12_N	E318	19-May-2021	22-May-2021	----	4 days	✓	22-May-2021	28 days	0 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-DP_WG_2021-04-12_N	E372-U	19-May-2021	25-May-2021	----	6 days	✓	25-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-04-12_N	E372-U	19-May-2021	25-May-2021	----	6 days	✓	25-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-SH_WG_2021-04-12_N	E372-U	19-May-2021	25-May-2021	----	6 days	✓	25-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP_WS_2021-04-12_N	E372-U	19-May-2021	25-May-2021	----	7 days	✓	25-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNT_WS_2021-04-12_N	E372-U	19-May-2021	25-May-2021	----	7 days	✓	25-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-DP_WG_2021-04-12_N	E421.Cr-L	19-May-2021	25-May-2021	----	6 days	✓	25-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-OB_WG_2021-04-12_N	E421.Cr-L	19-May-2021	25-May-2021	----	7 days	✓	25-May-2021	180 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-SH_WG_2021-04-12_N	E421.Cr-L	19-May-2021	25-May-2021	----	7 days	✓	25-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNP_WS_2021-04-12_N	E421.Cr-L	19-May-2021	25-May-2021	----	7 days	✓	25-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNT_WS_2021-04-12_N	E421.Cr-L	19-May-2021	25-May-2021	----	7 days	✓	25-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW1-DP_WG_2021-04-12_N	E509	19-May-2021	26-May-2021	----	8 days	✓	26-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW1-OB_WG_2021-04-12_N	E509	19-May-2021	26-May-2021	----	8 days	✓	26-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW1-SH_WG_2021-04-12_N	E509	19-May-2021	26-May-2021	----	8 days	✓	26-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_NNP_WS_2021-04-12_N	E509	19-May-2021	26-May-2021	----	8 days	✓	26-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_NNT_WS_2021-04-12_N	E509	19-May-2021	26-May-2021	----	8 days	✓	26-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-DP_WG_2021-04-12_N	E421	19-May-2021	25-May-2021	----	6 days	✓	25-May-2021	180 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-OB_WG_2021-04-12_N	E421	19-May-2021	25-May-2021	----	7 days	✔	25-May-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-SH_WG_2021-04-12_N	E421	19-May-2021	25-May-2021	----	7 days	✔	25-May-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNP_WS_2021-04-12_N	E421	19-May-2021	25-May-2021	----	7 days	✔	25-May-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNT_WS_2021-04-12_N	E421	19-May-2021	25-May-2021	----	7 days	✔	25-May-2021	180 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW1-DP_WG_2021-04-12_N	E358-L	19-May-2021	21-May-2021	----	3 days	✔	21-May-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW1-OB_WG_2021-04-12_N	E358-L	19-May-2021	21-May-2021	----	3 days	✔	21-May-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW1-SH_WG_2021-04-12_N	E358-L	19-May-2021	21-May-2021	----	3 days	✔	21-May-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_NNP_WS_2021-04-12_N	E358-L	19-May-2021	21-May-2021	----	3 days	✔	21-May-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_NNT_WS_2021-04-12_N	E358-L	19-May-2021	21-May-2021	----	3 days	✔	21-May-2021	28 days	1 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-DP_WG_2021-04-12_N	E355-L	19-May-2021	21-May-2021	----	3 days	✓	21-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-04-12_N	E355-L	19-May-2021	21-May-2021	----	3 days	✓	21-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-SH_WG_2021-04-12_N	E355-L	19-May-2021	21-May-2021	----	3 days	✓	21-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP_WS_2021-04-12_N	E355-L	19-May-2021	21-May-2021	----	3 days	✓	21-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNT_WS_2021-04-12_N	E355-L	19-May-2021	21-May-2021	----	3 days	✓	21-May-2021	28 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW1-DP_WG_2021-04-12_N	E283	19-May-2021	----	----	----		29-May-2021	14 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-04-12_N	E283	19-May-2021	----	----	----		29-May-2021	14 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW1-SH_WG_2021-04-12_N	E283	19-May-2021	----	----	----		29-May-2021	14 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_NNP_WS_2021-04-12_N	E283	19-May-2021	----	----	----		29-May-2021	14 days	11 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE CM_NNT_WS_2021-04-12_N	E283	19-May-2021	----	----	----		29-May-2021	14 days	11 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW1-DP_WG_2021-04-12_N	E290	19-May-2021	----	----	----		27-May-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW1-OB_WG_2021-04-12_N	E290	19-May-2021	----	----	----		27-May-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW1-SH_WG_2021-04-12_N	E290	19-May-2021	----	----	----		27-May-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_NNP_WS_2021-04-12_N	E290	19-May-2021	----	----	----		27-May-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_NNT_WS_2021-04-12_N	E290	19-May-2021	----	----	----		27-May-2021	14 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW1-DP_WG_2021-04-12_N	E100	19-May-2021	----	----	----		27-May-2021	28 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW1-OB_WG_2021-04-12_N	E100	19-May-2021	----	----	----		27-May-2021	28 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW1-SH_WG_2021-04-12_N	E100	19-May-2021	----	----	----		27-May-2021	28 days	9 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_NNP_WS_2021-04-12_N	E100	19-May-2021	----	----	----		27-May-2021	28 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_NNT_WS_2021-04-12_N	E100	19-May-2021	----	----	----		27-May-2021	28 days	9 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW1-DP_WG_2021-04-12_N	E125	19-May-2021	----	----	----		27-May-2021	0.34 hrs	189 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW1-SH_WG_2021-04-12_N	E125	19-May-2021	----	----	----		27-May-2021	0.34 hrs	190 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW1-OB_WG_2021-04-12_N	E125	19-May-2021	----	----	----		27-May-2021	0.34 hrs	191 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_NNP_WS_2021-04-12_N	E125	19-May-2021	----	----	----		27-May-2021	0.34 hrs	203 hrs	* EHTR-FM	
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_NNT_WS_2021-04-12_N	E125	19-May-2021	----	----	----		27-May-2021	0.34 hrs	203 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW1-DP_WG_2021-04-12_N	E108	19-May-2021	----	----	----		27-May-2021	0.25 hrs	197 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW1-SH_WG_2021-04-12_N	E108	19-May-2021	----	----	----		27-May-2021	0.25 hrs	197 hrs	* EHTR-FM	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW1-OB_WG_2021-04-12_N	E108	19-May-2021	----	----	----		27-May-2021	0.25 hrs	198 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_NNP_WS_2021-04-12_N	E108	19-May-2021	----	----	----		27-May-2021	0.25 hrs	210 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_NNT_WS_2021-04-12_N	E108	19-May-2021	----	----	----		27-May-2021	0.25 hrs	210 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW1-DP_WG_2021-04-12_N	E162	19-May-2021	----	----	----		24-May-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW1-OB_WG_2021-04-12_N	E162	19-May-2021	----	----	----		24-May-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW1-SH_WG_2021-04-12_N	E162	19-May-2021	----	----	----		24-May-2021	7 days	5 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_NNP_WS_2021-04-12_N	E162	19-May-2021	----	----	----		24-May-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_NNT_WS_2021-04-12_N	E162	19-May-2021	----	----	----		24-May-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] CM_MW1-DP_WG_2021-04-12_N	E160-L	19-May-2021	----	----	----		24-May-2021	7 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> CM_MW1-OB_WG_2021-04-12_N	E160-L	19-May-2021	----	----	----		24-May-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> CM_MW1-SH_WG_2021-04-12_N	E160-L	19-May-2021	----	----	----		24-May-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> CM_NNP_WS_2021-04-12_N	E160-L	19-May-2021	----	----	----		24-May-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> CM_NNT_WS_2021-04-12_N	E160-L	19-May-2021	----	----	----		24-May-2021	7 days	6 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> CM_MW1-DP_WG_2021-04-12_N	E121	19-May-2021	----	----	----		21-May-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-04-12_N	E121	19-May-2021	----	----	----		21-May-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> CM_MW1-SH_WG_2021-04-12_N	E121	19-May-2021	----	----	----		21-May-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> CM_NNP_WS_2021-04-12_N	E121	19-May-2021	----	----	----		21-May-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> CM_NNT_WS_2021-04-12_N	E121	19-May-2021	----	----	----		21-May-2021	3 days	3 days	✔	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended



Page : 15 of 21  
Work Order : CG2101535  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	208376	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	207125	2	26	7.6	5.0	✓
Ammonia by Fluorescence	E298	210836	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	202378	1	11	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	202379	1	11	9.0	5.0	✓
Conductivity in Water	E100	207124	2	26	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	204097	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	205904	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	204098	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	202904	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	202977	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	202382	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	202380	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	202381	1	11	9.0	5.0	✓
ORP by Electrode	E125	204702	1	18	5.5	5.0	✓
pH by Meter	E108	207123	2	26	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	202377	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	204263	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	202905	1	11	9.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	203043	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	202846	1	13	7.6	5.0	✓
Turbidity by Nephelometry	E121	202603	2	24	8.3	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	208376	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	207125	2	26	7.6	5.0	✓
Ammonia by Fluorescence	E298	210836	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	202378	1	11	9.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	202379	1	11	9.0	5.0	✓
Conductivity in Water	E100	207124	2	26	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	204097	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	205904	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	204098	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	202904	1	14	7.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	202977	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	202382	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	202380	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	202381	1	11	9.0	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	204702	1	18	5.5	5.0	✔
pH by Meter	E108	207123	2	26	7.6	5.0	✔
Sulfate in Water by IC	E235.SO4	202377	1	11	9.0	5.0	✔
TDS by Gravimetry	E162	204263	1	14	7.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	202905	1	11	9.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	203043	1	15	6.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	202846	1	13	7.6	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	204258	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	202603	2	24	8.3	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	208376	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	207125	2	26	7.6	5.0	✔
Ammonia by Fluorescence	E298	210836	1	14	7.1	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	202378	1	11	9.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	202379	1	11	9.0	5.0	✔
Conductivity in Water	E100	207124	2	26	7.6	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	204097	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	205904	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	204098	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	202904	1	14	7.1	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	202977	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	202382	1	11	9.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	202380	1	11	9.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	202381	1	11	9.0	5.0	✔
Sulfate in Water by IC	E235.SO4	202377	1	11	9.0	5.0	✔
TDS by Gravimetry	E162	204263	1	14	7.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	202905	1	11	9.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	203043	1	15	6.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	202846	1	13	7.6	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	204258	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	202603	2	24	8.3	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	210836	1	14	7.1	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	202378	1	11	9.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	202379	1	11	9.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	204097	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	205904	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	204098	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	202904	1	14	7.1	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	202977	1	20	5.0	5.0	✔



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	202382	1	11	9.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	202380	1	11	9.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	202381	1	11	9.0	5.0	✔
Sulfate in Water by IC	E235.SO4	202377	1	11	9.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	202905	1	11	9.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	203043	1	15	6.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	202846	1	13	7.6	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
	Vancouver - Environmental			
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101535**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q2\_20210519-MW1  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 20-May-2021 08:40  
**Date Analysis Commenced** : 20-May-2021  
**Issue Date** : 03-Jun-2021 17:16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia



Page : 2 of 14  
Work Order : CG2101535  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 202603)</b>											
CG2101508-001	Anonymous	turbidity	----	E121	0.10	NTU	32.8	31.4	4.36%	15%	----
<b>Physical Tests (QC Lot: 202604)</b>											
CG2101535-004	CM_NNT_WS_2021-04-12_N	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 204263)</b>											
CG2101534-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	128	113	14	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 204702)</b>											
CG2101529-006	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	490	497	1.46%	15%	----
<b>Physical Tests (QC Lot: 207123)</b>											
CG2101528-001	Anonymous	pH	----	E108	0.10	pH units	7.75	7.84	1.15%	4%	----
<b>Physical Tests (QC Lot: 207124)</b>											
CG2101528-001	Anonymous	conductivity	----	E100	2.0	µS/cm	3950	3950	0.00%	10%	----
<b>Physical Tests (QC Lot: 207125)</b>											
CG2101528-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	417	414	0.650%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	417	414	0.650%	20%	----
<b>Physical Tests (QC Lot: 207126)</b>											
CG2101535-005	CM_NNP_WS_2021-04-12_N	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	200	190	4.72%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	8.2	8.6	0.4	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	208	199	4.33%	20%	----
<b>Physical Tests (QC Lot: 207127)</b>											
CG2101535-005	CM_NNP_WS_2021-04-12_N	pH	----	E108	0.10	pH units	8.42	8.44	0.237%	4%	----
<b>Physical Tests (QC Lot: 207128)</b>											
CG2101535-005	CM_NNP_WS_2021-04-12_N	conductivity	----	E100	2.0	µS/cm	1150	1160	0.864%	10%	----
<b>Physical Tests (QC Lot: 208376)</b>											
CG2101536-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 202377)</b>											
CG2101508-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	59.8	59.7	0.280%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 202378)</b>											
CG2101508-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 202379)</b>											
CG2101508-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.13	1.14	0.576%	20%	----
<b>Anions and Nutrients (QC Lot: 202380)</b>											
CG2101508-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.69	2.68	0.469%	20%	----
<b>Anions and Nutrients (QC Lot: 202381)</b>											
CG2101508-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 202382)</b>											
CG2101508-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.168	0.167	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 202846)</b>											
CG2101503-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0420	0.0442	5.02%	20%	----
<b>Anions and Nutrients (QC Lot: 202905)</b>											
CG2101535-001	CM_MW1-DP_WG_2021-04-12_N	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.983	0.990	0.710%	20%	----
<b>Anions and Nutrients (QC Lot: 202977)</b>											
CG2101531-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210836)</b>											
CG2101532-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 202904)</b>											
CG2101373-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	8.85	9.45	6.56%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 203043)</b>											
CG2101373-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	10.4	11.8	12.1%	20%	----
<b>Dissolved Metals (QC Lot: 204097)</b>											
CG2101525-007	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 204098)</b>											
CG2101525-007	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00224	0.00213	5.11%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0167	0.0172	2.66%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.094	0.094	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	1.02 µg/L	0.00105	3.36%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	529	529	0.0341%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	82.5 µg/L	0.0837	1.53%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00066	<0.00040	0.00026	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 204098) - continued</b>											
CG2101525-007	Anonymous	iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	1.06	1.05	1.12%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	228	236	3.43%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.919	0.945	2.76%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00362	0.00340	6.26%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.337	0.344	2.06%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	22.2	23.4	5.07%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	6.58 µg/L	0.00600	9.08%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.71	2.73	0.713%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	34.2	34.6	1.23%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	2.13	2.10	1.83%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	427	430	0.614%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000218	0.000208	4.38%	20%	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0254	0.0255	0.0726%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0813	0.0819	0.708%	20%	----
<b>Dissolved Metals (QC Lot: 205904)</b>											
CG2101531-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 202603)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 202604)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 204258)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 204263)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 207124)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 207125)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 207126)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 207128)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 208376)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 202377)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 202378)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 202379)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 202380)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 202381)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 202382)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 202846)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 202905)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 202977)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 210836)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 202904)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 203043)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 204097)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 204098)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 204098) - continued</b>						
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 205904)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 202603)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100.0	85.0	115	---
<b>Physical Tests (QCLot: 202604)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.0	85.0	115	---
<b>Physical Tests (QCLot: 204258)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	92.1	85.0	115	---
<b>Physical Tests (QCLot: 204263)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	96.6	85.0	115	---
<b>Physical Tests (QCLot: 204702)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.6	95.4	104	---
<b>Physical Tests (QCLot: 207123)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 207124)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	---
<b>Physical Tests (QCLot: 207125)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 207126)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 207127)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 207128)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	104	90.0	110	---
<b>Physical Tests (QCLot: 208376)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 202377)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 202378)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 202379)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 202380)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 202381)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 202381) - continued</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	108	90.0	110	----
<b>Anions and Nutrients (QCLot: 202382)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	104	90.0	110	----
<b>Anions and Nutrients (QCLot: 202846)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	95.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 202905)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	113	75.0	125	----
<b>Anions and Nutrients (QCLot: 202977)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 210836)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	107	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 202904)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	91.9	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 203043)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	95.0	80.0	120	----
<b>Dissolved Metals (QCLot: 204097)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 204098)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.8	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.9	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 204098) - continued</b>									
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	94.9	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.7	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	108	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.5	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.6	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 202377)</b>										
CG2101535-004	CM_NNT_WS_2021-04-12_N	sulfate (as SO4)	14808-79-8	E235.SO4	110 mg/L	100 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 202378)</b>										
CG2101535-004	CM_NNT_WS_2021-04-12_N	bromide	24959-67-9	E235.Br-L	0.530 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 202379)</b>										
CG2101535-004	CM_NNT_WS_2021-04-12_N	chloride	16887-00-6	E235.Cl-L	111 mg/L	100 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 202380)</b>										
CG2101535-004	CM_NNT_WS_2021-04-12_N	nitrate (as N)	14797-55-8	E235.NO3-L	2.79 mg/L	2.5 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 202381)</b>										
CG2101535-004	CM_NNT_WS_2021-04-12_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.558 mg/L	0.5 mg/L	112	75.0	125	----
<b>Anions and Nutrients (QCLot: 202382)</b>										
CG2101535-004	CM_NNT_WS_2021-04-12_N	fluoride	16984-48-8	E235.F	1.11 mg/L	1 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 202846)</b>										
CG2101503-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0560 mg/L	0.0676 mg/L	82.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 202905)</b>										
CG2101535-002	CM_MW1-OB_WG_2021-04-12_N	Kjeldahl nitrogen, total [TKN]	----	E318	2.45 mg/L	2.5 mg/L	98.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 202977)</b>										
CG2101531-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0518 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 210836)</b>										
CG2101535-004	CM_NNT_WS_2021-04-12_N	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 202904)</b>										
CG2101373-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	21.4 mg/L	23.9 mg/L	89.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 203043)</b>										
CG2101373-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.6 mg/L	23.9 mg/L	94.6	70.0	130	----
<b>Dissolved Metals (QCLot: 204097)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 204097) - continued</b>										
CG2101525-007	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0766 mg/L	0.08 mg/L	95.7	70.0	130	----
<b>Dissolved Metals (QCLot: 204098)</b>										
CG2101525-007	Anonymous	aluminum, dissolved	7429-90-5	E421	0.400 mg/L	0.4 mg/L	100	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0352 mg/L	0.04 mg/L	87.9	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0714 mg/L	0.08 mg/L	89.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0166 mg/L	0.02 mg/L	83.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.184 mg/L	0.2 mg/L	92.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00744 mg/L	0.008 mg/L	92.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0339 mg/L	0.04 mg/L	84.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.68 mg/L	4 mg/L	92.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0361 mg/L	0.04 mg/L	90.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0901 mg/L	0.08 mg/L	113	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.0 mg/L	20 mg/L	90.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00741 mg/L	0.008 mg/L	92.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00707 mg/L	0.008 mg/L	88.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0806 mg/L	0.08 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.199 mg/L	0.2 mg/L	99.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.691 mg/L	0.8 mg/L	86.3	70.0	130	----
<b>Dissolved Metals (QCLot: 205904)</b>										
CG2101531-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000958 mg/L	0.0001 mg/L	95.8	70.0	130	----

Page : 14 of 14  
Work Order : CG2101535  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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COC ID: **COC\_WG\_Q2\_20210519-MW1**

TURNAROUND TIME:

REGULAR

RUSH: NO

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Victoria Sharpe			Lab Contact	Inayat Dhaliwal			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	victoria.sharpe@teck.com			Email	Inayat.Dhaliwal@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
								Email 4:	don.sacino@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:	shelby.holden@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
				Phone Number	403 407 1800			PO number	00741264			

Environmental Division  
Calgary  
Work Order Reference  
**CG2101535**



Telephone : +1 403 407 1800

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FIL.	PRESERV.	ANALYSIS	F	N	F	F	N	
											ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	
CM_MW1-DP_WG_2021-04-12_N	CM_MW1-DP	WG		2021/05/19	13:42	G	5		H2SO4	H2SO4	HCL	HNO3	NONE			
CM_MW1-OB_WG_2021-04-12_N	CM_MW1-OB	WG		2021/05/19	12:05	G	5									
CM_MW1-SH_WG_2021-04-12_N	CM_MW1-SH	WG		2021/05/19	12:55	G	5									
CM_NNT_WS_2021-04-12_N	CM_NNT	WG		2021/05/19	--	G	5									
CM_NNP_WS_2021-04-12_N	CM_NNP	WG		2021/05/19	--	G	5									

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

Request analyses of bicarbonate and HCO<sub>3</sub>, hydroxide as OH and carbonate as CO<sub>3</sub> rather than bicarbonate as CaCO<sub>3</sub>, Carbonate as CaCO<sub>3</sub> and hydroxide as CaCO<sub>3</sub>.

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

*[Handwritten signature]*  
2021/05/19 13:40

**SERVICE REQUEST (rush - subject to availability)**

Regular (default) X  
Priority (2-3 business days) - 50% surcharge  
Emergency (1 Business Day) - 100% surcharge  
For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

SH/DS

Mobile #

250-425-7522

Sampler's Signature

*[Handwritten signature: S.D. Holden]*

Date/Time

2021/05/19

79



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2101557**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q2\_20210520-MW2  
**Sampler** : Shelby Holden  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-May-2021 08:30  
**Date Analysis Commenced** : 21-May-2021  
**Issue Date** : 03-Jun-2021 17:19

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW2-SH_2_N	CM_TRP_WS_2_021-04-12_N	CM_NNP2_WS_2021-04-12_N	----	----
Client sampling date / time					20-May-2021 00:30	20-May-2021	20-May-2021	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101557-001	CG2101557-002	CG2101557-003	-----	-----	
					Result	Result	Result	---	---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	15.7	<2.0	15.4	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	354	<1.0	346	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	354	<1.0	346	----	----	
conductivity	----	E100	2.0	µS/cm	1070	<2.0	1070	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	645	<0.50	616	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	413	498	422	----	----	
pH	----	E108	0.10	pH units	7.99	4.22	8.04	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	777	<10	757	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
turbidity	----	E121	0.10	NTU	0.12	<0.10	0.15	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	432	<1.0	422	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0460 <sup>RRV</sup>	0.0144	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLHC</sup>	<0.050	<0.250 <sup>DLHC</sup>	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.96	<0.10	2.00	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLHC</sup>	<0.020	<0.100 <sup>DLHC</sup>	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.077	0.064 <sup>RRV</sup>	0.086	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.809	<0.0050	0.418	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0050 <sup>DLHC</sup>	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	315	<0.30	314	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.61 <sup>DTC</sup>	<0.50	1.23	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.31 <sup>DTC</sup>	<0.50	0.83	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW2-SH_WG_2021-04-12_N	CM_TRP_WS_2021-04-12_N	CM_NNP2_WS_2021-04-12_N	----	----
Client sampling date / time					20-May-2021 00:30	20-May-2021	20-May-2021	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101557-001	CG2101557-002	CG2101557-003	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	13.7	<0.10	13.5	----	----	
cation sum	----	EC101	0.10	meq/L	13.6	<0.10	13.1	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	99.3	100	97.0	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.366	<0.010	1.50	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	<0.0010	<0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0900	<0.00010	0.0864	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.039	<0.010	0.037	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.119	<0.0050	0.121	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	184	<0.050	173	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00025	<0.00010	0.00026	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00039	<0.00020	0.00032	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0288	<0.0010	0.0277	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	45.1	<0.0050	44.8	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000125	<0.000050	0.000126	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00050	<0.00050	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.35	<0.050	1.34	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.732	<0.050	0.702	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.48	<0.050	4.36	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	16.0	<0.050	16.3	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW2-SH_WG_2021-04-12_N	CM_TRP_WS_2021-04-12_N	CM_NNP2_WS_2021-04-12_N	----	----
Client sampling date / time					20-May-2021 00:30	20-May-2021	20-May-2021	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101557-001	CG2101557-002	CG2101557-003	-----	-----	
					Result	Result	Result	----	----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.519	<0.00020	0.528	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	106	<0.50	103	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000190	<0.000010	0.000185	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0013	<0.0010	0.0011	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101557</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Inayat Dhaliwal
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 21-May-2021 08:30
PO	: VPO00741264	Issue Date	: 03-Jun-2021 17:20
C-O-C number	: COC_WG_Q2_20210520-MW2		
Sampler	: Shelby Holden		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW2-SH_WG_2021-04-12_N	E298	20-May-2021	02-Jun-2021	----	14 days	✓	02-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WS_2021-04-12_N	E298	20-May-2021	02-Jun-2021	----	14 days	✓	02-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WS_2021-04-12_N	E298	20-May-2021	02-Jun-2021	----	14 days	✓	02-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW2-SH_WG_2021-04-12_N	E235.Br-L	20-May-2021	----	----	----		21-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_NNP2_WS_2021-04-12_N	E235.Br-L	20-May-2021	----	----	----		21-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_TRP_WS_2021-04-12_N	E235.Br-L	20-May-2021	----	----	----		21-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW2-SH_WG_2021-04-12_N	E235.Cl-L	20-May-2021	----	----	----		21-May-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_NNP2_WS_2021-04-12_N	E235.Cl-L	20-May-2021	----	----	----		21-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_TRP_WS_2021-04-12_N	E235.Cl-L	20-May-2021	----	----	----		21-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW2-SH_WG_2021-04-12_N	E378-U	20-May-2021	----	----	----		21-May-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_NNP2_WS_2021-04-12_N	E378-U	20-May-2021	----	----	----		21-May-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_TRP_WS_2021-04-12_N	E378-U	20-May-2021	----	----	----		21-May-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW2-SH_WG_2021-04-12_N	E235.F	20-May-2021	----	----	----		21-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_NNP2_WS_2021-04-12_N	E235.F	20-May-2021	----	----	----		21-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_TRP_WS_2021-04-12_N	E235.F	20-May-2021	----	----	----		21-May-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW2-SH_WG_2021-04-12_N	E235.NO3-L	20-May-2021	----	----	----		21-May-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_NNP2_WS_2021-04-12_N	E235.NO3-L	20-May-2021	----	----	----		21-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_TRP_WS_2021-04-12_N	E235.NO3-L	20-May-2021	----	----	----		21-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW2-SH_WG_2021-04-12_N	E235.NO2-L	20-May-2021	----	----	----		21-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_NNP2_WS_2021-04-12_N	E235.NO2-L	20-May-2021	----	----	----		21-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_TRP_WS_2021-04-12_N	E235.NO2-L	20-May-2021	----	----	----		21-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW2-SH_WG_2021-04-12_N	E235.SO4	20-May-2021	----	----	----		21-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_NNP2_WS_2021-04-12_N	E235.SO4	20-May-2021	----	----	----		21-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_TRP_WS_2021-04-12_N	E235.SO4	20-May-2021	----	----	----		21-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW2-SH_WG_2021-04-12_N	E318	20-May-2021	26-May-2021	----	7 days	✓	26-May-2021	28 days	0 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WS_2021-04-12_N	E318	20-May-2021	26-May-2021	----	7 days	✓	26-May-2021	28 days	0 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WS_2021-04-12_N	E318	20-May-2021	26-May-2021	----	7 days	✓	26-May-2021	28 days	0 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW2-SH_WG_2021-04-12_N	E372-U	20-May-2021	28-May-2021	----	9 days	✓	28-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WS_2021-04-12_N	E372-U	20-May-2021	28-May-2021	----	9 days	✓	28-May-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WS_2021-04-12_N	E372-U	20-May-2021	28-May-2021	----	9 days	✓	28-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW2-SH_WG_2021-04-12_N	E421.Cr-L	20-May-2021	25-May-2021	----	6 days	✓	25-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNP2_WS_2021-04-12_N	E421.Cr-L	20-May-2021	25-May-2021	----	6 days	✓	25-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_TRP_WS_2021-04-12_N	E421.Cr-L	20-May-2021	25-May-2021	----	6 days	✓	25-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW2-SH_WG_2021-04-12_N	E509	20-May-2021	26-May-2021	----	7 days	✓	26-May-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_NNP2_WS_2021-04-12_N	E509	20-May-2021	26-May-2021	----	7 days	✓	26-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_TRP_WS_2021-04-12_N	E509	20-May-2021	26-May-2021	----	7 days	✓	26-May-2021	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW2-SH_WG_2021-04-12_N	E421	20-May-2021	25-May-2021	----	6 days	✓	25-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNP2_WS_2021-04-12_N	E421	20-May-2021	25-May-2021	----	6 days	✓	25-May-2021	180 days	1 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_TRP_WS_2021-04-12_N	E421	20-May-2021	25-May-2021	----	6 days	✓	25-May-2021	180 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW2-SH_WG_2021-04-12_N	E358-L	20-May-2021	30-May-2021	----	11 days	✓	30-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_NNP2_WS_2021-04-12_N	E358-L	20-May-2021	30-May-2021	----	11 days	✓	30-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_TRP_WS_2021-04-12_N	E358-L	20-May-2021	30-May-2021	----	11 days	✓	30-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW2-SH_WG_2021-04-12_N	E355-L	20-May-2021	30-May-2021	----	11 days	✓	30-May-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WS_2021-04-12_N	E355-L	20-May-2021	30-May-2021	----	11 days	✓	30-May-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WS_2021-04-12_N	E355-L	20-May-2021	30-May-2021	----	11 days	✓	30-May-2021	28 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW2-SH_WG_2021-04-12_N	E283	20-May-2021	----	----	----		30-May-2021	14 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_NNP2_WS_2021-04-12_N	E283	20-May-2021	----	----	----		30-May-2021	14 days	11 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_TRP_WS_2021-04-12_N	E283	20-May-2021	----	----	----		30-May-2021	14 days	11 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW2-SH_WG_2021-04-12_N	E290	20-May-2021	----	----	----		28-May-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_NNP2_WS_2021-04-12_N	E290	20-May-2021	----	----	----		28-May-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_TRP_WS_2021-04-12_N	E290	20-May-2021	----	----	----		28-May-2021	14 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> CM_MW2-SH_WG_2021-04-12_N	E100	20-May-2021	----	----	----		28-May-2021	28 days	9 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_NNP2_WS_2021-04-12_N	E100	20-May-2021	----	----	----		28-May-2021	28 days	9 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_TRP_WS_2021-04-12_N	E100	20-May-2021	----	----	----		28-May-2021	28 days	9 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW2-SH_WG_2021-04-12_N	E125	20-May-2021	----	----	----		30-May-2021	0.34 hrs	254 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_NNP2_WS_2021-04-12_N	E125	20-May-2021	----	----	----		30-May-2021	0.34 hrs	254 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_TRP_WS_2021-04-12_N	E125	20-May-2021	----	----	----		30-May-2021	0.34 hrs	254 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW2-SH_WG_2021-04-12_N	E108	20-May-2021	----	----	----		28-May-2021	0.25 hrs	202 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_NNP2_WS_2021-04-12_N	E108	20-May-2021	----	----	----		28-May-2021	0.25 hrs	202 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_TRP_WS_2021-04-12_N	E108	20-May-2021	----	----	----		28-May-2021	0.25 hrs	202 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW2-SH_WG_2021-04-12_N	E162	20-May-2021	----	----	----		25-May-2021	7 days	6 days		✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> CM_NNP2_WS_2021-04-12_N	E162	20-May-2021	----	----	----		25-May-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> CM_TRP_WS_2021-04-12_N	E162	20-May-2021	----	----	----		25-May-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> CM_MW2-SH_WG_2021-04-12_N	E160-L	20-May-2021	----	----	----		25-May-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> CM_NNP2_WS_2021-04-12_N	E160-L	20-May-2021	----	----	----		25-May-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> CM_TRP_WS_2021-04-12_N	E160-L	20-May-2021	----	----	----		25-May-2021	7 days	6 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> CM_MW2-SH_WG_2021-04-12_N	E121	20-May-2021	----	----	----		22-May-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> CM_NNP2_WS_2021-04-12_N	E121	20-May-2021	----	----	----		22-May-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> CM_TRP_WS_2021-04-12_N	E121	20-May-2021	----	----	----		22-May-2021	3 days	3 days	✔	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	208608	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	207521	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	210861	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	203076	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	203077	1	18	5.5	5.0	✓
Conductivity in Water	E100	207520	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	204150	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	205905	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	204149	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	208888	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	203072	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	203080	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	203078	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	203079	1	18	5.5	5.0	✓
ORP by Electrode	E125	205355	1	17	5.8	5.0	✓
pH by Meter	E108	207519	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	203075	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	204386	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	204750	1	11	9.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	208889	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	206289	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	203793	1	10	10.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	208608	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	207521	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	210861	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	203076	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	203077	1	18	5.5	5.0	✓
Conductivity in Water	E100	207520	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	204150	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	205905	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	204149	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	208888	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	203072	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	203080	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	203078	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	203079	1	18	5.5	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	205355	1	17	5.8	5.0	✓
pH by Meter	E108	207519	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	203075	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	204386	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	204750	1	11	9.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	208889	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	206289	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	204390	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	203793	1	10	10.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	208608	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	207521	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	210861	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	203076	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	203077	1	18	5.5	5.0	✓
Conductivity in Water	E100	207520	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	204150	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	205905	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	204149	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	208888	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	203072	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	203080	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	203078	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	203079	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	203075	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	204386	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	204750	1	11	9.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	208889	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	206289	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	204390	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	203793	1	10	10.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	210861	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	203076	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	203077	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	204150	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	205905	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	204149	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	208888	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	203072	1	17	5.8	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	203080	1	18	5.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	203078	1	18	5.5	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	203079	1	18	5.5	5.0	✔
Sulfate in Water by IC	E235.SO4	203075	1	18	5.5	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	204750	1	11	9.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	208889	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	206289	1	20	5.0	5.0	✔





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101557**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q2\_20210520-MW2  
**Sampler** : Shelby Holden  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-May-2021 08:30  
**Date Analysis Commenced** : 21-May-2021  
**Issue Date** : 03-Jun-2021 17:19

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Sristika Chand	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2101557  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 203793)</b>											
CG2101556-003	Anonymous	turbidity	----	E121	0.10	NTU	0.92	0.91	0.01	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 204386)</b>											
CG2101551-002	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 205355)</b>											
CG2101551-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	439	450	2.49%	15%	----
<b>Physical Tests (QC Lot: 207519)</b>											
CG2101551-002	Anonymous	pH	----	E108	0.10	pH units	4.05	4.05	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 207520)</b>											
CG2101551-002	Anonymous	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 207521)</b>											
CG2101551-002	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 208608)</b>											
CG2101532-001	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 203072)</b>											
CG2101550-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0012	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 203075)</b>											
CG2101532-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.30	mg/L	8.90	8.78	1.40%	20%	----
<b>Anions and Nutrients (QC Lot: 203076)</b>											
CG2101532-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 203077)</b>											
CG2101532-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.13	0.12	0.004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 203078)</b>											
CG2101532-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.176	0.182	2.90%	20%	----
<b>Anions and Nutrients (QC Lot: 203079)</b>											
CG2101532-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 203080)</b>											
CG2101532-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.211	0.198	6.63%	20%	----
<b>Anions and Nutrients (QC Lot: 204750)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 204750) - continued</b>											
CG2101556-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 206289)</b>											
CG2101551-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210861)</b>											
CG2101551-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0656	0.0645	1.69%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 208888)</b>											
CG2101556-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.32	1.50	0.18	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 208889)</b>											
CG2101556-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.71	1.75	0.04	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 204149)</b>											
CG2101548-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0020	0.0011	0.0009	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00051	0.00052	0.000008	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0244	0.0247	1.40%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.017	0.017	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.697 µg/L	0.000698	0.164%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	169	172	1.62%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.19 µg/L	0.00020	0.000005	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00038	0.00038	0.000003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0884	0.0856	3.22%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	79.7	79.6	0.0932%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00124	0.00123	1.06%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00211	0.00215	1.81%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0230	0.0229	0.768%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.79	3.78	0.499%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	193 µg/L	0.192	0.422%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.35	1.34	0.826%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.60	3.54	1.95%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.172	0.176	2.55%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	108	104	3.43%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 204149) - continued</b>											
CG2101548-002	Anonymous	thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000026	0.000030	0.000003	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00706	0.00705	0.185%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0177	0.0172	3.42%	20%	----
<b>Dissolved Metals (QC Lot: 204150)</b>											
CG2101548-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 205905)</b>											
CG2101547-006	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 203793)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 204386)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 204390)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 207520)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 207521)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 208608)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 203072)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 203075)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 203076)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 203077)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 203078)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 203079)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 203080)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 204750)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 206289)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 210861)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 210861) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 208888)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 208889)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 204149)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 204149) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 204150)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 205905)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 203793)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.4	85.0	115	---
<b>Physical Tests (QCLot: 204386)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 204390)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	91.9	85.0	115	---
<b>Physical Tests (QCLot: 205355)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Physical Tests (QCLot: 207519)</b>									
pH	---	E108	---	pH units	7 pH units	101	98.6	101	---
<b>Physical Tests (QCLot: 207520)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.1	90.0	110	---
<b>Physical Tests (QCLot: 207521)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 208608)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	110	85.0	115	---
<b>Anions and Nutrients (QCLot: 203072)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 203075)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 203076)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 203077)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 203078)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 203079)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	96.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 203080)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	110	90.0	110	---
<b>Anions and Nutrients (QCLot: 204750)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	100	75.0	125	---
<b>Anions and Nutrients (QCLot: 206289)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 206289) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	95.3	80.0	120	----
<b>Anions and Nutrients (QCLot: 210861)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 208888)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	94.6	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 208889)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 204149)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.2	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.5	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	86.2	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	87.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.3	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.7	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	95.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	83.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.7	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.0	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	92.0	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.4	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	87.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.2	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 204149) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.5	80.0	120	----
<b>Dissolved Metals (QCLot: 204150)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.8	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 203072)</b>										
CG2101550-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0527 mg/L	0.05 mg/L	105	70.0	130	----
<b>Anions and Nutrients (QCLot: 203075)</b>										
CG2101547-015	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 203076)</b>										
CG2101547-015	Anonymous	bromide	24959-67-9	E235.Br-L	0.519 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 203077)</b>										
CG2101547-015	Anonymous	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 203078)</b>										
CG2101547-015	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.64 mg/L	2.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 203079)</b>										
CG2101547-015	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.476 mg/L	0.5 mg/L	95.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 203080)</b>										
CG2101547-015	Anonymous	fluoride	16984-48-8	E235.F	1.13 mg/L	1 mg/L	113	75.0	125	----
<b>Anions and Nutrients (QCLot: 204750)</b>										
CG2101556-005	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.65 mg/L	2.5 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 206289)</b>										
CG2101551-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0562 mg/L	0.0676 mg/L	83.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 210861)</b>										
CG2101551-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.110 mg/L	0.1 mg/L	110	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 208888)</b>										
CG2101556-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.6 mg/L	23.9 mg/L	107	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 208889)</b>										
CG2101556-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.4 mg/L	23.9 mg/L	106	70.0	130	----
<b>Dissolved Metals (QCLot: 204149)</b>										
CG2101548-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.209 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0217 mg/L	0.02 mg/L	108	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0222 mg/L	0.02 mg/L	111	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 204149) - continued</b>										
CG2101548-002	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0372 mg/L	0.04 mg/L	92.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00786 mg/L	0.01 mg/L	78.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.091 mg/L	0.1 mg/L	91.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00403 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.00 mg/L	2 mg/L	100	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0906 mg/L	0.1 mg/L	90.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0215 mg/L	0.02 mg/L	108	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.21 mg/L	4 mg/L	105	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.30 mg/L	10 mg/L	93.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00378 mg/L	0.004 mg/L	94.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0393 mg/L	0.04 mg/L	98.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.393 mg/L	0.4 mg/L	98.3	70.0	130	----
<b>Dissolved Metals (QCLot: 204150)</b>										
CG2101548-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 205905)</b>										
CG2101547-007	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000871 mg/L	0.0001 mg/L	87.1	70.0	130	----





<b>COC ID:</b> COC_WG_Q2_20210520-MW2		<b>TURNAROUND TIME:</b> REGULAR			<b>RUSH:</b> NO							
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>						
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD		
Project Manager	Victoria Sharpe			Lab Contact	Inayat Dhaliwal		Email 1:	Victoria.Sharpe@teck.com	X	X	X	
Email	victoria.sharpe@teck.com			Email	inayat.dhaliwal@aisglobal.com		Email 2:	teckcoal@equisonline.com			X	
Address	PO Box 3000			Address	2559 29th St. NE		Email 3:	jay.jones@teck.com	X	X	X	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	don.sacino@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	shelby.holden@teck.com	X	X	X
Phone Number	1-250-425-7522			Phone Number	403 407 1800		PO number	00741264				

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None				
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE PRESERV.	F	N	F	F	N				
								ANALYSIS									
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA					
CM_MW2-SH_WG_2021-04-12_N	CM_MW2-SH	WG	No	2021/05/20	12:30	G	5	1	1	1	1	1					
CM_TRP_WS_2021-04-12_N	CM_TRP	WG	No	2021/05/20	/	G	5	1	1	1	1	1					
CM_NNP2_WS_2021-04-12_N	CM_NNP2	WG	No	2021/05/20	/	G	5	1	1	1	1	1					

**Environmental Division**  
**Calgary**  
 Work Order Reference  
**CG2101557**



Telephone : +1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.			<i>[Signature]</i>	21/05 8:30

<b>SERVICE REQUEST (rush - subject to availability)</b>					
Regular (default)	<input checked="" type="checkbox"/>	<b>Sampler's Name</b>	SH	<b>Mobile #</b>	250-425-7522
Priority (2-3 business days) - 50% surcharge		<b>Sampler's Signature</b>	<i>[Signature]</i>	<b>Date/Time</b>	2021/05/20
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

8  
1537

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2101629**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q2\_20210526-MW3  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-May-2021 09:25  
**Date Analysis Commenced** : 27-May-2021  
**Issue Date** : 07-Jun-2021 16:55

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW3-DP_ WG_2021-04-1 2_N	CM_MW3-SH_ WG_2021-04-1 2_N	----	----	----
Client sampling date / time					26-May-2021 11:45	26-May-2021 11:35	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101629-001 Result	CG2101629-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	212	176	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	212	176	----	----	----	
conductivity	----	E100	2.0	µS/cm	2780	344	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	50.6	187	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	490	442	----	----	----	
pH	----	E108	0.10	pH units	7.92	7.95	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	1470	177	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.7	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	0.52	0.15	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	259	214	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.542 <sup>DLHC</sup>	0.0154	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	2.51	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	780	0.62	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.505	0.089	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.544	0.090	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0250 <sup>DLHC</sup>	0.0142	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLHC</sup>	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0036	0.0022	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0108	<0.0020	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	4.64	11.0	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.31 <sup>DTC</sup>	1.91	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.66 <sup>DTC</sup>	1.67	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW3-DP_ WG_2021-04-1 2_N	CM_MW3-SH_ WG_2021-04-1 2_N	----	----	----
Client sampling date / time					26-May-2021 11:45	26-May-2021 11:35	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101629-001 Result	CG2101629-002 Result	-----	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	26.4	3.77	----	----	----	
cation sum	----	EC101	0.10	meq/L	28.6	3.91	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	108	104	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.00	1.82	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0044	0.0025	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00173	<0.00010	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.824	0.0796	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.494	0.017	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0100 <sup>DLA</sup>	0.0070	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	12.5	54.0	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00014	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00083	0.00052	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.020 <sup>DLA</sup>	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000536	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	1.39	0.0061	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.70	12.6	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0466	<0.00010	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00483	0.000539	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.49	0.612	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.100 <sup>DLA</sup>	0.260	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.54	2.34	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	631	3.67	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW3-DP_ WG_2021-04-1 2_N	CM_MW3-SH_ WG_2021-04-1 2_N	----	----	----
Client sampling date / time					26-May-2021 11:45	26-May-2021 11:35	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101629-001 Result	CG2101629-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.25	0.276	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<1.00 <sup>DLA</sup>	3.90	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000960	0.000200	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0129	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101629</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Inayat Dhaliwal
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 27-May-2021 09:25
PO	: VPO00741264	Issue Date	: 07-Jun-2021 16:56
C-O-C number	: COC_WG_Q2_20210526-MW3		
Sampler	: SH/DS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-DP_WG_2021-04-12_N	E298	26-May-2021	04-Jun-2021	----	9 days	✓	04-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-SH_WG_2021-04-12_N	E298	26-May-2021	04-Jun-2021	----	9 days	✓	04-Jun-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-04-12_N	E235.Br-L	26-May-2021	----	----	----		27-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW3-SH_WG_2021-04-12_N	E235.Br-L	26-May-2021	----	----	----		27-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-04-12_N	E235.Cl-L	26-May-2021	----	----	----		27-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW3-SH_WG_2021-04-12_N	E235.Cl-L	26-May-2021	----	----	----		27-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-04-12_N	E378-U	26-May-2021	----	----	----		27-May-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW3-SH_WG_2021-04-12_N	E378-U	26-May-2021	----	----	----		27-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW3-DP_WG_2021-04-12_N	E235.F	26-May-2021	----	----	----		27-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW3-SH_WG_2021-04-12_N	E235.F	26-May-2021	----	----	----		27-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW3-DP_WG_2021-04-12_N	E235.NO3-L	26-May-2021	----	----	----		27-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW3-SH_WG_2021-04-12_N	E235.NO3-L	26-May-2021	----	----	----		27-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW3-DP_WG_2021-04-12_N	E235.NO2-L	26-May-2021	----	----	----		27-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW3-SH_WG_2021-04-12_N	E235.NO2-L	26-May-2021	----	----	----		27-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW3-DP_WG_2021-04-12_N	E235.SO4	26-May-2021	----	----	----		27-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW3-SH_WG_2021-04-12_N	E235.SO4	26-May-2021	----	----	----		27-May-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-DP_WG_2021-04-12_N	E318	26-May-2021	31-May-2021	----	5 days	✔	31-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-SH_WG_2021-04-12_N	E318	26-May-2021	31-May-2021	----	5 days	✔	31-May-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-DP_WG_2021-04-12_N	E372-U	26-May-2021	03-Jun-2021	----	8 days	✔	03-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-SH_WG_2021-04-12_N	E372-U	26-May-2021	03-Jun-2021	----	8 days	✔	03-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW3-DP_WG_2021-04-12_N	E421.Cr-L	26-May-2021	31-May-2021	----	6 days	✔	02-Jun-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW3-SH_WG_2021-04-12_N	E421.Cr-L	26-May-2021	31-May-2021	----	6 days	✔	02-Jun-2021	180 days	3 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW3-DP_WG_2021-04-12_N	E509	26-May-2021	02-Jun-2021	----	7 days	✔	02-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW3-SH_WG_2021-04-12_N	E509	26-May-2021	02-Jun-2021	----	7 days	✔	02-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW3-DP_WG_2021-04-12_N	E421	26-May-2021	31-May-2021	----	6 days	✔	02-Jun-2021	180 days	3 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW3-SH_WG_2021-04-12_N	E421	26-May-2021	31-May-2021	----	6 days	✔	02-Jun-2021	180 days	3 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW3-DP_WG_2021-04-12_N	E358-L	26-May-2021	02-Jun-2021	----	8 days	✔	02-Jun-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW3-SH_WG_2021-04-12_N	E358-L	26-May-2021	02-Jun-2021	----	8 days	✔	02-Jun-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-DP_WG_2021-04-12_N	E355-L	26-May-2021	02-Jun-2021	----	8 days	✔	02-Jun-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-SH_WG_2021-04-12_N	E355-L	26-May-2021	02-Jun-2021	----	8 days	✔	02-Jun-2021	28 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-04-12_N	E283	26-May-2021	----	----	----		01-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW3-SH_WG_2021-04-12_N	E283	26-May-2021	----	----	----		01-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-04-12_N	E290	26-May-2021	----	----	----		31-May-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW3-SH_WG_2021-04-12_N	E290	26-May-2021	----	----	----		31-May-2021	14 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW3-DP_WG_2021-04-12_N	E100	26-May-2021	----	----	----		31-May-2021	28 days	6 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW3-SH_WG_2021-04-12_N	E100	26-May-2021	----	----	----		31-May-2021	28 days	6 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW3-DP_WG_2021-04-12_N	E125	26-May-2021	----	----	----		03-Jun-2021	0.34 hrs	192 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW3-SH_WG_2021-04-12_N	E125	26-May-2021	----	----	----		03-Jun-2021	0.34 hrs	192 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW3-DP_WG_2021-04-12_N	E108	26-May-2021	----	----	----		31-May-2021	0.25 hrs	129 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW3-SH_WG_2021-04-12_N	E108	26-May-2021	----	----	----		31-May-2021	0.25 hrs	129 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW3-DP_WG_2021-04-12_N	E162	26-May-2021	----	----	----		31-May-2021	7 days	6 days		✓
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW3-SH_WG_2021-04-12_N	E162	26-May-2021	----	----	----		31-May-2021	7 days	6 days		✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] CM_MW3-DP_WG_2021-04-12_N	E160-L	26-May-2021	----	----	----		31-May-2021	7 days	6 days		✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> CM_MW3-SH_WG_2021-04-12_N	E160-L	26-May-2021	----	----	----		31-May-2021	7 days	6 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW3-DP_WG_2021-04-12_N	E121	26-May-2021	----	----	----		27-May-2021	3 days	2 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW3-SH_WG_2021-04-12_N	E121	26-May-2021	----	----	----		27-May-2021	3 days	2 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	210382	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	209722	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	213168	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	206676	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	206677	1	20	5.0	5.0	✓
Conductivity in Water	E100	209723	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	209599	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	210814	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	209600	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	211623	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	206824	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	206674	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	206678	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	206679	1	19	5.2	5.0	✓
ORP by Electrode	E125	210974	1	20	5.0	5.0	✓
pH by Meter	E108	209724	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	206675	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	209177	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	207585	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	211625	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	210056	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	206752	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	210382	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	209722	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	213168	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	206676	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	206677	1	20	5.0	5.0	✓
Conductivity in Water	E100	209723	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	209599	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	210814	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	209600	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	211623	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	206824	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	206674	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	206678	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	206679	1	19	5.2	5.0	✓





Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	210974	1	20	5.0	5.0	✓
pH by Meter	E108	209724	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	206675	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	209177	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	207585	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	211625	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	210056	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	209151	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	206752	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	210382	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	209722	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	213168	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	206676	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	206677	1	20	5.0	5.0	✓
Conductivity in Water	E100	209723	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	209599	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	210814	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	209600	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	211623	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	206824	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	206674	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	206678	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	206679	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	206675	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	209177	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	207585	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	211625	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	210056	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	209151	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	206752	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	213168	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	206676	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	206677	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	209599	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	210814	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	209600	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	211623	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	206824	1	20	5.0	5.0	✓





Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	206674	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	206678	0	19	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	206679	0	19	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	206675	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	207585	1	16	6.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	211625	1	16	6.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	210056	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101629**

**Page** : 1 of 13

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q2\_20210526-MW3  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 27-May-2021 09:25  
**Date Analysis Commenced** : 27-May-2021  
**Issue Date** : 07-Jun-2021 16:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Inorganics, Calgary, Alberta

Page : 2 of 13  
Work Order : CG2101629  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 206752)</b>											
CG2101618-001	Anonymous	turbidity	----	E121	0.10	NTU	5.71	5.69	0.351%	15%	----
<b>Physical Tests (QC Lot: 209177)</b>											
CG2101628-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1240	1240	0.484%	20%	----
<b>Physical Tests (QC Lot: 209722)</b>											
CG2101628-001	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	348	344	1.24%	20%	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	348	344	1.24%	20%	----
<b>Physical Tests (QC Lot: 209723)</b>											
CG2101628-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1480	1470	0.543%	10%	----
<b>Physical Tests (QC Lot: 209724)</b>											
CG2101629-001	CM_MW3-DP_WG_2021-04-12_N	pH	----	E108	0.10	pH units	7.92	7.98	0.755%	4%	----
<b>Physical Tests (QC Lot: 210382)</b>											
CG2101629-001	CM_MW3-DP_WG_2021-04-12_N	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 210974)</b>											
CG2101629-001	CM_MW3-DP_WG_2021-04-12_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	490	488	0.409%	15%	----
<b>Anions and Nutrients (QC Lot: 206674)</b>											
CG2101628-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.132	0.143	0.011	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 206675)</b>											
CG2101628-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	586	583	0.550%	20%	----
<b>Anions and Nutrients (QC Lot: 206676)</b>											
CG2101628-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 206677)</b>											
CG2101628-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	3.50	3.39	0.11	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 206678)</b>											
CG2101628-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	8.97	8.86	1.24%	20%	----
<b>Anions and Nutrients (QC Lot: 206679)</b>											
CG2101628-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 206824)</b>											
CG2101618-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 207585)</b>											
CG2101628-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210056)</b>											
CG2101628-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 213168)</b>											
CG2101628-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 211623)</b>											
CG2101628-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.60	1.98	0.38	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 211625)</b>											
CG2101628-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.74	1.55	0.19	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 209599)</b>											
CG2101629-001	CM_MW3-DP_WG_2021-04-12_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 209600)</b>											
CG2101629-001	CM_MW3-DP_WG_2021-04-12_N	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0044	0.0040	0.0004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00173	0.00169	0.00004	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.824	0.817	0.936%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.494	0.503	1.62%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	<0.0100 µg/L	<0.0000100	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	12.5	12.5	0.576%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00083	0.00082	0.00001	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	0.000536	0.000524	0.000012	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	1.39	1.39	0.398%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	4.70	4.64	1.09%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.0466	0.0461	1.25%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00483	0.00492	2.00%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	2.49	2.51	0.945%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	3.54	3.48	1.61%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 209600) - continued</b>											
CG2101629-001	CM_MW3-DP_WG_2021-04-12_N	sodium, dissolved	17341-25-2	E421	0.100	mg/L	631	624	1.14%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	1.25	1.21	2.94%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.000960	0.000930	3.10%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0129	0.0131	0.0002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 210814)</b>											
CG2101629-001	CM_MW3-DP_WG_2021-04-12_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 206752)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 209151)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 209177)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 209722)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 209723)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 210382)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 206674)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 206675)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 206676)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 206677)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 206678)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 206679)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 206824)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 207585)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 210056)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 213168)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 213168) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 211623)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 211625)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 209599)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 209600)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 209600) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 210814)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 206752)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100.0	85.0	115	---
<b>Physical Tests (QCLot: 209151)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	86.0	85.0	115	---
<b>Physical Tests (QCLot: 209177)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	97.1	85.0	115	---
<b>Physical Tests (QCLot: 209722)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 209723)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 209724)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 210382)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 210974)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 206674)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 206675)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 206676)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	101	85.0	115	---
<b>Anions and Nutrients (QCLot: 206677)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 206678)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 206679)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 206824)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	106	80.0	120	---
<b>Anions and Nutrients (QCLot: 207585)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	86.1	75.0	125	---
<b>Anions and Nutrients (QCLot: 210056)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 210056) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	103	80.0	120	----
<b>Anions and Nutrients (QCLot: 213168)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	104	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 211623)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	107	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 211625)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	107	80.0	120	----
<b>Dissolved Metals (QCLot: 209599)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 209600)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.3	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.1	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.0	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 209600) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	104	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.5	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 206674)</b>										
CG2101630-007	Anonymous	fluoride	16984-48-8	E235.F	1.03 mg/L	1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 206675)</b>										
CG2101630-007	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 206676)</b>										
CG2101630-007	Anonymous	bromide	24959-67-9	E235.Br-L	0.510 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 206677)</b>										
CG2101630-007	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 206824)</b>										
CG2101628-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0508 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 207585)</b>										
CG2101628-008	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.94 mg/L	2.5 mg/L	117	70.0	130	----
<b>Anions and Nutrients (QCLot: 210056)</b>										
CG2101628-008	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0524 mg/L	0.0676 mg/L	77.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 213168)</b>										
CG2101634-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.115 mg/L	0.1 mg/L	115	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 211623)</b>										
CG2101628-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.9 mg/L	23.9 mg/L	104	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 211625)</b>										
CG2101628-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.1 mg/L	23.9 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 209599)</b>										
CG2101629-001	CM_MW3-DP_WG_2021-04-12_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0774 mg/L	0.08 mg/L	96.7	70.0	130	----
<b>Dissolved Metals (QCLot: 209600)</b>										
CG2101629-001	CM_MW3-DP_WG_2021-04-12_N	aluminum, dissolved	7429-90-5	E421	0.410 mg/L	0.4 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0438 mg/L	0.04 mg/L	109	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0802 mg/L	0.08 mg/L	100	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0185 mg/L	0.02 mg/L	92.7	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 209600) - continued</b>										
CG2101629-001	CM_MW3-DP_WG_2021-04-12_N	boron, dissolved	7440-42-8	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00783 mg/L	0.008 mg/L	97.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0371 mg/L	0.04 mg/L	92.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.92 mg/L	4 mg/L	97.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0438 mg/L	0.04 mg/L	110	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0747 mg/L	0.08 mg/L	93.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	8.38 mg/L	8 mg/L	105	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0787 mg/L	0.08 mg/L	98.4	70.0	130	----
		silicon, dissolved	7440-21-3	E421	19.1 mg/L	20 mg/L	95.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00802 mg/L	0.008 mg/L	100	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	42.9 mg/L	40 mg/L	107	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00777 mg/L	0.008 mg/L	97.1	70.0	130	----
tin, dissolved	7440-31-5	E421	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0820 mg/L	0.08 mg/L	102	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00825 mg/L	0.008 mg/L	103	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.206 mg/L	0.2 mg/L	103	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.788 mg/L	0.8 mg/L	98.6	70.0	130	----		
<b>Dissolved Metals (QCLot: 210814)</b>										
CG2101629-002	CM_MW3-SH_WG_2021-04-12_N	mercury, dissolved	7439-97-6	E509	0.0000925 mg/L	0.0001 mg/L	92.5	70.0	130	----

COC ID: **COC\_WG\_Q2\_20210526-MW3**      TURNAROUND TIME: **REGULAR**      RUSH: **NO**

PROJECT/CLIENT INFO				LABORATORY			OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager	Victoria Sharpe			Lab Contact	Inayat Dhaliwal		Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	victoria.sharpe@teck.com			Email	inayat.dhaliwal@alsglobal.com		Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE		Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	don.sacino@teck.com	X	X
Country	Canada	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	shelby.holden@teck.com	X	X
Phone Number	403 407 1800		PO number	00741264							

Environmental Division  
Calgary  
Work Order Reference  
**CG2101629**



Telephone : +1 403 407 1800

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**      Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	F	N	F	F	N	F	N	F	N	F	N	
																			ALS_Package-DOC
CM_MW3-DP_WG_2021-04-12_N	CM_MW3-DP	WG		2021/05/26	10:45	G	5	1	1	1	1	1							
CM_MW3-SH_WG_2021-04-12_N	CM_MW3-SH	WG		2021/05/26	11:35	G	5	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO <sub>3</sub> , hydroxide as OH and carbonate as CO <sub>3</sub> rather than bicarbonate as CaCO <sub>3</sub> , Carbonate as CaCO <sub>3</sub> and hydroxide as CaCO <sub>3</sub> .			<i>[Signature]</i>	27/05 4:25

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	SH/DS	Mobile #
Regular (default) <input checked="" type="checkbox"/>			250-425-7522
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>[Signature]</i>		2021/05/26

5

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2101673**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : WG\_Q2\_20210527-MW\_AG1A-B,MW10  
**Sampler** : SH  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 28-May-2021 09:00  
**Date Analysis Commenced** : 28-May-2021  
**Issue Date** : 08-Jun-2021 13:36

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID		CM_MW_AG1A	CM_MW_AG1B	CM_MW10_WG	----	----
(Matrix: Water)							_WG_2021-04-12_N	_WG_2021-04-12_N	_2021-04-12_N		
Client sampling date / time					27-May-2021	27-May-2021	27-May-2021				
					13:10	12:15	09:55				
Analyte	CAS Number	Method	LOR	Unit	CG2101673-001	CG2101673-002	CG2101673-003	-----	-----		
					Result	Result	Result	---	---		
<b>Physical Tests</b>											
acidity (as CaCO3)	----	E283	2.0	mg/L	15.8	15.1	3.2	----	----		
conductivity	----	E100	2.0	µS/cm	787	726	545	----	----		
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	470	462	227	----	----		
oxidation-reduction potential [ORP]	----	E125	0.10	mV	240	255	455	----	----		
pH	----	E108	0.10	pH units	7.98	7.87	8.27	----	----		
solids, total dissolved [TDS]	----	E162	10	mg/L	524	418	311	----	----		
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	17.6	<1.0	4.1	----	----		
turbidity	----	E121	0.10	NTU	89.2	0.23	12.1	----	----		
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	485	433	263	----	----		
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	485	433	263	----	----		
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	592	528	321	----	----		
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----		
<b>Anions and Nutrients</b>											
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0289	<0.0050	0.0355	----	----		
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.068	<0.050	<0.050	----	----		
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.21	0.69	0.51	----	----		
fluoride	16984-48-8	E235.F	0.020	mg/L	0.085	0.070	1.04	----	----		
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.088	<0.050	----	----		
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.845	0.0098	----	----		
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----		
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0041	<0.0010	----	----		
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0024	0.0054	----	----		
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	10.2	11.5	52.2	----	----		
<b>Organic / Inorganic Carbon</b>											
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.47	1.86	2.35	----	----		
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.92	1.74	1.45	----	----		



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW_AG1A _WG_2021-04- 12_N	CM_MW_AG1B _WG_2021-04- 12_N	CM_MW10_WG _2021-04-12_N	----	----
Client sampling date / time					27-May-2021 13:10	27-May-2021 12:15	27-May-2021 09:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101673-001 Result	CG2101673-002 Result	CG2101673-003 Result	----- ----	----- ----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	10.0	8.98	6.41	----	----	
cation sum	----	EC101	0.10	meq/L	10.1	9.34	6.41	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	101	104	100	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.498	1.96	<0.010	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0010	<0.0010	0.0011	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00174	0.00024	0.00171	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	1.57	0.136	0.213	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	0.016	0.022	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0434	<0.0050	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	139	116	59.4	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00039	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.16	<0.10	0.34	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00037	<0.00020	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	6.95	<0.010	0.734	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0.000102	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0208	0.0018	0.0142	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	29.9	41.9	19.2	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.148	0.00020	0.0612	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00110	0.000193	0.00558	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00063	0.00083	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.13	0.935	0.790	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.061	0.568	<0.050	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.94	3.89	4.26	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLM</sup>	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	10.2	1.82	41.7	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW_AG1A _WG_2021-04- 12_N	CM_MW_AG1B _WG_2021-04- 12_N	CM_MW10_WG _2021-04-12_N	----	----
Client sampling date / time					27-May-2021 13:10	27-May-2021 12:15	27-May-2021 09:55	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101673-001 Result	CG2101673-002 Result	CG2101673-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.793	0.245	0.265	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.70	4.49	19.3	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000063	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000924	0.000480	0.00242	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0011	0.0014	0.0240	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101673</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Inayat Dhaliwal
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 28-May-2021 09:00
PO	: VPO00741264	Issue Date	: 08-Jun-2021 13:36
C-O-C number	: WG_Q2_20210527-MW_AG1A-B,MW10		
Sampler	: SH		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1A_WG_2021-04-12_N	E298	27-May-2021	06-Jun-2021	----	10 days	✓	06-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1B_WG_2021-04-12_N	E298	27-May-2021	06-Jun-2021	----	10 days	✓	06-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-04-12_N	E298	27-May-2021	06-Jun-2021	----	11 days	✓	06-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_MW_AG1A_WG_2021-04-12_N	E235.Br-L	27-May-2021	----	----	----		28-May-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_MW_AG1B_WG_2021-04-12_N	E235.Br-L	27-May-2021	----	----	----		28-May-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_MW10_WG_2021-04-12_N	E235.Br-L	27-May-2021	----	----	----		28-May-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_MW_AG1A_WG_2021-04-12_N	E235.Cl-L	27-May-2021	----	----	----		28-May-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE CM_MW_AG1B_WG_2021-04-12_N	E235.Cl-L	27-May-2021	----	----	----		28-May-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE CM_MW10_WG_2021-04-12_N	E235.Cl-L	27-May-2021	----	----	----		28-May-2021	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE CM_MW_AG1A_WG_2021-04-12_N	E378-U	27-May-2021	----	----	----		28-May-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE CM_MW_AG1B_WG_2021-04-12_N	E378-U	27-May-2021	----	----	----		28-May-2021	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE CM_MW10_WG_2021-04-12_N	E378-U	27-May-2021	----	----	----		28-May-2021	3 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW_AG1A_WG_2021-04-12_N	E235.F	27-May-2021	----	----	----		28-May-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW_AG1B_WG_2021-04-12_N	E235.F	27-May-2021	----	----	----		28-May-2021	28 days	2 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW10_WG_2021-04-12_N	E235.F	27-May-2021	----	----	----		28-May-2021	28 days	2 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW_AG1A_WG_2021-04-12_N	E235.NO3-L	27-May-2021	----	----	----		28-May-2021	3 days	2 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW_AG1B_WG_2021-04-12_N	E235.NO3-L	27-May-2021	----	----	----		28-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW10_WG_2021-04-12_N	E235.NO3-L	27-May-2021	----	----	----		28-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW_AG1A_WG_2021-04-12_N	E235.NO2-L	27-May-2021	----	----	----		28-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW_AG1B_WG_2021-04-12_N	E235.NO2-L	27-May-2021	----	----	----		28-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW10_WG_2021-04-12_N	E235.NO2-L	27-May-2021	----	----	----		28-May-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW_AG1A_WG_2021-04-12_N	E235.SO4	27-May-2021	----	----	----		28-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW_AG1B_WG_2021-04-12_N	E235.SO4	27-May-2021	----	----	----		28-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW10_WG_2021-04-12_N	E235.SO4	27-May-2021	----	----	----		28-May-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1A_WG_2021-04-12_N	E318	27-May-2021	02-Jun-2021	----	6 days	✓	02-Jun-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1B_WG_2021-04-12_N	E318	27-May-2021	02-Jun-2021	----	6 days	✔	02-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-04-12_N	E318	27-May-2021	02-Jun-2021	----	6 days	✔	02-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1A_WG_2021-04-12_N	E372-U	27-May-2021	03-Jun-2021	----	7 days	✔	03-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1B_WG_2021-04-12_N	E372-U	27-May-2021	03-Jun-2021	----	7 days	✔	03-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-04-12_N	E372-U	27-May-2021	03-Jun-2021	----	7 days	✔	03-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW_AG1A_WG_2021-04-12_N	E421.Cr-L	27-May-2021	01-Jun-2021	----	6 days	✔	02-Jun-2021	180 days	2 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW_AG1B_WG_2021-04-12_N	E421.Cr-L	27-May-2021	02-Jun-2021	----	7 days	✔	03-Jun-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW10_WG_2021-04-12_N	E421.Cr-L	27-May-2021	02-Jun-2021	----	7 days	✔	03-Jun-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW_AG1A_WG_2021-04-12_N	E509	27-May-2021	03-Jun-2021	----	8 days	✔	03-Jun-2021	28 days	1 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW_AG1B_WG_2021-04-12_N	E509	27-May-2021	03-Jun-2021	----	8 days	✔	03-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW10_WG_2021-04-12_N	E509	27-May-2021	03-Jun-2021	----	8 days	✔	03-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW_AG1A_WG_2021-04-12_N	E421	27-May-2021	01-Jun-2021	----	6 days	✔	02-Jun-2021	180 days	2 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW_AG1B_WG_2021-04-12_N	E421	27-May-2021	02-Jun-2021	----	7 days	✔	03-Jun-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW10_WG_2021-04-12_N	E421	27-May-2021	02-Jun-2021	----	7 days	✔	03-Jun-2021	180 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW_AG1A_WG_2021-04-12_N	E358-L	27-May-2021	07-Jun-2021	----	12 days	✔	07-Jun-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW_AG1B_WG_2021-04-12_N	E358-L	27-May-2021	07-Jun-2021	----	12 days	✔	07-Jun-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW10_WG_2021-04-12_N	E358-L	27-May-2021	07-Jun-2021	----	12 days	✔	07-Jun-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1A_WG_2021-04-12_N	E355-L	27-May-2021	07-Jun-2021	----	12 days	✔	07-Jun-2021	28 days	1 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1B_WG_2021-04-12_N	E355-L	27-May-2021	07-Jun-2021	----	12 days	✔	07-Jun-2021	28 days	1 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-04-12_N	E355-L	27-May-2021	07-Jun-2021	----	12 days	✔	07-Jun-2021	28 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW_AG1A_WG_2021-04-12_N	E283	27-May-2021	----	----	----		02-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW_AG1B_WG_2021-04-12_N	E283	27-May-2021	----	----	----		02-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW10_WG_2021-04-12_N	E283	27-May-2021	----	----	----		02-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW_AG1A_WG_2021-04-12_N	E290	27-May-2021	----	----	----		02-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW_AG1B_WG_2021-04-12_N	E290	27-May-2021	----	----	----		02-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW10_WG_2021-04-12_N	E290	27-May-2021	----	----	----		02-Jun-2021	14 days	7 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> CM_MW_AG1A_WG_2021-04-12_N	E100	27-May-2021	----	----	----		02-Jun-2021	28 days	7 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW_AG1B_WG_2021-04-12_N	E100	27-May-2021	----	----	----		02-Jun-2021	28 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW10_WG_2021-04-12_N	E100	27-May-2021	----	----	----		02-Jun-2021	28 days	7 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW_AG1A_WG_2021-04-12_N	E125	27-May-2021	----	----	----		04-Jun-2021	0.34 hrs	192 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW_AG1B_WG_2021-04-12_N	E125	27-May-2021	----	----	----		04-Jun-2021	0.34 hrs	193 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW10_WG_2021-04-12_N	E125	27-May-2021	----	----	----		04-Jun-2021	0.34 hrs	196 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW_AG1A_WG_2021-04-12_N	E108	27-May-2021	----	----	----		02-Jun-2021	0.25 hrs	151 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW_AG1B_WG_2021-04-12_N	E108	27-May-2021	----	----	----		02-Jun-2021	0.25 hrs	152 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW10_WG_2021-04-12_N	E108	27-May-2021	----	----	----		02-Jun-2021	0.25 hrs	155 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW_AG1A_WG_2021-04-12_N	E162	27-May-2021	----	----	----		01-Jun-2021	7 days	6 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW_AG1B_WG_2021-04-12_N	E162	27-May-2021	----	----	----		01-Jun-2021	7 days	6 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW10_WG_2021-04-12_N	E162	27-May-2021	----	----	----		01-Jun-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] CM_MW_AG1A_WG_2021-04-12_N	E160-L	27-May-2021	----	----	----		01-Jun-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] CM_MW_AG1B_WG_2021-04-12_N	E160-L	27-May-2021	----	----	----		01-Jun-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] CM_MW10_WG_2021-04-12_N	E160-L	27-May-2021	----	----	----		01-Jun-2021	7 days	6 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW10_WG_2021-04-12_N	E121	27-May-2021	----	----	----		29-May-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW_AG1A_WG_2021-04-12_N	E121	27-May-2021	----	----	----		30-May-2021	3 days	3 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW_AG1B_WG_2021-04-12_N	E121	27-May-2021	----	----	----		30-May-2021	3 days	3 days	✔	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	211659	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	211685	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	214326	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	207908	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	207909	1	8	12.5	5.0	✓
Conductivity in Water	E100	211686	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	210419	2	32	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	212560	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	210418	2	38	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	215073	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	207882	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	207912	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	207910	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	207911	1	8	12.5	5.0	✓
ORP by Electrode	E125	212130	2	40	5.0	5.0	✓
pH by Meter	E108	211684	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	207907	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	209879	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	210032	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	215076	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	211274	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	208244	2	40	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	211659	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	211685	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	214326	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	207908	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	207909	1	8	12.5	5.0	✓
Conductivity in Water	E100	211686	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	210419	2	32	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	212560	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	210418	2	38	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	215073	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	207882	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	207912	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	207910	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	207911	1	8	12.5	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	212130	2	40	5.0	5.0	✓
pH by Meter	E108	211684	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	207907	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	209879	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	210032	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	215076	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	211274	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	209874	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	208244	2	40	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	211659	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	211685	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	214326	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	207908	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	207909	1	8	12.5	5.0	✓
Conductivity in Water	E100	211686	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	210419	2	32	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	212560	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	210418	2	38	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	215073	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	207882	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	207912	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	207910	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	207911	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	207907	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	209879	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	210032	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	215076	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	211274	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	209874	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	208244	2	40	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	214326	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	207908	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	207909	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	210419	2	32	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	212560	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	210418	2	38	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	215073	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	207882	1	15	6.6	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	207912	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	207910	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	207911	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	207907	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	210032	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	215076	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	211274	2	40	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101673**

**Page** : 1 of 18

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : WG\_Q2\_20210527-MW\_AG1A-B,MW10  
**Sampler** : SH  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 28-May-2021 09:00  
**Date Analysis Commenced** : 28-May-2021  
**Issue Date** : 08-Jun-2021 13:36

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
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Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 18  
Work Order : CG2101673  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 208244)</b>											
CG2101658-001	Anonymous	turbidity	----	E121	0.10	NTU	2.25	2.22	1.34%	15%	----
<b>Physical Tests (QC Lot: 208590)</b>											
CG2101669-006	Anonymous	turbidity	----	E121	0.10	NTU	0.67	0.67	0.008	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 209879)</b>											
CG2101669-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	366	362	1.10%	20%	----
<b>Physical Tests (QC Lot: 211659)</b>											
CG2101669-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 211684)</b>											
CG2101669-001	Anonymous	pH	----	E108	0.10	pH units	8.31	8.34	0.360%	4%	----
<b>Physical Tests (QC Lot: 211685)</b>											
CG2101669-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	151	157	3.83%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	2.2	3.8	1.6	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	153	161	4.77%	20%	----
<b>Physical Tests (QC Lot: 211686)</b>											
CG2101669-001	Anonymous	conductivity	----	E100	2.0	µS/cm	561	552	1.62%	10%	----
<b>Physical Tests (QC Lot: 212130)</b>											
CG2101668-010	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	364	367	0.985%	15%	----
<b>Physical Tests (QC Lot: 212131)</b>											
CG2101673-003	CM_MW10_WG_2021-04-1 2_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	455	465	2.22%	15%	----
<b>Anions and Nutrients (QC Lot: 207882)</b>											
CG2101669-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 207907)</b>											
CG2101671-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	127	128	0.207%	20%	----
<b>Anions and Nutrients (QC Lot: 207908)</b>											
CG2101671-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 207909)</b>											
CG2101671-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.18	3.17	0.425%	20%	----
<b>Anions and Nutrients (QC Lot: 207910)</b>											
CG2101671-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	5.97	6.00	0.563%	20%	----
<b>Anions and Nutrients (QC Lot: 207911)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 207911) - continued</b>											
CG2101671-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 207912)</b>											
CG2101671-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.189	0.187	0.003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210032)</b>											
CG2101671-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 211274)</b>											
CG2101668-009	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 211275)</b>											
CG2101673-002	CM_MW_AG1B_WG_2021-04-12_N	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0024	0.0022	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 214326)</b>											
CG2101669-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 215073)</b>											
CG2101671-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.29	1.14	0.14	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 215076)</b>											
CG2101671-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.23	1.24	0.008	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 210418)</b>											
CG2101673-001	CM_MW_AG1A_WG_2021-04-12_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0010	<0.0010	0.00003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00174	0.00173	0.589%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	1.57	1.62	2.82%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	0.026	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	139	142	1.59%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.16 µg/L	0.00015	0.00001	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	6.95	7.00	0.739%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0208	0.0212	1.97%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	29.9	31.0	3.76%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.148	0.151	1.98%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00110	0.00113	3.38%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 210418) - continued</b>											
CG2101673-001	CM_MW_AG1A_WG_2021-04-12_N	potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.13	1.16	2.80%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.061 µg/L	0.000050	0.000010	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.94	6.06	2.09%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	----	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	10.2	10.4	1.27%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.793	0.800	0.923%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.70	3.60	0.11	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000924	0.000934	1.03%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0011	0.0011	0.00003	Diff <2x LOR	----		
<b>Dissolved Metals (QC Lot: 210419)</b>											
CG2101673-001	CM_MW_AG1A_WG_2021-04-12_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 210837)</b>											
CG2101673-002	CM_MW_AG1B_WG_2021-04-12_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00024	0.00026	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.136	0.156	13.8%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.016	0.017	0.0008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0434 µg/L	0.0000454	0.0000021	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	116	129	11.2%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00037	0.00038	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0018	0.0018	0.00010	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	41.9	43.5	3.64%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00020	0.00021	0.000007	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000193	0.000214	0.000020	Diff <2x LOR	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00063	0.00062	0.000009	Diff <2x LOR	----		



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 210837) - continued</b>											
CG2101673-002	CM_MW_AG1B_WG_2021-04-12_N	potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.935	1.03	9.91%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.568 µg/L	0.000535	6.00%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.89	3.83	1.37%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.82	1.95	6.55%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.245	0.269	9.52%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.49	4.07	0.41	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000063	0.000068	0.000005	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000480	0.000504	4.89%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0014	0.0012	0.0001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 210838)</b>											
CG2101673-002	CM_MW_AG1B_WG_2021-04-12_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00039	0.00040	0.00001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 212560)</b>											
CG2101673-001	CM_MW_AG1A_WG_2021-04-12_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 208244)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 208590)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 209874)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 209879)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 211659)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 211685)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 211686)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 207882)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 207907)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 207908)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 207909)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 207910)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 207911)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 207912)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 210032)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 211274)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 211274) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 211275)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 214326)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 215073)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 215076)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 210418)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 210418) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 210419)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 210837)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----





Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 210837) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 210838)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 212560)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 208244)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
<b>Physical Tests (QCLot: 208590)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	100.0	85.0	115	----
<b>Physical Tests (QCLot: 209874)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	89.0	85.0	115	----
<b>Physical Tests (QCLot: 209879)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	98.2	85.0	115	----
<b>Physical Tests (QCLot: 211659)</b>									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	108	85.0	115	----
<b>Physical Tests (QCLot: 211684)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 211685)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	104	85.0	115	----
<b>Physical Tests (QCLot: 211686)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	----
<b>Physical Tests (QCLot: 212130)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	102	95.4	104	----
<b>Physical Tests (QCLot: 212131)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	103	95.4	104	----
<b>Anions and Nutrients (QCLot: 207882)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 207907)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 207908)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.8	85.0	115	----
<b>Anions and Nutrients (QCLot: 207909)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 207910)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 207911)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 207912)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 207912) - continued</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.7	90.0	110	----
<b>Anions and Nutrients (QCLot: 210032)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 211274)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	93.4	80.0	120	----
<b>Anions and Nutrients (QCLot: 211275)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	93.3	80.0	120	----
<b>Anions and Nutrients (QCLot: 214326)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	94.2	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 215073)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 215076)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	111	80.0	120	----
<b>Dissolved Metals (QCLot: 210418)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.2	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.5	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.7	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.2	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.2	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	95.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	93.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.6	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.4	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.0	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.9	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 210418) - continued</b>									
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.2	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	98.8	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	94.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.2	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	90.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.5	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 210419)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
<b>Dissolved Metals (QCLot: 210837)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	92.2	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	87.9	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.3	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	90.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	94.9	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 210837) - continued</b>									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	106	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 210838)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	88.2	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 207882)</b>										
CG2101669-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0453 mg/L	0.05 mg/L	90.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 207907)</b>										
CG2101671-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 207908)</b>										
CG2101671-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.496 mg/L	0.5 mg/L	99.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 207909)</b>										
CG2101671-001	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 207910)</b>										
CG2101671-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 207911)</b>										
CG2101671-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.513 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 207912)</b>										
CG2101671-001	Anonymous	fluoride	16984-48-8	E235.F	0.948 mg/L	1 mg/L	94.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 210032)</b>										
CG2101671-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.91 mg/L	2.5 mg/L	76.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 211274)</b>										
CG2101668-010	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0536 mg/L	0.0676 mg/L	79.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 211275)</b>										
CG2101673-003	CM_MW10_WG_2021-04-12_N	phosphorus, total	7723-14-0	E372-U	0.0560 mg/L	0.0676 mg/L	82.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 214326)</b>										
CG2101669-008	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 215073)</b>										
CG2101671-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	27.0 mg/L	23.9 mg/L	113	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 215076)</b>										
CG2101671-001	Anonymous	carbon, total organic [TOC]	----	E355-L	28.8 mg/L	23.9 mg/L	121	70.0	130	----
<b>Dissolved Metals (QCLot: 210418)</b>										
CG2101673-001	CM_MW_AG1A_WG_2021-04-12_N	aluminum, dissolved	7429-90-5	E421	0.198 mg/L	0.2 mg/L	99.2	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 210418) - continued</b>										
CG2101673-001	CM_MW_AG1A_WG_2021-04-12_N	antimony, dissolved	7440-36-0	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00892 mg/L	0.01 mg/L	89.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	93.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0178 mg/L	0.02 mg/L	89.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0933 mg/L	0.1 mg/L	93.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0200 mg/L	0.02 mg/L	100.0	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.94 mg/L	4 mg/L	98.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0429 mg/L	0.04 mg/L	107	70.0	130	----
		silicon, dissolved	7440-21-3	E421	7.97 mg/L	10 mg/L	79.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00692 mg/L	0.008 mg/L	86.6	70.0	130	----
sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----		
strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----		
sulfur, dissolved	7704-34-9	E421	19.4 mg/L	20 mg/L	97.2	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00362 mg/L	0.004 mg/L	90.6	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.399 mg/L	0.4 mg/L	99.8	70.0	130	----		
<b>Dissolved Metals (QCLot: 210419)</b>										
CG2101673-001	CM_MW_AG1A_WG_2021-04-12_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
<b>Dissolved Metals (QCLot: 210837)</b>										
CG2101673-002	CM_MW_AG1B_WG_2021-04-12_N	aluminum, dissolved	7429-90-5	E421	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0213 mg/L	0.02 mg/L	107	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 210837) - continued</b>										
CG2101673-002	CM_MW_AG1B_WG_2021-04-12_N	arsenic, dissolved	7440-38-2	E421	0.0224 mg/L	0.02 mg/L	112	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00842 mg/L	0.01 mg/L	84.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.097 mg/L	0.1 mg/L	97.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00410 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0186 mg/L	0.02 mg/L	92.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.01 mg/L	2 mg/L	100	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0993 mg/L	0.1 mg/L	99.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.93 mg/L	4 mg/L	98.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0497 mg/L	0.04 mg/L	124	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.88 mg/L	10 mg/L	88.8	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.96 mg/L	2 mg/L	98.1	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	21.4 mg/L	20 mg/L	107	70.0	130	----
thallium, dissolved	7440-28-0	E421	0.00397 mg/L	0.004 mg/L	99.3	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00415 mg/L	0.004 mg/L	104	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.394 mg/L	0.4 mg/L	98.6	70.0	130	----		
<b>Dissolved Metals (QCLot: 210838)</b>										
CG2101673-002	CM_MW_AG1B_WG_2021-04-12_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 212560)</b>										
CG2101673-002	CM_MW_AG1B_WG_2021-04-12_N	mercury, dissolved	7439-97-6	E509	0.0000926 mg/L	0.0001 mg/L	92.6	70.0	130	----





COC ID: <b>COC_WG_Q2_20210527-MW_AG1A-B, MW10</b>		TURNAROUND TIME: <b>REGULAR</b>				RUSH: <b>NO</b>								
<b>PROJECT/CLIENT INFO</b>						<b>LABORATORY</b>						<b>OTHER INFO</b>		
Facility Name / Job# Coal Mountain Operations						Lab Name ALS Calgary			Report Format / Distribution			Excel	PDF	EDD
Project Manager Victoria Sharpe						Lab Contact Inayat Dhaliwal			Email 1: Victoria.Sharpe@teck.com			X	X	X
Email victoria.sharpe@teck.com						Email Inayat.Dhaliwal@alsglobal.com			Email 2: teckcoal@equisonline.com					
Address PO Box 3000						Address 2559 29th St. NE			Email 3: jay.jones@teck.com			X	X	X
City Sparwood						City Calgary			Email 4: don.sacino@teck.com			X	X	X
Province BC						Province AB								
Country Canada						Country Canada								
Postal Code T1Y 7B5						Postal Code T1Y 7B5								
Phone Number 403 407 1800						Phone Number 403 407 1800			PO number			<b>00741264</b>		

Environmental Division  
Calgary  
Work Order Reference  
**CG2101673**



Telephone : +1 403 407 1800

**MPLE DETAILS** Filtered - F: Field, L: Lab, FT: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G-Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED																		
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	FILE	F	N	F	F	N								
CM_MW_AG1A_WG_2021-04-12_N	CM_MW_AG1A	WG		2021/05/27	13:10	G	5	1	1	1	1	1														
CM_MW_AG1B_WG_2021-04-12_N	CM_MW_AG1B	WG		2021/05/27	12:15	G	5	1	1	1	1	1														
CM_MW10_WG_2021-04-12_N	CM_MW10	WG		2021/05/27	9:55	G	5	1	1	1	1	1														

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>		<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3. Carbonate as CaCO3 and hydroxide as CaCO3.					[Signature]		20/05 9:10
<b>SERVICE REQUEST (rush - subject to availability)</b>							
Regular (default) <input checked="" type="checkbox"/>		Sampler's Name		SH		Mobile # 250-425-7522	
Priority (2-3 business days) - 50% surcharge		Sampler's Signature		[Signature]		Date/Time 2021/05/27	
Emergency (1 Business Day) - 100% surcharge							
For Emergency <1 Day, ASAP or Weekend - Contact ALS							

62

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2101686**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q2\_20210528-MW5  
**Sampler** : VS/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-May-2021 10:05  
**Date Analysis Commenced** : 29-May-2021  
**Issue Date** : 10-Jun-2021 10:30

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW5-DP_ WG_2021-04-1 2_N	CM_MW5-SH_ WG_2021-04-1 2_N	----	----	----
Client sampling date / time					28-May-2021 12:01	28-May-2021 12:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101686-001 Result	CG2101686-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	445	229	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	445	229	----	----	----	
conductivity	----	E100	2.0	µS/cm	748	929	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	298	494	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	466	446	----	----	----	
pH	----	E108	0.10	pH units	8.08	8.05	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	412	625	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.9	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	12.9	<0.10	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	543	279	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.735	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	12.7	9.92	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.251	0.144	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.793	0.522	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0439	2.07	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0029	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0033	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0023	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	2.66	284	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.24	0.96	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.53	<0.50	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW5-DP_ WG_2021-04-1 2_N	CM_MW5-SH_ WG_2021-04-1 2_N	----	----	----
Client sampling date / time					28-May-2021 12:01	28-May-2021 12:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101686-001 Result	CG2101686-002 Result	-----	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.32	10.9	----	----	----	
cation sum	----	EC101	0.10	meq/L	9.05	10.9	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	97.1	100	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.47	<0.010	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00022	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00019	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	1.19	0.0640	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.100	0.035	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0267	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	76.5	112	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00025	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00034	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.927	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0665	0.0225	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	26.1	52.0	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0341	<0.00010	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000590	0.00142	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00107	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.18	1.72	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	11.8	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.82	2.14	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	67.0	22.3	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW5-DP_ WG_2021-04-1 2_N	CM_MW5-SH_ WG_2021-04-1 2_N	----	----	----
Client sampling date / time					28-May-2021 12:01	28-May-2021 12:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2101686-001 Result	CG2101686-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.83	0.334	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.83	107	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000035	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000072	0.00256	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0014	0.0017	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2101686</b>	Page	: 1 of 14
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Inayat Dhaliwal
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 29-May-2021 10:05
PO	: VPO00741264	Issue Date	: 10-Jun-2021 10:30
C-O-C number	: COC_WG_Q2_20210528-MW5		
Sampler	: VS/DS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>								
Anions and Nutrients	Anonymous	Anonymous	bromide	24959-67-9	E235.Br-L	2130 % <sup>MS-B</sup>	75.0-125%	Recovery greater than upper data quality objective
Anions and Nutrients	Anonymous	Anonymous	chloride	16887-00-6	E235.Cl-L	2300 % <sup>MS-B</sup>	75.0-125%	Recovery greater than upper data quality objective
Anions and Nutrients	Anonymous	Anonymous	fluoride	16984-48-8	E235.F	2310 % <sup>MS-B</sup>	75.0-125%	Recovery greater than upper data quality objective
Anions and Nutrients	Anonymous	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	2220 % <sup>MS-B</sup>	75.0-125%	Recovery greater than upper data quality objective

**Result Qualifiers**

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW5-DP_WG_2021-04-12_N	E298	28-May-2021	06-Jun-2021	----	10 days	✓	06-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW5-SH_WG_2021-04-12_N	E298	28-May-2021	06-Jun-2021	----	10 days	✓	06-Jun-2021	28 days	1 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_MW5-DP_WG_2021-04-12_N	E235.Br-L	28-May-2021	----	----	----		29-May-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_MW5-SH_WG_2021-04-12_N	E235.Br-L	28-May-2021	----	----	----		29-May-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_MW5-DP_WG_2021-04-12_N	E235.Cl-L	28-May-2021	----	----	----		29-May-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_MW5-SH_WG_2021-04-12_N	E235.Cl-L	28-May-2021	----	----	----		29-May-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> CM_MW5-DP_WG_2021-04-12_N	E378-U	28-May-2021	----	----	----		29-May-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE CM_MW5-SH_WG_2021-04-12_N	E378-U	28-May-2021	----	----	----		29-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW5-DP_WG_2021-04-12_N	E235.F	28-May-2021	----	----	----		29-May-2021	28 days	2 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW5-SH_WG_2021-04-12_N	E235.F	28-May-2021	----	----	----		29-May-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW5-DP_WG_2021-04-12_N	E235.NO3-L	28-May-2021	----	----	----		29-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW5-SH_WG_2021-04-12_N	E235.NO3-L	28-May-2021	----	----	----		29-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW5-DP_WG_2021-04-12_N	E235.NO2-L	28-May-2021	----	----	----		29-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW5-SH_WG_2021-04-12_N	E235.NO2-L	28-May-2021	----	----	----		29-May-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW5-DP_WG_2021-04-12_N	E235.SO4	28-May-2021	----	----	----		29-May-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW5-SH_WG_2021-04-12_N	E235.SO4	28-May-2021	----	----	----		29-May-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-DP_WG_2021-04-12_N	E318	28-May-2021	03-Jun-2021	----	6 days	✔	03-Jun-2021	28 days	0 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-SH_WG_2021-04-12_N	E318	28-May-2021	03-Jun-2021	----	6 days	✔	03-Jun-2021	28 days	0 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-DP_WG_2021-04-12_N	E372-U	28-May-2021	04-Jun-2021	----	7 days	✔	04-Jun-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-SH_WG_2021-04-12_N	E372-U	28-May-2021	04-Jun-2021	----	7 days	✔	04-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW5-DP_WG_2021-04-12_N	E421.Cr-L	28-May-2021	02-Jun-2021	----	6 days	✔	03-Jun-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW5-SH_WG_2021-04-12_N	E421.Cr-L	28-May-2021	02-Jun-2021	----	6 days	✔	03-Jun-2021	180 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW5-DP_WG_2021-04-12_N	E509	28-May-2021	03-Jun-2021	----	7 days	✔	03-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW5-SH_WG_2021-04-12_N	E509	28-May-2021	03-Jun-2021	----	7 days	✔	03-Jun-2021	28 days	1 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW5-DP_WG_2021-04-12_N	E421	28-May-2021	02-Jun-2021	----	6 days	✔	03-Jun-2021	180 days	1 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW5-SH_WG_2021-04-12_N	E421	28-May-2021	02-Jun-2021	----	6 days	✓	03-Jun-2021	180 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW5-DP_WG_2021-04-12_N	E358-L	28-May-2021	08-Jun-2021	----	11 days	✓	08-Jun-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW5-SH_WG_2021-04-12_N	E358-L	28-May-2021	08-Jun-2021	----	11 days	✓	08-Jun-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-DP_WG_2021-04-12_N	E355-L	28-May-2021	08-Jun-2021	----	11 days	✓	08-Jun-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-SH_WG_2021-04-12_N	E355-L	28-May-2021	08-Jun-2021	----	11 days	✓	08-Jun-2021	28 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW5-DP_WG_2021-04-12_N	E283	28-May-2021	----	----	----		03-Jun-2021	14 days	7 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW5-SH_WG_2021-04-12_N	E283	28-May-2021	----	----	----		03-Jun-2021	14 days	7 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW5-DP_WG_2021-04-12_N	E290	28-May-2021	----	----	----		03-Jun-2021	14 days	7 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW5-SH_WG_2021-04-12_N	E290	28-May-2021	----	----	----		03-Jun-2021	14 days	7 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW5-DP_WG_2021-04-12_N	E100	28-May-2021	----	----	----		03-Jun-2021	28 days	7 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW5-SH_WG_2021-04-12_N	E100	28-May-2021	----	----	----		03-Jun-2021	28 days	7 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW5-DP_WG_2021-04-12_N	E125	28-May-2021	----	----	----		06-Jun-2021	0.34 hrs	215 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW5-SH_WG_2021-04-12_N	E125	28-May-2021	----	----	----		06-Jun-2021	0.34 hrs	215 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW5-DP_WG_2021-04-12_N	E108	28-May-2021	----	----	----		03-Jun-2021	0.25 hrs	152 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW5-SH_WG_2021-04-12_N	E108	28-May-2021	----	----	----		03-Jun-2021	0.25 hrs	152 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW5-DP_WG_2021-04-12_N	E162	28-May-2021	----	----	----		02-Jun-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW5-SH_WG_2021-04-12_N	E162	28-May-2021	----	----	----		02-Jun-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] CM_MW5-DP_WG_2021-04-12_N	E160-L	28-May-2021	----	----	----		02-Jun-2021	7 days	6 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> CM_MW5-SH_WG_2021-04-12_N	E160-L	28-May-2021	----	----	----		02-Jun-2021	7 days	6 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW5-DP_WG_2021-04-12_N	E121	28-May-2021	----	----	----		30-May-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW5-SH_WG_2021-04-12_N	E121	28-May-2021	----	----	----		30-May-2021	3 days	3 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	212775	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	212759	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	214353	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	208481	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	208482	1	20	5.0	5.0	✓
Conductivity in Water	E100	212758	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	210838	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	212560	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	210837	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	215888	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	208427	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	208479	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	208483	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	208484	1	20	5.0	5.0	✓
ORP by Electrode	E125	214284	1	20	5.0	5.0	✓
pH by Meter	E108	212757	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	208480	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	210851	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	210930	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	215891	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	212099	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	208885	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	212775	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	212759	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	214353	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	208481	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	208482	1	20	5.0	5.0	✓
Conductivity in Water	E100	212758	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	210838	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	212560	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	210837	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	215888	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	208427	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	208479	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	208483	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	208484	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	214284	1	20	5.0	5.0	✔
pH by Meter	E108	212757	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	208480	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	210851	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	210930	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	215891	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	212099	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	210846	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	208885	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	212775	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	212759	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	214353	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	208481	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	208482	1	20	5.0	5.0	✔
Conductivity in Water	E100	212758	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	210838	1	13	7.6	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	212560	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	210837	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	215888	1	17	5.8	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	208427	1	10	10.0	5.0	✔
Fluoride in Water by IC	E235.F	208479	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	208483	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	208484	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	208480	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	210851	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	210930	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	215891	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	212099	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	210846	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	208885	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	214353	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	208481	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	208482	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	210838	1	13	7.6	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	212560	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	210837	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	215888	1	17	5.8	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	208427	1	10	10.0	5.0	✔





Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	208479	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	208483	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	208484	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	208480	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	210930	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	215891	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	212099	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2101686**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q2\_20210528-MW5  
**Sampler** : VS/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Inayat Dhaliwal  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-May-2021 10:05  
**Date Analysis Commenced** : 29-May-2021  
**Issue Date** : 10-Jun-2021 10:30

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2101686  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 208885)</b>											
CG2101684-002	Anonymous	turbidity	----	E121	0.10	NTU	6.53	6.92	5.80%	15%	----
<b>Physical Tests (QC Lot: 210851)</b>											
CG2101684-002	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1390	1430	3.09%	20%	----
<b>Physical Tests (QC Lot: 212757)</b>											
CG2101684-001	Anonymous	pH	----	E108	0.10	pH units	7.97	8.01	0.501%	4%	----
<b>Physical Tests (QC Lot: 212758)</b>											
CG2101684-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1260	1250	0.799%	10%	----
<b>Physical Tests (QC Lot: 212759)</b>											
CG2101684-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	251	243	3.36%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	251	243	3.36%	20%	----
<b>Physical Tests (QC Lot: 212775)</b>											
CG2101684-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 214284)</b>											
CG2101684-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	422	427	1.37%	15%	----
<b>Anions and Nutrients (QC Lot: 208427)</b>											
CG2101684-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0053	0.0056	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 208479)</b>											
CG2101683-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.249	0.252	0.003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 208480)</b>											
CG2101683-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	10.4	10.4	0.02	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 208481)</b>											
CG2101683-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 208482)</b>											
CG2101683-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	81.6	81.3	0.360%	20%	----
<b>Anions and Nutrients (QC Lot: 208483)</b>											
CG2101684-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	2.40	2.41	0.361%	20%	----
<b>Anions and Nutrients (QC Lot: 208484)</b>											
CG2101684-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 210930)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 210930) - continued</b>											
CG2101684-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	2.53	2.47	2.70%	20%	----
<b>Anions and Nutrients (QC Lot: 212099)</b>											
CG2101684-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0191	0.0196	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 214353)</b>											
CG2101684-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0179	0.0178	0.0001	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 215888)</b>											
CG2101684-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 215891)</b>											
CG2101684-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.53	3.38	0.15	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 210837)</b>											
CG2101673-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00024	0.00026	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.136	0.156	13.8%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.016	0.017	0.0008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0434 µg/L	0.0000454	0.0000021	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	116	129	11.2%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00037	0.00038	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0018	0.0018	0.00010	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	41.9	43.5	3.64%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00020	0.00021	0.000007	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000193	0.000214	0.000020	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00063	0.00062	0.000009	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.935	1.03	9.91%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.568 µg/L	0.000535	6.00%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.89	3.83	1.37%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.82	1.95	6.55%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.245	0.269	9.52%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.49	4.07	0.41	Diff <2x LOR	----





Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 210837) - continued</b>											
CG2101673-002	Anonymous	thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000063	0.000068	0.000005	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000480	0.000504	4.89%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0014	0.0012	0.0001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 210838)</b>											
CG2101673-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00039	0.00040	0.00001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 212560)</b>											
CG2101673-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 208885)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 210846)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 210851)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 212758)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 212759)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 212775)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 208427)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 208479)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 208480)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 208481)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 208482)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 208483)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 208484)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 210930)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 212099)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 214353)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 214353) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 215888)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 215891)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 210837)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 210837) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 210838)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 212560)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 208885)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	100.0	85.0	115	---
<b>Physical Tests (QCLot: 210846)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.0	85.0	115	---
<b>Physical Tests (QCLot: 210851)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 212757)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 212758)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	---
<b>Physical Tests (QCLot: 212759)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	105	85.0	115	---
<b>Physical Tests (QCLot: 212775)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	111	85.0	115	---
<b>Physical Tests (QCLot: 214284)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100.0	95.4	104	---
<b>Anions and Nutrients (QCLot: 208427)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	101	80.0	120	---
<b>Anions and Nutrients (QCLot: 208479)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.5	90.0	110	---
<b>Anions and Nutrients (QCLot: 208480)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 208481)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 208482)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 208483)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 208484)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 210930)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	118	75.0	125	---
<b>Anions and Nutrients (QCLot: 212099)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Anions and Nutrients (QCLot: 212099) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.4	80.0	120	----
<b>Anions and Nutrients (QCLot: 214353)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 215888)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 215891)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 210837)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	92.2	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	87.9	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.3	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	90.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.4	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	94.9	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	106	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 210837) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 210838)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	88.2	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 208427)</b>										
CG2101684-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0494 mg/L	0.05 mg/L	98.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 208479)</b>										
CG2101684-001	Anonymous	fluoride	16984-48-8	E235.F	23.1 mg/L	1 mg/L	2310	75.0	125	MS-B
<b>Anions and Nutrients (QCLot: 208480)</b>										
CG2101684-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	MS-B
<b>Anions and Nutrients (QCLot: 208481)</b>										
CG2101684-001	Anonymous	bromide	24959-67-9	E235.Br-L	10.6 mg/L	0.5 mg/L	2130	75.0	125	MS-B
<b>Anions and Nutrients (QCLot: 208482)</b>										
CG2101684-001	Anonymous	chloride	16887-00-6	E235.Cl-L	2300 mg/L	100 mg/L	2300	75.0	125	MS-B
<b>Anions and Nutrients (QCLot: 208483)</b>										
CG2101684-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	MS-B
<b>Anions and Nutrients (QCLot: 208484)</b>										
CG2101684-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	11.1 mg/L	0.5 mg/L	2220	75.0	125	MS-B
<b>Anions and Nutrients (QCLot: 210930)</b>										
CG2101684-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	3.15 mg/L	2.5 mg/L	126	70.0	130	----
<b>Anions and Nutrients (QCLot: 212099)</b>										
CG2101684-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0537 mg/L	0.0676 mg/L	79.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 214353)</b>										
CG2101684-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 215888)</b>										
CG2101684-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.9 mg/L	23.9 mg/L	99.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 215891)</b>										
CG2101684-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.7 mg/L	23.9 mg/L	95.0	70.0	130	----
<b>Dissolved Metals (QCLot: 210837)</b>										
CG2101673-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0213 mg/L	0.02 mg/L	107	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0224 mg/L	0.02 mg/L	112	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 210837) - continued</b>										
CG2101673-002	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00842 mg/L	0.01 mg/L	84.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.097 mg/L	0.1 mg/L	97.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00410 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0186 mg/L	0.02 mg/L	92.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.01 mg/L	2 mg/L	100	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0993 mg/L	0.1 mg/L	99.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.93 mg/L	4 mg/L	98.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0497 mg/L	0.04 mg/L	124	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.88 mg/L	10 mg/L	88.8	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.96 mg/L	2 mg/L	98.1	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	21.4 mg/L	20 mg/L	107	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00397 mg/L	0.004 mg/L	99.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00415 mg/L	0.004 mg/L	104	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.394 mg/L	0.4 mg/L	98.6	70.0	130	----
<b>Dissolved Metals (QCLot: 210838)</b>										
CG2101673-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 212560)</b>										
CG2101673-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000926 mg/L	0.0001 mg/L	92.6	70.0	130	----

**Qualifiers**

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Page : 14 of 14  
Work Order : CG2101686  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

---



COC ID: **COC\_WG\_Q2\_20210528-MW5**      TURNAROUND TIME: **REGULAR**      RUSH: **NO**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Victoria Sharpe			Lab Contact	Inayat Dhaliwal			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	victoria.sharpe@teck.com			Email	inayat.dhaliwal@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	don.sacino@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	shelby.holden@teck.com	X	X	X
Phone Number	1-250-425-7522			Phone Number	403 407 1800			PO number	00741264			

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None						
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	F	N	F	F	N	
CM_MW5-DP_WG_2021-04-12_N	CM_MW5-DP	WG	No	2021/05/28	12:01	G	5	1	1	1	1	1	1					
CM_MW5-SH_WG_2021-04-12_N	CM_MW5-SH	WG	No	2021/05/28	12:00	G	5	1	1	1	1	1	1					

**Environmental Division**  
**Calgary**  
 Work Order Reference  
**CG2101686**



Telephone : + 1 403 407 1800

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO <sub>3</sub> <sup>-</sup> hydroxide as OH <sup>-</sup> and carbonate as CO <sub>3</sub> <sup>2-</sup> rather than bicarbonate as CaCO <sub>3</sub> . Carbonate as CaCO <sub>3</sub> and hydroxide as CaCO <sub>3</sub> .			<i>[Signature]</i>	29/05/21 10:05
<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	VS/DS	Mobile #	250-425-7522
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>D Simpson</i>	Date/Time	2021/05/28
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

90



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102602**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q3\_MW4\_07142021  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 15-Jul-2021 08:30  
**Date Analysis Commenced** : 15-Jul-2021  
**Issue Date** : 26-Jul-2021 20:08

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					CM_MW4-SH_	CM_MW4-DP_	---	---	---
					WG_2021-07-1	WG_2021-07-1			
					2_N	2_N			
Client sampling date / time					14-Jul-2021 09:40	14-Jul-2021 09:35	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2102602-001	CG2102602-002	-----	-----	-----
					Result	Result	---	---	---
<b>Physical Tests</b>									
acidity (as CaCO3)	---	E283	2.0	mg/L	<2.0	<2.0	---	---	---
conductivity	---	E100	2.0	µS/cm	1400	2860	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	25.6	29.1	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	442	434	---	---	---
pH	---	E108	0.10	pH units	8.45	8.42	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	860	1780	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	<1.0	3.0	---	---	---
turbidity	---	E121	0.10	NTU	1.06	10.5	---	---	---
alkalinity, total (as CaCO3)	---	E290	2.0	mg/L	575	831	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	2.0	mg/L	<2.0	<2.0	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	2.0	mg/L	19.2	22.4	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	2.0	mg/L	556	809	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	678	987	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	11.5	13.4	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	---	---	---
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.440	0.578	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	1.40	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	144	514	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	0.530	0.336	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.613	0.779	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0250	<0.0250 <sup>DLDS</sup>	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	0.0052	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0110	0.0100	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0113 <sup>DLM</sup>	0.0154	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<1.50 <sup>DLDS</sup>	<1.50 <sup>DLDS</sup>	---	---	---
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	3.34	2.30	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	2.57	---	---	---	---
<b>Ion Balance</b>									



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW4-SH_WG_2021-07-12_N	CM_MW4-DP_WG_2021-07-12_N	---	---	---
Client sampling date / time					14-Jul-2021 09:40	14-Jul-2021 09:35	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2102602-001	CG2102602-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	---	EC101	0.10	meq/L	15.6	31.1	---	---	---	
cation sum	---	EC101	0.10	meq/L	15.6	31.4	---	---	---	
ion balance (cations/anions ratio)	---	EC101	0.010	%	100	101	---	---	---	
ion balance (cation-anion difference)	---	EC101	0.010	%	<0.010	0.480	---	---	---	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0054	0.0059	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.315	0.563	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.100 <sup>DLA</sup>	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000250 <sup>DLA</sup>	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.349	0.430	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0100 <sup>DLA</sup>	<0.0250 <sup>DLA</sup>	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	6.37	8.20	---	---	---	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.50 <sup>DLA</sup>	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	<0.00100 <sup>DLA</sup>	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.089	0.082	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000250 <sup>DLA</sup>	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.420	1.06	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.35	2.09	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00433	0.00366	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000788	0.000334	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00250 <sup>DLA</sup>	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.04	1.36	---	---	---	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.100 <sup>DLA</sup>	<0.250 <sup>DLA</sup>	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.10	4.05	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000050 <sup>DLA</sup>	---	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	345	706	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.725	1.16	---	---	---	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW4-SH_ WG_2021-07-1 2_N	CM_MW4-DP_ WG_2021-07-1 2_N	----	----	----
Client sampling date / time					14-Jul-2021 09:40	14-Jul-2021 09:35	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102602-001	CG2102602-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<1.00 <sup>DLA</sup>	<2.50 <sup>DLA</sup>	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000050 <sup>DLA</sup>	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00150 <sup>DLA</sup>	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000050 <sup>DLA</sup>	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00250 <sup>DLA</sup>	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0020 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL REPORT

**Work Order** : **CG2102602**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q3\_MW4\_07142021  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 15-Jul-2021 08:30  
**Date Analysis Commenced** : 15-Jul-2021  
**Issue Date** : 26-Jul-2021 20:08

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2102602  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 244392)</b>											
CG2102599-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	11.9	12.5	0.6	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 245294)</b>											
CG2102594-001	Anonymous	turbidity	----	E121	0.10	NTU	0.70	0.77	0.07	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 246361)</b>											
CG2102596-001	Anonymous	pH	----	E108	0.10	pH units	8.08	8.11	0.370%	4%	----
<b>Physical Tests (QC Lot: 246362)</b>											
CG2102596-001	Anonymous	conductivity	----	E100	2.0	µS/cm	448	437	2.48%	10%	----
<b>Physical Tests (QC Lot: 246363)</b>											
CG2102596-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	163	163	0.245%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	163	163	0.245%	20%	----
<b>Physical Tests (QC Lot: 247986)</b>											
CG2102589-036	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2920	2950	1.12%	20%	----
<b>Physical Tests (QC Lot: 248640)</b>											
CG2102598-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	460	459	0.196%	15%	----
<b>Anions and Nutrients (QC Lot: 244340)</b>											
CG2102596-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 244344)</b>											
CG2102599-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 244379)</b>											
CG2102596-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	65.2	65.5	0.467%	20%	----
<b>Anions and Nutrients (QC Lot: 244380)</b>											
CG2102596-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 244381)</b>											
CG2102596-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	4.72	4.72	0.0194%	20%	----
<b>Anions and Nutrients (QC Lot: 244382)</b>											
CG2102596-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 244383)</b>											
CG2102596-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 244384)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 244384) - continued</b>											
CG2102596-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.550	0.556	1.11%	20%	----
<b>Anions and Nutrients (QC Lot: 245723)</b>											
CG2102596-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 247198)</b>											
CG2102596-006	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 248406)</b>											
CG2102595-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.87	2.00	0.13	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 248407)</b>											
CG2102595-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.20	2.21	0.01	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 247424)</b>											
CG2102589-033	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0030	0.0029	0.00007	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00061	0.00069	0.00007	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0103	0.00989	4.03%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.086	0.086	0.0005	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.0573 µg/L	0.0000543	0.0000030	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	472	471	0.256%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	67.9 µg/L	0.0672	0.975%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	0.615	0.615	0.0553%	20%	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.121	0.118	2.23%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	243	239	1.76%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.820	0.820	0.0286%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00136	0.00138	1.04%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.341	0.342	0.229%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	6.80	6.77	0.483%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	3.70	3.59	3.04%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	5.84	5.84	0.0188%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.473	0.468	0.993%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	564	558	1.00%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 247424) - continued</b>											
CG2102589-033	Anonymous	thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000154	0.000148	0.000005	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0337	0.0343	1.92%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0991	0.100	1.32%	20%	----
<b>Dissolved Metals (QC Lot: 247425)</b>											
CG2102589-033	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 247973)</b>											
CG2102589-034	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 244392)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 245294)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 246362)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 246363)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 247982)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 247986)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 244340)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 244344)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 244379)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 244380)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 244381)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 244382)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 244383)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 244384)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 245723)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 247198)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 247198) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 248406)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 248407)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 247424)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 247424) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 247425)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 247973)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 244392)</b>									
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	50 mg/L	109	85.0	115	----
<b>Physical Tests (QCLot: 245294)</b>									
turbidity	----	E121	0.1	NTU	200 NTU	96.8	85.0	115	----
<b>Physical Tests (QCLot: 246361)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 246362)</b>									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	----
<b>Physical Tests (QCLot: 246363)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	500 mg/L	95.9	85.0	115	----
<b>Physical Tests (QCLot: 247982)</b>									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	87.6	85.0	115	----
<b>Physical Tests (QCLot: 247986)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	102	85.0	115	----
<b>Physical Tests (QCLot: 248640)</b>									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	102	95.4	104	----
<b>Anions and Nutrients (QCLot: 244340)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.2	85.0	115	----
<b>Anions and Nutrients (QCLot: 244344)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	91.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 244379)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 244380)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 244381)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.7	90.0	110	----
<b>Anions and Nutrients (QCLot: 244382)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 244383)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 244384)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	106	90.0	110	----
<b>Anions and Nutrients (QCLot: 245723)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 245723) - continued</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	----
<b>Anions and Nutrients (QCLot: 247198)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	100	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 248406)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 248407)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	108	80.0	120	----
<b>Dissolved Metals (QCLot: 247424)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.4	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.5	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.2	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	91.3	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.7	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.8	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.1	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.5	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	95.0	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.2	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.0	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	97.1	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.0	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	93.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.6	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	92.2	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 247424) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	89.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	94.6	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.4	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	94.0	80.0	120	----
<b>Dissolved Metals (QCLot: 247425)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	96.5	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.3	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 244340)</b>										
CG2102596-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 244344)</b>										
CG2102599-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	ND mg/L	2.5 mg/L	ND	70.0	130	MSTN
<b>Anions and Nutrients (QCLot: 244379)</b>										
CG2102596-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 244380)</b>										
CG2102596-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.499 mg/L	0.5 mg/L	99.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 244381)</b>										
CG2102596-006	Anonymous	chloride	16887-00-6	E235.Cl-L	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 244382)</b>										
CG2102596-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.74 mg/L	2.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 244383)</b>										
CG2102596-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.532 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 244384)</b>										
CG2102596-006	Anonymous	fluoride	16984-48-8	E235.F	1.14 mg/L	1 mg/L	114	75.0	125	----
<b>Anions and Nutrients (QCLot: 245723)</b>										
CG2102596-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0519 mg/L	0.05 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 247198)</b>										
CG2102598-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0572 mg/L	0.0676 mg/L	84.7	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 248406)</b>										
CG2102595-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.7 mg/L	23.9 mg/L	99.2	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 248407)</b>										
CG2102595-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.6 mg/L	23.9 mg/L	107	70.0	130	----
<b>Dissolved Metals (QCLot: 247424)</b>										
CG2102589-034	Anonymous	aluminum, dissolved	7429-90-5	E421	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0219 mg/L	0.02 mg/L	109	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 247424) - continued</b>										
CG2102589-034	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00904 mg/L	0.01 mg/L	90.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.095 mg/L	0.1 mg/L	95.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	91.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.95 mg/L	2 mg/L	97.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0190 mg/L	0.02 mg/L	95.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0983 mg/L	0.1 mg/L	98.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0217 mg/L	0.02 mg/L	108	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0364 mg/L	0.04 mg/L	91.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0473 mg/L	0.04 mg/L	118	70.0	130	----
		silicon, dissolved	7440-21-3	E421	10.0 mg/L	10 mg/L	100	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00370 mg/L	0.004 mg/L	92.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.380 mg/L	0.4 mg/L	95.1	70.0	130	----
<b>Dissolved Metals (QCLot: 247425)</b>										
CG2102589-034	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 247973)</b>										
CG2102589-035	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000982 mg/L	0.0001 mg/L	98.2	70.0	130	----

**Qualifiers**

Qualifier	Description
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.

Page : 14 of 14  
Work Order : CG2102602  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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COC ID: **COC\_WG\_Q3\_MW4\_07142021**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excell	PDF	EDD
Project Manager	Victoria Sharpe			Lab Contact	Milica Papic			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	Victoria.Sharpe@teck.com			Email	Milica.Papic@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	don.sacino@teck.com	X	X	X
		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	shelby.holden@teck.com	X	X	X
				Phone Number	403 407 1800			PO number	00741264			

Environmental Division  
Calgary

Work Order Reference  
**CG2102602**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PRESERV.	ANALYSIS	F	N	F	F	N						
CM_MW4-SH_WG_2021-07-12_N	CM_MW4-SH	WG	No	2021/07/14	9:40	G	5	H2SO4	ALS_Package-DOC	1	1	1	1	1						
CM_MW4-DP_WG_2021-07-12_N	CM_MW4-DP	WG	No	2021/07/14	9:35	G	5	H2SO4	ALS_Package-TKN/TOC	1	1	1	1	1						
									HG-D-CVAF-VA											
									TECKCOAL-MET-D-VA											
									TECKCOAL-ROUTINE-VA											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO <sub>3</sub> , hydroxide as OH and carbonate as CO <sub>3</sub> rather than bicarbonate as CaCO <sub>3</sub> , Carbonate as CaCO <sub>3</sub> and hydroxide as CaCO <sub>3</sub> .		8:30	GT	July 15

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	SH/DS	Mobile #
Regular (default) <input checked="" type="checkbox"/>			250-425-7529
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	<i>[Signature]</i>	Date/Time
			2021/07/14

**140C**



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102629**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q3\_MW6\_07152021  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 16-Jul-2021 08:30  
**Date Analysis Commenced** : 16-Jul-2021  
**Issue Date** : 29-Jul-2021 18:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Courtney Cox	Analyst	Inorganics, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW6-DP_ WG_2021-07-1 2_N	CM_MW6-SH_ WG_2021-07-1 2_N	----	----	----
Client sampling date / time					15-Jul-2021 12:32	15-Jul-2021 12:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102629-001 Result	CG2102629-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----	
conductivity	----	E100	2.0	µS/cm	1230	409	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	29.5	80.4	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	252	398	----	----	----	
pH	----	E108	0.10	pH units	8.53	8.11	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	796	253	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.2	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	1.58	1.18	----	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	674	194	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	30.6	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	643	194	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	785	236	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	18.4	<2.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.552 <sup>RRV</sup>	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.089	0.081	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	38.0	19.9	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.577	1.69	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.596	0.202	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0781	<0.0050	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0407	0.0037	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0352	0.0062	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	0.39	1.27	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	4.54 <sup>DTC</sup>	2.41	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.54 <sup>DTC</sup>	----	----	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW6-DP_ WG_2021-07-1 2_N	CM_MW6-SH_ WG_2021-07-1 2_N	----	----	----
Client sampling date / time					15-Jul-2021 12:32	15-Jul-2021 12:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102629-001	CG2102629-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	14.6	4.55	----	----	----	
cation sum	----	EC101	0.10	meq/L	15.3	4.99	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	105	110	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.34	4.61	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0068	0.0031	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00070	0.00077	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.274	0.147	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.290	0.039	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0100 <sup>DLA</sup>	<0.0050	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	7.99	19.8	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.020 <sup>DLA</sup>	0.216	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.412	0.0407	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.32	7.52	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0637	0.271	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00161	0.00522	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.88	0.337	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.100 <sup>DLA</sup>	0.142	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.95	3.48	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	337	77.1	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.882	0.210	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW6-DP_ WG_2021-07-1 2_N	CM_MW6-SH_ WG_2021-07-1 2_N	----	----	----
Client sampling date / time					15-Jul-2021 12:32	15-Jul-2021 12:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102629-001	CG2102629-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<1.00 <sup>DLA</sup>	1.24	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000593	0.000454	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0020 <sup>DLA</sup>	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102629**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q3\_MW6\_07152021  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 16-Jul-2021 08:30  
**Date Analysis Commenced** : 16-Jul-2021  
**Issue Date** : 29-Jul-2021 18:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Courtney Cox	Analyst	Inorganics, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2102629  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 245365)</b>											
CG2102629-001	CM_MW6-DP_WG_2021-07-12_N	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 246053)</b>											
CG2102628-002	Anonymous	turbidity	----	E121	0.10	NTU	0.26	0.13	0.13	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 246337)</b>											
CG2102624-005	Anonymous	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 246338)</b>											
CG2102624-005	Anonymous	pH	----	E108	0.10	pH units	5.71	5.49	3.93%	4%	----
<b>Physical Tests (QC Lot: 246339)</b>											
CG2102624-005	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 248921)</b>											
CG2102623-005	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 249657)</b>											
CG2102628-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	432	425	1.59%	15%	----
<b>Anions and Nutrients (QC Lot: 245741)</b>											
CG2102619-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	334	334	0.0968%	20%	----
<b>Anions and Nutrients (QC Lot: 245742)</b>											
CG2102619-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	0.390	0.365	0.024	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 245743)</b>											
CG2102619-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	34.7	34.4	1.00%	20%	----
<b>Anions and Nutrients (QC Lot: 245744)</b>											
CG2102619-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	6.92	6.90	0.334%	20%	----
<b>Anions and Nutrients (QC Lot: 245745)</b>											
CG2102619-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 245746)</b>											
CG2102619-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 245770)</b>											
CG2102619-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0020	0.0022	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 246232)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 246232) - continued</b>											
CG2102628-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 248042)</b>											
CG2102626-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249613)</b>											
CG2102624-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0058	0.0062	0.0003	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 249709)</b>											
CG2102470-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.06	1.16	0.10	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 249710)</b>											
CG2102470-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.13	1.02	0.11	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 248325)</b>											
CG2102619-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00013	0.00013	0.000003	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 248326)</b>											
CG2102619-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00012	0.00011	0.000005	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00013	0.00011	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0557	0.0543	2.51%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.025	0.024	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0824 µg/L	0.0000728	12.4%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	147	143	2.54%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0216	0.0212	1.81%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000150	0.000146	0.000004	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0576	0.0554	4.01%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	64.4	63.6	1.33%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00029	0.00033	0.00004	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000705	0.000681	3.40%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00098	0.00101	0.00003	Diff <2x LOR	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.45	2.41	1.65%	20%	----		
selenium, dissolved	7782-49-2	E421	0.050	mg/L	57.4 µg/L	0.0577	0.640%	20%	----		
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.49	3.36	3.88%	20%	----		
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----		
sodium, dissolved	17341-25-2	E421	0.050	mg/L	13.5	13.4	0.867%	20%	----		





Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 248326) - continued</b>											
CG2102619-001	Anonymous	strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.336	0.334	0.402%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	116	113	2.63%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000018	0.000019	0.0000005	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00166	0.00160	3.75%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0228	0.0223	2.09%	20%	----
<b>Dissolved Metals (QC Lot: 249490)</b>											
CG2102619-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 245365)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 246053)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 246337)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 246339)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 248906)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 248921)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 245741)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 245742)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 245743)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 245744)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 245745)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 245746)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 245770)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 246232)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 248042)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 249613)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 249613) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 249709)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 249710)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 248325)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 248326)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 248326) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 249490)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 245365)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 246053)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	94.3	85.0	115	---
<b>Physical Tests (QCLot: 246337)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.4	90.0	110	---
<b>Physical Tests (QCLot: 246338)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 246339)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	97.3	85.0	115	---
<b>Physical Tests (QCLot: 248906)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	95.9	85.0	115	---
<b>Physical Tests (QCLot: 248921)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	98.6	85.0	115	---
<b>Physical Tests (QCLot: 249657)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	---
<b>Anions and Nutrients (QCLot: 245741)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 245742)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 245743)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	108	90.0	110	---
<b>Anions and Nutrients (QCLot: 245744)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 245745)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 245746)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 245770)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	110	80.0	120	---
<b>Anions and Nutrients (QCLot: 246232)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	79.3	75.0	125	---
<b>Anions and Nutrients (QCLot: 248042)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 248042) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	90.6	80.0	120	----
<b>Anions and Nutrients (QCLot: 249613)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 249709)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	108	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 249710)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	117	80.0	120	----
<b>Dissolved Metals (QCLot: 248325)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 248326)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	96.8	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.2	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.7	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.1	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.7	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	87.7	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 248326) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.3	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 245741)</b>										
CG2102624-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 245742)</b>										
CG2102624-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.521 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 245743)</b>										
CG2102624-005	Anonymous	chloride	16887-00-6	E235.Cl-L	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 245744)</b>										
CG2102624-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.63 mg/L	2.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 245745)</b>										
CG2102624-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.526 mg/L	0.5 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 245746)</b>										
CG2102624-005	Anonymous	fluoride	16984-48-8	E235.F	1.11 mg/L	1 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 245770)</b>										
CG2102623-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0470 mg/L	0.05 mg/L	94.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 246232)</b>										
CG2102629-001	CM_MW6-DP_WG_2021-07-12_N	Kjeldahl nitrogen, total [TKN]	----	E318	2.37 mg/L	2.5 mg/L	94.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 248042)</b>										
CG2102626-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0558 mg/L	0.0676 mg/L	82.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 249613)</b>										
CG2102626-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	4.32 mg/L	5 mg/L	86.4	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 249709)</b>										
CG2102470-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	28.9 mg/L	23.9 mg/L	121	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 249710)</b>										
CG2102470-001	Anonymous	carbon, total organic [TOC]	----	E355-L	28.2 mg/L	23.9 mg/L	118	70.0	130	----
<b>Dissolved Metals (QCLot: 248325)</b>										
CG2102619-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
<b>Dissolved Metals (QCLot: 248326)</b>										
CG2102619-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.186 mg/L	0.2 mg/L	93.2	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 248326) - continued</b>										
CG2102619-002	Anonymous	antimony, dissolved	7440-36-0	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0357 mg/L	0.04 mg/L	89.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00856 mg/L	0.01 mg/L	85.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.085 mg/L	0.1 mg/L	85.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00380 mg/L	0.004 mg/L	95.0	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.67 mg/L	2 mg/L	83.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0184 mg/L	0.02 mg/L	92.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0871 mg/L	0.1 mg/L	87.1	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0180 mg/L	0.02 mg/L	90.1	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.97 mg/L	4 mg/L	99.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		silicon, dissolved	7440-21-3	E421	7.85 mg/L	10 mg/L	78.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00371 mg/L	0.004 mg/L	92.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00369 mg/L	0.004 mg/L	92.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00370 mg/L	0.004 mg/L	92.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0977 mg/L	0.1 mg/L	97.7	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.366 mg/L	0.4 mg/L	91.6	70.0	130	----
<b>Dissolved Metals (QCLot: 249490)</b>										
CG2102619-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000104 mg/L	0.0001 mg/L	104	70.0	130	----

Page : 14 of 14  
Work Order : CG2102629  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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COC ID: **COC\_WG\_Q3\_MW6\_07152021**      TURNAROUND TIME: **REGULAR**      RUSH: **NO**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution				
Project Manager	Victoria Sharpe			Lab Contact	Milica Papic			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	Victoria.Sharpe@teck.com			Email	Milica.Papic@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	don.sacino@teck.com	X	X	X
Postal Code	T0B 2G0			Postal Code	T1Y 7B5			Email 5:	shelby.holden@teck.com	X	X	X
				Phone Number	403 407 1800			PO number	00741264			

**Environmental Division**  
**Calgary**  
 Work Order Reference  
**CG2102629**



Telephone : +1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered By: Field, L: Lab, FL: Field & Lab, N: None																											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	PRESERV.	F	N	F	F	N																										
								ALS_Package-DOC	H2SO4																															
CM_MW6-DP_WG_2021-07-12_N	CM_MW6-DP	WG	No	2021/07/15	12:30	G	5	ALS_Package-DOC	H2SO4	1	1	1	1	1																										
CM_MW6-SH_WG_2021-07-12_N	CM_MW6-SH	WG	No	2021/07/15	12:30	G	5	ALS_Package-DOC	H2SO4	1	1	1	1	1																										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.			<i>ML</i>	7/16 0830

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

Sampler's Name	Shelby H / Darren S	Mobile #	250-425-7529
Sampler's Signature	<i>Shelby Holden</i>	Date/Time	July 15, 2021

9.



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102743**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q3\_MW7-MW8\_07212021  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Jul-2021 09:00  
**Date Analysis Commenced** : 22-Jul-2021  
**Issue Date** : 09-Aug-2021 16:17

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW7-DP_ WG_2021-07-1 2_N	CM_MW7-SH_ WG_2021-07-1 2_N	CM_NNP_WS_2 021-07-12_N	CM_NNT_WS_2 021-07-12_N	CM_MW8_WG_ 2021-07-12_N
Client sampling date / time					21-Jul-2021 11:35	21-Jul-2021 11:25	21-Jul-2021	21-Jul-2021	21-Jul-2021 10:55	
Analyte	CAS Number	Method	LOR	Unit	CG2102743-001	CG2102743-002	CG2102743-003	CG2102743-004	CG2102743-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	36.1	12.8	10.8	<2.0	9.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	384	279	339	<1.0	335	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	384	279	339	<1.0	335	
conductivity	----	E100	2.0	µS/cm	2160	779	679	<2.0	716	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1340	355	266	<0.50	307	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	448	526	424	436	518	
pH	----	E108	0.10	pH units	7.53	7.82	7.96	5.50	8.04	
solids, total dissolved [TDS]	----	E162	10	mg/L	1870	522	422	<10	450	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	21.6	90.6	6.5	<1.0	7.0	
turbidity	----	E121	0.10	NTU	10.6	45.0	21.0	<0.10	20.9	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	469	340	414	<1.0	408	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0164	0.0890 <sup>RRV</sup>	0.878 <sup>RRV</sup>	<0.0050	0.970	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	0.064	<0.050	<0.050	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.29	12.5	1.65	<0.10	1.29	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLDS</sup>	0.212	0.251	<0.020	0.239	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.205	0.105	0.894	<0.050	0.910	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.425	<0.0050	<0.0050	<0.0050	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0010	<0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0020	<0.0010	<0.0010	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0077	0.0195	0.0140	<0.0020	0.0091	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1090	158	62.8	<0.30	86.2	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	2.51	1.59	<0.50	0.94	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.02	3.73	1.58	<0.50	1.07	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW7-DP_WG_2021-07-12_N	CM_MW7-SH_WG_2021-07-12_N	CM_NNP_WS_2021-07-12_N	CM_NNT_WS_2021-07-12_N	CM_MW8_WG_2021-07-12_N
Client sampling date / time					21-Jul-2021 11:35	21-Jul-2021 11:25	21-Jul-2021	21-Jul-2021	21-Jul-2021 10:55	
Analyte	CAS Number	Method	LOR	Unit	CG2102743-001	CG2102743-002	CG2102743-003	CG2102743-004	CG2102743-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	30.4	9.23	8.14	<0.10	8.54	
cation sum	----	EC101	0.10	meq/L	28.0	7.85	7.41	<0.10	8.09	
ion balance (cations/anions ratio)	----	EC101	0.010	%	92.1	85.0	91.0	100	94.7	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.11	8.08	4.69	<0.010	2.70	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0020 <sup>DLA</sup>	<0.0010	0.0023	<0.0010	0.0027	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00023	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00140	0.00022	<0.00010	0.00023	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0144	0.0276	0.106	<0.00010	0.0976	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	<0.040 <sup>DLA</sup>	<0.020	<0.040 <sup>DLA</sup>	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.052	0.016	0.266	<0.010	0.260	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0625	<0.0050	<0.0100 <sup>DLA</sup>	<0.0050	<0.0100 <sup>DLA</sup>	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	329	89.9	73.3	<0.050	84.1	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.30	0.44	0.33	<0.10	0.30	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	<0.00020	<0.00040 <sup>DLA</sup>	<0.00020	<0.00040 <sup>DLA</sup>	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.020 <sup>DLA</sup>	1.73	1.38	<0.010	1.13	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000100 <sup>DLA</sup>	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0544	0.0054	0.0616	<0.0010	0.0586	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	127	31.8	20.1	<0.0050	23.5	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.322	0.151	0.143	<0.00010	0.127	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000178	0.000710	0.000719	<0.000050	0.000639	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0154	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	<0.00100 <sup>DLA</sup>	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.52	1.57	2.66	<0.050	2.73	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.839	0.080	<0.100 <sup>DLA</sup>	<0.050	<0.100 <sup>DLA</sup>	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.52	4.90	6.27	<0.050	6.41	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	25.3	14.6	44.1	<0.050	40.8	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.841	0.402	5.39	<0.00020	5.73	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW7-DP_WG_2021-07-12_N	CM_MW7-SH_WG_2021-07-12_N	CM_NNP_WS_2021-07-12_N	CM_NNT_WS_2021-07-12_N	CM_MW8_WG_2021-07-12_N
Client sampling date / time					21-Jul-2021 11:35	21-Jul-2021 11:25	21-Jul-2021	21-Jul-2021	21-Jul-2021 10:55	
Analyte	CAS Number	Method	LOR	Unit	CG2102743-001	CG2102743-002	CG2102743-003	CG2102743-004	CG2102743-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	379	56.0	22.0	<0.50	30.2	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000020 <sup>DLA</sup>	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00020 <sup>DLA</sup>	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	<0.00060 <sup>DLA</sup>	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00455	0.000494	0.000378	<0.000010	0.000293	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	<0.00100 <sup>DLA</sup>	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0148	<0.0010	<0.0020 <sup>DLA</sup>	<0.0010	<0.0020 <sup>DLA</sup>	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

<b>Work Order</b> : <b>CG2102743</b> <b>Client</b> : <b>Teck Coal Limited</b> <b>Contact</b> : Victoria Sharpe <b>Address</b> : Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0  <b>Telephone</b> : ---- <b>Project</b> : COAL MOUNTAIN OPERATIONS <b>PO</b> : VPO00741264 <b>C-O-C number</b> : COC_WG_Q3_MW7-MW8_07212021 <b>Sampler</b> : SH/DS <b>Site</b> : ---- <b>Quote number</b> : Teck Coal Master Quote <b>No. of samples received</b> : 5 <b>No. of samples analysed</b> : 5	<b>Page</b> : 1 of 21  <b>Laboratory</b> : Calgary - Environmental <b>Account Manager</b> : Milica Pasic <b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5  <b>Telephone</b> : +1 403 407 1800 <b>Date Samples Received</b> : 22-Jul-2021 09:00 <b>Issue Date</b> : 09-Aug-2021 16:17
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO:** Data Quality Objective.
- LOR:** Limit of Reporting (detection limit).
- RPD:** Relative Percent Difference.

### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### ***Outliers: Reference Material (RM) Samples***

- No Reference Material (RM) Sample outliers occur.

#### ***Outliers : Analysis Holding Time Compliance (Breaches)***

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-07-12_N	E298	21-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-07-12_N	E298	21-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-07-12_N	E298	21-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP_WS_2021-07-12_N	E298	21-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNT_WS_2021-07-12_N	E298	21-Jul-2021	25-Jul-2021	----	----		25-Jul-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW7-DP_WG_2021-07-12_N	E235.Br-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW7-SH_WG_2021-07-12_N	E235.Br-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE CM_MW8_WG_2021-07-12_N	E235.Br-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE CM_NNP_WS_2021-07-12_N	E235.Br-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE CM_NNT_WS_2021-07-12_N	E235.Br-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW7-DP_WG_2021-07-12_N	E235.Cl-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW7-SH_WG_2021-07-12_N	E235.Cl-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW8_WG_2021-07-12_N	E235.Cl-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_NNP_WS_2021-07-12_N	E235.Cl-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_NNT_WS_2021-07-12_N	E235.Cl-L	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW7-DP_WG_2021-07-12_N	E378-U	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW7-SH_WG_2021-07-12_N	E378-U	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW8_WG_2021-07-12_N	E378-U	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_NNP_WS_2021-07-12_N	E378-U	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_NNT_WS_2021-07-12_N	E378-U	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW7-DP_WG_2021-07-12_N	E235.F	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW7-SH_WG_2021-07-12_N	E235.F	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW8_WG_2021-07-12_N	E235.F	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_NNP_WS_2021-07-12_N	E235.F	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_NNT_WS_2021-07-12_N	E235.F	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW7-DP_WG_2021-07-12_N	E235.NO3-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW7-SH_WG_2021-07-12_N	E235.NO3-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW8_WG_2021-07-12_N	E235.NO3-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_NNP_WS_2021-07-12_N	E235.NO3-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_NNT_WS_2021-07-12_N	E235.NO3-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW7-DP_WG_2021-07-12_N	E235.NO2-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW7-SH_WG_2021-07-12_N	E235.NO2-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW8_WG_2021-07-12_N	E235.NO2-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_NNP_WS_2021-07-12_N	E235.NO2-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_NNT_WS_2021-07-12_N	E235.NO2-L	21-Jul-2021	----	----	----		22-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_MW7-DP_WG_2021-07-12_N	E235.SO4	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_MW7-SH_WG_2021-07-12_N	E235.SO4	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_MW8_WG_2021-07-12_N	E235.SO4	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_NNP_WS_2021-07-12_N	E235.SO4	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_NNT_WS_2021-07-12_N	E235.SO4	21-Jul-2021	----	----	----		22-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-07-12_N	E318	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-07-12_N	E318	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-07-12_N	E318	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP_WS_2021-07-12_N	E318	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNT_WS_2021-07-12_N	E318	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-07-12_N	E372-U	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-07-12_N	E372-U	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-07-12_N	E372-U	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP_WS_2021-07-12_N	E372-U	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNT_WS_2021-07-12_N	E372-U	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW7-DP_WG_2021-07-12_N	E421.Cr-L	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW7-SH_WG_2021-07-12_N	E421.Cr-L	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	180 days	5 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW8_WG_2021-07-12_N	E421.Cr-L	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNP_WS_2021-07-12_N	E421.Cr-L	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNT_WS_2021-07-12_N	E421.Cr-L	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW7-DP_WG_2021-07-12_N	E509	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW7-SH_WG_2021-07-12_N	E509	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW8_WG_2021-07-12_N	E509	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_NNP_WS_2021-07-12_N	E509	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_NNT_WS_2021-07-12_N	E509	21-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW7-DP_WG_2021-07-12_N	E421	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	180 days	5 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW7-SH_WG_2021-07-12_N	E421	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW8_WG_2021-07-12_N	E421	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNP_WS_2021-07-12_N	E421	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	180 days	5 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNT_WS_2021-07-12_N	E421	21-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	180 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW7-DP_WG_2021-07-12_N	E358-L	21-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW7-SH_WG_2021-07-12_N	E358-L	21-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW8_WG_2021-07-12_N	E358-L	21-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_NNP_WS_2021-07-12_N	E358-L	21-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_NNT_WS_2021-07-12_N	E358-L	21-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	12 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-07-12_N	E355-L	21-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-07-12_N	E355-L	21-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-07-12_N	E355-L	21-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP_WS_2021-07-12_N	E355-L	21-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	12 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNT_WS_2021-07-12_N	E355-L	21-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	12 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW7-DP_WG_2021-07-12_N	E283	21-Jul-2021	----	----	----		22-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW7-SH_WG_2021-07-12_N	E283	21-Jul-2021	----	----	----		22-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW8_WG_2021-07-12_N	E283	21-Jul-2021	----	----	----		22-Jul-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_NNP_WS_2021-07-12_N	E283	21-Jul-2021	----	----	----		22-Jul-2021	14 days	1 days	✓	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Acidity by Titration</b>										
HDPE CM_NNT_WS_2021-07-12_N	E283	21-Jul-2021	----	----	----		22-Jul-2021	14 days	1 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE CM_MW7-DP_WG_2021-07-12_N	E290	21-Jul-2021	----	----	----		24-Jul-2021	14 days	3 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE CM_MW7-SH_WG_2021-07-12_N	E290	21-Jul-2021	----	----	----		24-Jul-2021	14 days	3 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE CM_MW8_WG_2021-07-12_N	E290	21-Jul-2021	----	----	----		24-Jul-2021	14 days	3 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE CM_NNP_WS_2021-07-12_N	E290	21-Jul-2021	----	----	----		24-Jul-2021	14 days	3 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE CM_NNT_WS_2021-07-12_N	E290	21-Jul-2021	----	----	----		24-Jul-2021	14 days	3 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW7-DP_WG_2021-07-12_N	E100	21-Jul-2021	----	----	----		24-Jul-2021	28 days	3 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW7-SH_WG_2021-07-12_N	E100	21-Jul-2021	----	----	----		24-Jul-2021	28 days	3 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW8_WG_2021-07-12_N	E100	21-Jul-2021	----	----	----		24-Jul-2021	28 days	3 days	✓



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_NNP_WS_2021-07-12_N	E100	21-Jul-2021	----	----	----		24-Jul-2021	28 days	3 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_NNT_WS_2021-07-12_N	E100	21-Jul-2021	----	----	----		24-Jul-2021	28 days	3 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW7-DP_WG_2021-07-12_N	E125	21-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	188 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW7-SH_WG_2021-07-12_N	E125	21-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	188 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_NNP_WS_2021-07-12_N	E125	21-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	188 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_NNT_WS_2021-07-12_N	E125	21-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	188 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW8_WG_2021-07-12_N	E125	21-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	189 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW7-DP_WG_2021-07-12_N	E108	21-Jul-2021	----	----	----		24-Jul-2021	0.25 hrs	74 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW7-SH_WG_2021-07-12_N	E108	21-Jul-2021	----	----	----		24-Jul-2021	0.25 hrs	74 hrs		* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
HDPE CM_NNP_WS_2021-07-12_N	E108	21-Jul-2021	----	----	----		24-Jul-2021	0.25 hrs	74 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_NNT_WS_2021-07-12_N	E108	21-Jul-2021	----	----	----		24-Jul-2021	0.25 hrs	74 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW8_WG_2021-07-12_N	E108	21-Jul-2021	----	----	----		24-Jul-2021	0.25 hrs	75 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW7-DP_WG_2021-07-12_N	E162	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW7-SH_WG_2021-07-12_N	E162	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW8_WG_2021-07-12_N	E162	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_NNP_WS_2021-07-12_N	E162	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_NNT_WS_2021-07-12_N	E162	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW7-DP_WG_2021-07-12_N	E160-L	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW7-SH_WG_2021-07-12_N	E160-L	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW8_WG_2021-07-12_N	E160-L	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_NNP_WS_2021-07-12_N	E160-L	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_NNT_WS_2021-07-12_N	E160-L	21-Jul-2021	----	----	----		27-Jul-2021	7 days	6 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW7-DP_WG_2021-07-12_N	E121	21-Jul-2021	----	----	----		23-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW7-SH_WG_2021-07-12_N	E121	21-Jul-2021	----	----	----		23-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW8_WG_2021-07-12_N	E121	21-Jul-2021	----	----	----		23-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_NNP_WS_2021-07-12_N	E121	21-Jul-2021	----	----	----		23-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_NNT_WS_2021-07-12_N	E121	21-Jul-2021	----	----	----		23-Jul-2021	3 days	2 days	✔	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 15 of 21  
Work Order : CG2102743  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	249310	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	251155	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	251557	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	249242	1	17	5.8	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	249243	1	17	5.8	5.0	✔
Conductivity in Water	E100	251153	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	251672	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	252708	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	251673	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256782	1	17	5.8	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249336	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	249240	1	17	5.8	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	249244	1	17	5.8	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	249245	1	17	5.8	5.0	✔
ORP by Electrode	E125	254244	1	20	5.0	5.0	✔
pH by Meter	E108	251154	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	249241	1	17	5.8	5.0	✔
TDS by Gravimetry	E162	252416	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251413	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256784	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250077	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	249941	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	249310	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	251155	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	251557	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	249242	1	17	5.8	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	249243	1	17	5.8	5.0	✔
Conductivity in Water	E100	251153	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	251672	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	252708	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	251673	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256782	1	17	5.8	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249336	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	249240	1	17	5.8	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	249244	1	17	5.8	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	249245	1	17	5.8	5.0	✔





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	254244	1	20	5.0	5.0	✓
pH by Meter	E108	251154	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	249241	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	252416	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251413	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256784	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250077	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	252410	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	249941	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	249310	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	251155	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	251557	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	249242	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	249243	1	17	5.8	5.0	✓
Conductivity in Water	E100	251153	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	251672	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	252708	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	251673	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256782	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249336	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	249240	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	249244	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	249245	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	249241	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	252416	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251413	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256784	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250077	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	252410	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	249941	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	251557	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	249242	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	249243	1	17	5.8	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	251672	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	252708	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	251673	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256782	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	249336	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	249240	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	249244	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	249245	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	249241	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251413	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256784	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	250077	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102743**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q3\_MW7-MW8\_07212021  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
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**Date Samples Received** : 22-Jul-2021 09:00  
**Date Analysis Commenced** : 22-Jul-2021  
**Issue Date** : 09-Aug-2021 16:17

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
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Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Page : 2 of 14  
Work Order : CG2102743  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 249310)</b>											
CG2102741-003	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	4.8	4.8	0.02	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 249941)</b>											
CG2102741-003	Anonymous	turbidity	----	E121	0.10	NTU	1.26	1.27	0.01	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 251153)</b>											
CG2102741-003	Anonymous	conductivity	----	E100	2.0	µS/cm	1260	1260	0.159%	10%	----
<b>Physical Tests (QC Lot: 251154)</b>											
CG2102741-003	Anonymous	pH	----	E108	0.10	pH units	8.22	8.24	0.243%	4%	----
<b>Physical Tests (QC Lot: 251155)</b>											
CG2102741-003	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	251	260	3.56%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	251	260	3.56%	20%	----
<b>Physical Tests (QC Lot: 252416)</b>											
CG2102741-003	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	829	828	0.0603%	20%	----
<b>Physical Tests (QC Lot: 254244)</b>											
CG2102743-001	CM_MW7-DP_WG_2021-07-12_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	448	457	1.92%	15%	----
<b>Anions and Nutrients (QC Lot: 249240)</b>											
CG2102741-003	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.114	0.114	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249241)</b>											
CG2102741-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	440	443	0.741%	20%	----
<b>Anions and Nutrients (QC Lot: 249242)</b>											
CG2102741-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249243)</b>											
CG2102741-003	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	2.32	2.32	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249244)</b>											
CG2102741-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	2.51	2.51	0.195%	20%	----
<b>Anions and Nutrients (QC Lot: 249245)</b>											
CG2102741-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0061	0.0061	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 249336)</b>											
CG2102719-007	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0015	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250077)</b>											





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 250077) - continued</b>											
CG2102743-001	CM_MW7-DP_WG_2021-07-12_N	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0077	0.0083	0.0006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 251413)</b>											
CG2102743-001	CM_MW7-DP_WG_2021-07-12_N	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.205	0.206	0.0009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 251557)</b>											
CG2102741-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 256782)</b>											
CG2102743-001	CM_MW7-DP_WG_2021-07-12_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 256784)</b>											
CG2102743-001	CM_MW7-DP_WG_2021-07-12_N	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.02	1.09	0.08	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 251672)</b>											
CG2102725-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00022	0.00021	0.000004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 251673)</b>											
CG2102725-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00018	0.00018	0.000001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00024	0.00026	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0631	0.0632	0.251%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.011	0.012	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0743 µg/L	0.0000820	9.95%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	243	247	1.71%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00021	0.00020	0.000004	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0244	0.0244	0.00638%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	149	146	1.75%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00020	0.00020	0.000001	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00108	0.00103	4.13%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00081	0.00077	0.00004	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.54	2.56	0.414%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	189 µg/L	0.194	2.38%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.73	3.67	1.66%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 251673) - continued</b>											
CG2102725-001	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.33	3.26	2.22%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.222	0.219	1.31%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	281	275	2.00%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00828	0.00828	0.0117%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0024	0.0020	0.0004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 252708)</b>											
CG2102743-001	CM_MW7-DP_WG_2021-07-12_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 249310)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 249941)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 251153)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 251155)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 252410)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 252416)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 249240)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 249241)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 249242)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 249243)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 249244)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 249245)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 249336)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 250077)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 251413)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 251557)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 251557) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 256782)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 256784)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 251672)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 251673)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 251673) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 252708)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 249310)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	104	85.0	115	----
<b>Physical Tests (QCLot: 249941)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.2	85.0	115	----
<b>Physical Tests (QCLot: 251153)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	94.8	90.0	110	----
<b>Physical Tests (QCLot: 251154)</b>									
pH	---	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 251155)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	104	85.0	115	----
<b>Physical Tests (QCLot: 252410)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.9	85.0	115	----
<b>Physical Tests (QCLot: 252416)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.6	85.0	115	----
<b>Physical Tests (QCLot: 254244)</b>									
oxidation-reduction potential [ORP]	---	E125	----	mV	220 mV	100	95.4	104	----
<b>Anions and Nutrients (QCLot: 249240)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 249241)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 249242)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.8	85.0	115	----
<b>Anions and Nutrients (QCLot: 249243)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 249244)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 249245)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 249336)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	103	80.0	120	----
<b>Anions and Nutrients (QCLot: 250077)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.4	80.0	120	----
<b>Anions and Nutrients (QCLot: 251413)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 251413) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	116	75.0	125	----
<b>Anions and Nutrients (QCLot: 251557)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.0	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 256782)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 256784)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 251672)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 251673)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.5	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.9	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	91.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.3	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	87.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.0	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	89.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.0	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.5	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.9	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	104	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 251673) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.6	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.9	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.2	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	91.3	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.1	80.0	120	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 249240)</b>										
CG2102743-004	CM_NNT_WS_2021-07-12_N	fluoride	16984-48-8	E235.F	1.06 mg/L	1 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 249241)</b>										
CG2102743-004	CM_NNT_WS_2021-07-12_N	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 249242)</b>										
CG2102743-004	CM_NNT_WS_2021-07-12_N	bromide	24959-67-9	E235.Br-L	0.540 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 249243)</b>										
CG2102743-004	CM_NNT_WS_2021-07-12_N	chloride	16887-00-6	E235.Cl-L	110 mg/L	100 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 249244)</b>										
CG2102743-004	CM_NNT_WS_2021-07-12_N	nitrate (as N)	14797-55-8	E235.NO3-L	2.69 mg/L	2.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 249245)</b>										
CG2102743-004	CM_NNT_WS_2021-07-12_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.544 mg/L	0.5 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 249336)</b>										
CG2102719-008	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0561 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 250077)</b>										
CG2102743-002	CM_MW7-SH_WG_2021-07-12_N	phosphorus, total	7723-14-0	E372-U	0.0592 mg/L	0.0676 mg/L	87.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 251413)</b>										
CG2102743-002	CM_MW7-SH_WG_2021-07-12_N	Kjeldahl nitrogen, total [TKN]	----	E318	2.29 mg/L	2.5 mg/L	91.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 251557)</b>										
CG2102741-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.111 mg/L	0.1 mg/L	111	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 256782)</b>										
CG2102743-001	CM_MW7-DP_WG_2021-07-12_N	carbon, dissolved organic [DOC]	----	E358-L	24.1 mg/L	23.9 mg/L	101	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 256784)</b>										
CG2102743-001	CM_MW7-DP_WG_2021-07-12_N	carbon, total organic [TOC]	----	E355-L	26.0 mg/L	23.9 mg/L	109	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 251672)</b>										
CG2102725-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 251673)</b>										
CG2102725-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.200 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0222 mg/L	0.02 mg/L	111	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0354 mg/L	0.04 mg/L	88.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00822 mg/L	0.01 mg/L	82.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.087 mg/L	0.1 mg/L	86.9	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00379 mg/L	0.004 mg/L	94.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0186 mg/L	0.02 mg/L	93.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	98.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0178 mg/L	0.02 mg/L	89.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0856 mg/L	0.1 mg/L	85.6	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0514 mg/L	0.04 mg/L	128	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.50 mg/L	10 mg/L	95.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00368 mg/L	0.004 mg/L	92.1	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00349 mg/L	0.004 mg/L	87.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.365 mg/L	0.4 mg/L	91.2	70.0	130	----
<b>Dissolved Metals (QCLot: 252708)</b>										
CG2102743-002	CM_MW7-SH_WG_2021-07-12_N	mercury, dissolved	7439-97-6	E509	0.0000981 mg/L	0.0001 mg/L	98.1	70.0	130	----

Page : 14 of 14  
Work Order : CG2102743  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

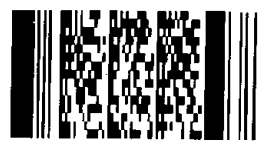
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<b>COC ID:</b> COC_WG_Q3_MW7-MW8_07212021		<b>TURNAROUND TIME:</b> REGULAR		<b>RUSH:</b> NO							
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>					
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager	Victoria Sharpe			Lab Contact	Milica Pasic		Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	Victoria.Sharpe@teck.com			Email	Milica.Pasic@ALSGlobal.com		Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE		Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	don.sacino@teck.com	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	shelby.holden@teck.com	X	X
Phone Number	1-250-425-7522			Phone Number	403 407 1800		PO number	00741264			

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None				
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	File	F	N	F	F	N				
								PRESERV.	H2SO4	H2SO4	HCL	HNO3	NONE				
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA				
CM_MW7-DP_WG_2021-07-12_N	CM_MW7-DP	WG	No	2021/07/21	11:35	G	5		1	1	1	1	1				
CM_MW7-SH_WG_2021-07-12_N	CM_MW7-SH	WG	No	2021/07/21	11:25	G	5		1	1	1	1	1				
CM_NNP_WS_2021-07-12_N	CM_NNP	WG	No	2021/07/21	--	G	5		1	1	1	1	1				
CM_NNT_WS_2021-07-12_N	CM_NNT	WG	No	2021/07/21	--	G	5		1	1	1	1	1				
CM_MW8_WG_2021-07-12_N	CM_MW8	WG	No	2021/07/21	10:55	G	5		1	1	1	1	1				

Environmental Division  
Calgary  
Work Order Reference  
**CG2102743**



Telephone : +1 403 407 1800

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>		<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.		<b>GT</b>		<b>9:00</b>	<b>GT</b>		<b>9:00</b>
				<b>July 22</b>			<b>July 22</b>
<b>SERVICE REQUEST (rush - subject to availability)</b>		<b>Sampler's Name</b>		<b>SH/DS</b>	<b>Mobile #</b>		<b>250-425-7529</b>
Regular (default) X							
Priority (2-3 business days) - 50% surcharge		<b>Sampler's Signature</b>		<b>Date/Time</b>		<b>July 21, 2021</b>	
Emergency (1 Business Day) - 100% surcharge		<i>Shelby Holden</i>					
For Emergency <1 Day, ASAP or Weekend - Contact ALS							

**90c**



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102782**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q3\_MW1-MW2\_07222021  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Jul-2021 08:40  
**Date Analysis Commenced** : 23-Jul-2021  
**Issue Date** : 30-Jul-2021 18:30

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					CM_MW1-OB_	CM_MW2-SH_	---	---	---
					WG_2021-07-1	WG_2021-07-1			
					2_N	2_N			
Client sampling date / time					22-Jul-2021 13:15	22-Jul-2021 11:00	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2102782-001	CG2102782-002	-----	-----	-----
					Result	Result	---	---	---
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	13.1	24.3	---	---	---
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	276	328	---	---	---
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	---	---	---
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	---	---	---
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	276	328	---	---	---
conductivity	----	E100	2.0	µS/cm	1050	1320	---	---	---
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	450	762	---	---	---
oxidation-reduction potential [ORP]	----	E125	0.10	mV	435	450	---	---	---
pH	----	E108	0.10	pH units	8.09	8.15	---	---	---
solids, total dissolved [TDS]	----	E162	10	mg/L	720	1060	---	---	---
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	---	---	---
turbidity	----	E121	0.10	NTU	0.26	0.15	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	336	400	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	---	---	---
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0063	<0.0050	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	63.5	4.60	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLDS</sup>	<0.100 <sup>DLDS</sup>	---	---	---
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.086	<0.050	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.673	0.0940	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0023	0.0014	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0023	<0.0020	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	248	510	---	---	---
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.25	2.47	---	---	---
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.43	2.37	---	---	---
<b>Ion Balance</b>									



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					CM_MW1-OB_WG_2021-07-12_N	CM_MW2-SH_WG_2021-07-12_N	---	---	---
Client sampling date / time					22-Jul-2021 13:15	22-Jul-2021 11:00	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2102782-001	CG2102782-002	-----	-----	-----
					Result	Result	---	---	---
<b>Ion Balance</b>									
anion sum	---	EC101	0.10	meq/L	12.5	17.3	---	---	---
cation sum	---	EC101	0.10	meq/L	11.8	16.3	---	---	---
ion balance (cations/anions ratio)	---	EC101	0.010	%	94.4	94.2	---	---	---
ion balance (cation-anion difference)	---	EC101	0.010	%	2.88	2.98	---	---	---
<b>Dissolved Metals</b>									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	<0.0010	---	---	---
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00017	<0.00010	---	---	---
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00019	<0.00010	---	---	---
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0895	0.124	---	---	---
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.040	0.043	---	---	---
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0616	0.163	---	---	---
calcium, dissolved	7440-70-2	E421	0.050	mg/L	122	213	---	---	---
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00071	0.00023	---	---	---
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00652	0.00032	---	---	---
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	---	---	---
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000512	<0.000050	---	---	---
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0196	0.0279	---	---	---
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	35.3	55.9	---	---	---
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00031	<0.00010	---	---	---
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000384	0.000134	---	---	---
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00051	<0.00050	---	---	---
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.99	1.78	---	---	---
selenium, dissolved	7782-49-2	E421	0.050	µg/L	3.77	0.120	---	---	---
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.53	5.21	---	---	---
silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000012	<0.000010	---	---	---
sodium, dissolved	17341-25-2	E421	0.050	mg/L	64.6	23.3	---	---	---
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.365	0.639	---	---	---





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW1-OB_ WG_2021-07-1 2_N	CM_MW2-SH_ WG_2021-07-1 2_N	----	----	----
Client sampling date / time					22-Jul-2021 13:15	22-Jul-2021 11:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102782-001	CG2102782-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	82.2	169	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000023	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00122	0.000214	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0639	0.0018	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102782</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Milica Pasic
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 23-Jul-2021 08:40
PO	: VPO00741264	Issue Date	: 30-Jul-2021 18:30
C-O-C number	: COC_WG_Q3_MW1-MW2_07222021		
Sampler	: SH/DS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-07-12_N	E298	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW2-SH_WG_2021-07-12_N	E298	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-07-12_N	E235.Br-L	22-Jul-2021	----	----	----		23-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW2-SH_WG_2021-07-12_N	E235.Br-L	22-Jul-2021	----	----	----		23-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-07-12_N	E235.Cl-L	22-Jul-2021	----	----	----		23-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW2-SH_WG_2021-07-12_N	E235.Cl-L	22-Jul-2021	----	----	----		23-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-07-12_N	E378-U	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE CM_MW2-SH_WG_2021-07-12_N	E378-U	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW1-OB_WG_2021-07-12_N	E235.F	22-Jul-2021	----	----	----		23-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW2-SH_WG_2021-07-12_N	E235.F	22-Jul-2021	----	----	----		23-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW1-OB_WG_2021-07-12_N	E235.NO3-L	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW2-SH_WG_2021-07-12_N	E235.NO3-L	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW1-OB_WG_2021-07-12_N	E235.NO2-L	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW2-SH_WG_2021-07-12_N	E235.NO2-L	22-Jul-2021	----	----	----		23-Jul-2021	3 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW1-OB_WG_2021-07-12_N	E235.SO4	22-Jul-2021	----	----	----		23-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW2-SH_WG_2021-07-12_N	E235.SO4	22-Jul-2021	----	----	----		23-Jul-2021	28 days	1 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-07-12_N	E318	22-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW2-SH_WG_2021-07-12_N	E318	22-Jul-2021	26-Jul-2021	----	----		26-Jul-2021	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-07-12_N	E372-U	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW2-SH_WG_2021-07-12_N	E372-U	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-OB_WG_2021-07-12_N	E421.Cr-L	22-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW2-SH_WG_2021-07-12_N	E421.Cr-L	22-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW1-OB_WG_2021-07-12_N	E509	22-Jul-2021	30-Jul-2021	----	----		30-Jul-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW2-SH_WG_2021-07-12_N	E509	22-Jul-2021	30-Jul-2021	----	----		30-Jul-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-OB_WG_2021-07-12_N	E421	22-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	5 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW2-SH_WG_2021-07-12_N	E421	22-Jul-2021	27-Jul-2021	----	----		27-Jul-2021	180 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW1-OB_WG_2021-07-12_N	E358-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW2-SH_WG_2021-07-12_N	E358-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-07-12_N	E355-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW2-SH_WG_2021-07-12_N	E355-L	22-Jul-2021	28-Jul-2021	----	----		28-Jul-2021	28 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-07-12_N	E283	22-Jul-2021	----	----	----		23-Jul-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW2-SH_WG_2021-07-12_N	E283	22-Jul-2021	----	----	----		23-Jul-2021	14 days	1 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-07-12_N	E290	22-Jul-2021	----	----	----		25-Jul-2021	14 days	3 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW2-SH_WG_2021-07-12_N	E290	22-Jul-2021	----	----	----		25-Jul-2021	14 days	3 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW1-OB_WG_2021-07-12_N	E100	22-Jul-2021	----	----	----		25-Jul-2021	28 days	3 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW2-SH_WG_2021-07-12_N	E100	22-Jul-2021	----	----	----		25-Jul-2021	28 days	3 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW1-OB_WG_2021-07-12_N	E125	22-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	167 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW2-SH_WG_2021-07-12_N	E125	22-Jul-2021	----	----	----		29-Jul-2021	0.34 hrs	170 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW1-OB_WG_2021-07-12_N	E108	22-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	72 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW2-SH_WG_2021-07-12_N	E108	22-Jul-2021	----	----	----		25-Jul-2021	0.25 hrs	75 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW1-OB_WG_2021-07-12_N	E162	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days		✓
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW2-SH_WG_2021-07-12_N	E162	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days		✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE [TSS-WB] CM_MW1-OB_WG_2021-07-12_N	E160-L	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days		✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> CM_MW2-SH_WG_2021-07-12_N	E160-L	22-Jul-2021	----	----	----		28-Jul-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW1-OB_WG_2021-07-12_N	E121	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW2-SH_WG_2021-07-12_N	E121	22-Jul-2021	----	----	----		24-Jul-2021	3 days	2 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	250173	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	251543	1	9	11.1	5.0	✓
Ammonia by Fluorescence	E298	253525	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	250352	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	250353	1	9	11.1	5.0	✓
Conductivity in Water	E100	251541	1	9	11.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252819	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	255285	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252820	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	253576	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	250424	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	250356	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	250354	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	250355	1	9	11.1	5.0	✓
ORP by Electrode	E125	254245	1	20	5.0	5.0	✓
pH by Meter	E108	251542	1	11	9.0	5.0	✓
Sulfate in Water by IC	E235.SO4	250351	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	253357	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251514	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253577	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	253438	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	251149	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	250173	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	251543	1	9	11.1	5.0	✓
Ammonia by Fluorescence	E298	253525	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	250352	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	250353	1	9	11.1	5.0	✓
Conductivity in Water	E100	251541	1	9	11.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252819	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	255285	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	252820	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	253576	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	250424	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	250356	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	250354	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	250355	1	9	11.1	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	254245	1	20	5.0	5.0	✔
pH by Meter	E108	251542	1	11	9.0	5.0	✔
Sulfate in Water by IC	E235.SO4	250351	1	9	11.1	5.0	✔
TDS by Gravimetry	E162	253357	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251514	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253577	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	253438	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	253352	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	251149	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	250173	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	251543	1	9	11.1	5.0	✔
Ammonia by Fluorescence	E298	253525	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	250352	1	9	11.1	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	250353	1	9	11.1	5.0	✔
Conductivity in Water	E100	251541	1	9	11.1	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252819	1	19	5.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	255285	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	252820	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	253576	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	250424	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	250356	1	9	11.1	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	250354	1	9	11.1	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	250355	1	9	11.1	5.0	✔
Sulfate in Water by IC	E235.SO4	250351	1	9	11.1	5.0	✔
TDS by Gravimetry	E162	253357	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251514	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253577	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	253438	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	253352	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	251149	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	253525	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	250352	0	9	0.0	5.0	✖
Chloride in Water by IC (Low Level)	E235.Cl-L	250353	0	9	0.0	5.0	✖
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	252819	1	19	5.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	255285	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	252820	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	253576	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	250424	1	20	5.0	5.0	✔



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	250356	0	9	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	250354	0	9	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	250355	0	9	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	250351	0	9	0.0	5.0	✘
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	251514	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	253577	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	253438	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102782**

**Page** : 1 of 13

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q3\_MW1-MW2\_07222021  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Jul-2021 08:40  
**Date Analysis Commenced** : 23-Jul-2021  
**Issue Date** : 30-Jul-2021 18:30

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Page : 2 of 13  
Work Order : CG2102782  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 250173)</b>											
CG2102775-021	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	73.0	77.4	4.4	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 251149)</b>											
CG2102775-022	Anonymous	turbidity	----	E121	0.10	NTU	19.6	20.1	2.32%	15%	----
<b>Physical Tests (QC Lot: 251541)</b>											
CG2102775-021	Anonymous	conductivity	----	E100	2.0	µS/cm	3040	3020	0.660%	10%	----
<b>Physical Tests (QC Lot: 251542)</b>											
CG2102775-021	Anonymous	pH	----	E108	0.10	pH units	7.68	7.75	0.907%	4%	----
<b>Physical Tests (QC Lot: 251543)</b>											
CG2102775-021	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	651	657	0.948%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	651	657	0.948%	20%	----
<b>Physical Tests (QC Lot: 253357)</b>											
CG2102775-022	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	2980	2920	1.69%	20%	----
<b>Physical Tests (QC Lot: 254245)</b>											
CG2102775-016	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	462	461	0.130%	15%	----
<b>Anions and Nutrients (QC Lot: 250351)</b>											
CG2102782-001	CM_MW1-OB_WG_2021-07-12_N	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	248	247	0.754%	20%	----
<b>Anions and Nutrients (QC Lot: 250352)</b>											
CG2102782-001	CM_MW1-OB_WG_2021-07-12_N	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250353)</b>											
CG2102782-001	CM_MW1-OB_WG_2021-07-12_N	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	63.5	62.7	1.38%	20%	----
<b>Anions and Nutrients (QC Lot: 250354)</b>											
CG2102782-001	CM_MW1-OB_WG_2021-07-12_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.673	0.684	1.65%	20%	----
<b>Anions and Nutrients (QC Lot: 250355)</b>											
CG2102782-001	CM_MW1-OB_WG_2021-07-12_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250356)</b>											
CG2102782-001	CM_MW1-OB_WG_2021-07-12_N	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	0.112	0.012	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 250424)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 250424) - continued</b>											
CG2102775-021	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 251514)</b>											
CG2102777-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.00	mg/L	89.9	82.5	8.58%	20%	----
<b>Anions and Nutrients (QC Lot: 253438)</b>											
CG2102775-021	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 253525)</b>											
CG2102775-012	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0500	mg/L	0.535	0.530	0.901%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 253576)</b>											
CG2102626-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.08	1.84	0.24	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 253577)</b>											
CG2102626-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.42	2.32	0.10	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 252819)</b>											
CG2102757-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 252820)</b>											
CG2102757-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0114	0.0119	4.52%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00582	0.00589	1.15%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00141	0.00135	4.34%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.515	0.544	5.50%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.092	0.090	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0300	mg/L	<0.0300 µg/L	<0.0000300	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	63.3	64.6	2.10%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	4.57 µg/L	0.00459	0.577%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.402	0.386	4.14%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	32.1	31.6	1.64%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0245	0.0248	1.08%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0258	0.0258	0.104%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0285	0.0292	2.13%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	17.8	18.4	3.30%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	2.90 µg/L	0.00273	6.03%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.28	3.29	0.480%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 252820) - continued</b>											
CG2102757-001	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	28.3	28.5	0.598%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.432	0.441	2.16%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	26.5	27.0	2.13%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000129	0.000126	1.80%	20%	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00283	0.00281	0.870%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00137	0.00136	0.00001	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0011	0.00004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 255285)</b>											
CG2102782-001	CM_MW1-OB_WG_2021-07-12_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 250173)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 251149)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 251541)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 251543)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 253352)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 253357)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 250351)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 250352)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 250353)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 250354)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 250355)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 250356)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 250424)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 251514)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 253438)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 253525)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 253525) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 253576)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 253577)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 252819)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 252820)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---

Page : 8 of 13  
Work Order : CG2102782  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 252820) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 255285)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 250173)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 251149)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.5	85.0	115	---
<b>Physical Tests (QCLot: 251541)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	95.6	90.0	110	---
<b>Physical Tests (QCLot: 251542)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 251543)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 253352)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	88.4	85.0	115	---
<b>Physical Tests (QCLot: 253357)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.3	85.0	115	---
<b>Physical Tests (QCLot: 254245)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 250351)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 250352)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 250353)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 250354)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 250355)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 250356)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 250424)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	105	80.0	120	---
<b>Anions and Nutrients (QCLot: 251514)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	75.3	75.0	125	---
<b>Anions and Nutrients (QCLot: 253438)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 253438) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	90.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 253525)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.4	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 253576)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	98.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 253577)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	96.0	80.0	120	----
<b>Dissolved Metals (QCLot: 252819)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 252820)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.9	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	108	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.6	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	108	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	108	80.0	120	----





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 252820) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	111	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.3	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>Anions and Nutrients (QCLot: 250424)</b>										
CG2102775-022	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0507 mg/L	0.05 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 251514)</b>										
CG2102778-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	ND mg/L	2.5 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 253438)</b>										
CG2102775-022	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0636 mg/L	0.0676 mg/L	94.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 253525)</b>										
CG2102775-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0920 mg/L	0.1 mg/L	92.0	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 253576)</b>										
CG2102626-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.9 mg/L	23.9 mg/L	100.0	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 253577)</b>										
CG2102626-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.5 mg/L	23.9 mg/L	107	70.0	130	----
<b>Dissolved Metals (QCLot: 252819)</b>										
CG2102757-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
<b>Dissolved Metals (QCLot: 252820)</b>										
CG2102757-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.203 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00878 mg/L	0.01 mg/L	87.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.099 mg/L	0.1 mg/L	99.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00391 mg/L	0.004 mg/L	97.7	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.97 mg/L	2 mg/L	98.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----		



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 252820) - continued</b>										
CG2102757-002	Anonymous	manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0442 mg/L	0.04 mg/L	110	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.28 mg/L	10 mg/L	92.8	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00373 mg/L	0.004 mg/L	93.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0209 mg/L	0.02 mg/L	105	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.383 mg/L	0.4 mg/L	95.8	70.0	130	----
<b>Dissolved Metals (QCLot: 255285)</b>										
CG2102782-002	CM_MW2-SH_WG_2021-07-12_N	mercury, dissolved	7439-97-6	E509	0.0000942 mg/L	0.0001 mg/L	94.2	70.0	130	----

<b>COC ID:</b>		<b>COC_WG_Q3_MW1-MW2_07222021</b>		<b>TURNAROUND TIME:</b>		REGULAR		<b>RUSH:</b>		NO					
<b>PROJECT/CLIENT INFO</b>						<b>LABORATORY</b>				<b>OTHER INFO</b>					
Facility Name / Job#		Coal Mountain Operations				Lab Name		ALS Calgary		Report Format / Distribution					
Project Manager		Victoria Sharpe				Lab Contact		Milica Pasic		Email 1:		Victoria.Sharpe@teck.com	X	X	X
Email		Victoria.Sharpe@teck.com				Email		Milica.Pasic@ALSGlobal.com		Email 2:		teckcoal@equisonline.com			
Address		PO Box 3000				Address		2559 29th St. NE		Email 3:		jay.jones@teck.com			
City		Sparwood		Province		BC		City		Calgary		Province		AB	
Postal Code		V0B 2G0		Country		Canada		Postal Code		T1Y 7B5		Country		Canada	
Phone Number		1-250-425-7522				Phone Number		403 407 1800		PO number		00741264			

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE	F	N	F	F	N						
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA						
CM_MW1-OB_WG_2021-07-12_N	CM_MW1-OB	WG	No	2021/7/22	13:15	G	5		1	1	1	1	1						
CM_MW2-SH_WG_2021-07-12_N	CM_MW2-SH	WG	No	2021/7/22	11:00	G	5		1	1	1	1	1						

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>			<b>RELINQUISHED BY/AFFILIATION</b>			<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>	
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.								<i>[Signature]</i>		23/07 D=40	
<b>SERVICE REQUEST (rush - subject to availability)</b>											
Regular (default) <input checked="" type="checkbox"/>			<b>Sampler's Name</b>			<b>SH/DS</b>		<b>Mobile #</b>		250-425-7529	
Priority (2-3 business days) - 50% surcharge			<b>Sampler's Signature</b>			<i>[Signature]</i>		<b>Date/Time</b>		July 22, 2021 <i>(10)</i>	
Emergency (2-4 hours) - 100% surcharge											
- Contact ALS											

Environmental Division  
Calgary  
Work Order Reference  
**CG2102782**



Telephone : +1 403 407 1800



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102906**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q3\_MW10-MW\_AG\_07282021  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-Jul-2021 08:50  
**Date Analysis Commenced** : 29-Jul-2021  
**Issue Date** : 10-Aug-2021 12:50

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW_AG1A _WG_2021-07- 12_N	CM_MW_AG1B _WG_2021-07- 12_N	CM_TRP_WS_2 021-07-12_N	CM_NNP2_WS_ 2021-07-12_N	CM_MW10_WG _2021-07-12_N
Client sampling date / time					28-Jul-2021 12:45	28-Jul-2021 11:45	28-Jul-2021	28-Jul-2021	28-Jul-2021 14:30	
Analyte	CAS Number	Method	LOR	Unit	CG2102906-001	CG2102906-002	CG2102906-003	CG2102906-004	CG2102906-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	24.8	30.5	<2.0	20.8	<10.0 <sup>DLM</sup>	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	440	451	<1.0	440	239	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	440	451	<1.0	440	239	
conductivity	----	E100	2.0	µS/cm	715	751	<2.0	715	559	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	470	559	<0.50	475	265	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	436	463	478	400	439	
pH	----	E108	0.10	pH units	7.93	7.70	5.32	7.97	8.20	
solids, total dissolved [TDS]	----	E162	10	mg/L	462	537	<10	488	375	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	16.0	<1.0	<1.0	15.6	5.6	
turbidity	----	E121	0.10	NTU	89.8	0.72	<0.10	96.4	26.5	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	537	550	<1.0	536	291	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0319	<0.0050	0.0209 <sup>RRV</sup>	0.0454	0.0334	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.062	<0.050	<0.050	0.066	<0.050	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.43	0.54	<0.10	3.56	0.45	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.086	0.075	<0.020	0.083	1.01	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050 <sup>TKNI</sup>	<0.050	<0.050	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.557	0.0518 <sup>RRV</sup>	<0.0050	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0021	<0.0010	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0051	0.0035	<0.0020	0.0063	0.0104	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	9.14	14.2	<0.30	9.54	80.4	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.49	1.88	<0.50	2.37	3.11 <sup>DTC, RRV</sup>	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.33	1.34	<0.50	2.36	0.96 <sup>DTC, RRV</sup>	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW_AG1A _WG_2021-07- 12_N	CM_MW_AG1B _WG_2021-07- 12_N	CM_TRP_WS_2 021-07-12_N	CM_NNP2_WS_ 2021-07-12_N	CM_MW10_WG _2021-07-12_N
Client sampling date / time					28-Jul-2021 12:45	28-Jul-2021 11:45	28-Jul-2021	28-Jul-2021	28-Jul-2021 14:30	
Analyte	CAS Number	Method	LOR	Unit	CG2102906-001	CG2102906-002	CG2102906-003	CG2102906-004	CG2102906-005	
					Result	Result	Result	Result	Result	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.08	9.37	<0.10	9.10	6.52	
cation sum	----	EC101	0.10	meq/L	10.1	11.3	<0.10	10.2	6.75	
ion balance (cations/anions ratio)	----	EC101	0.010	%	111	120	100 <sup>RRV</sup>	112	104	
ion balance (cation-anion difference)	----	EC101	0.010	%	5.32	9.34	<0.010	5.70	1.73	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0020	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00170	0.00030	<0.00010	0.00169	0.00309	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	1.64	0.244	<0.00010	1.63	0.256	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.028	0.030	<0.010	0.028	0.025	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0576	<0.0050	<0.0050	<0.0050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	140	152	<0.050	141	72.5	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00036	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.15	<0.10	<0.10	0.14	0.51	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00027	<0.00020	0.00021	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	6.97	<0.010	<0.010	6.97	2.06	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	0.000058	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0223	0.0035	<0.0010	0.0229	0.0135	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	29.2	43.6	<0.0050	29.9	20.3	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.147	0.00087	<0.00010	0.146	0.0775	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00112	0.000174	<0.000050	0.00113	0.00444	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00068	<0.00050	<0.00050	<0.00050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.17	1.25	<0.050	1.16	0.816	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	1.96	<0.050	0.113	0.053	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.37	5.94	<0.050	6.45	4.71	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	10.1	2.57	0.153 <sup>RRV</sup>	10.3	31.3	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.731	0.301	<0.00020	0.727	0.275	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW_AG1A _WG_2021-07- 12_N	CM_MW_AG1B _WG_2021-07- 12_N	CM_TRP_WS_2 021-07-12_N	CM_NNP2_WS_ 2021-07-12_N	CM_MW10_WG _2021-07-12_N
Client sampling date / time					28-Jul-2021 12:45	28-Jul-2021 11:45	28-Jul-2021	28-Jul-2021	28-Jul-2021 14:30	
Analyte	CAS Number	Method	LOR	Unit	CG2102906-001	CG2102906-002	CG2102906-003	CG2102906-004	CG2102906-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.30	5.61	<0.50	3.61	28.4	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000033	<0.000010	<0.000010	<0.000010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00104	0.000554	<0.000010	0.00104	0.000712	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0029	0.0019	0.169 <sup>RRV</sup>	0.0014	0.0012	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102906</b>	Page	: 1 of 21
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Milica Pasic
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 29-Jul-2021 08:50
PO	: VPO00741264	Issue Date	: 10-Aug-2021 12:50
C-O-C number	: COC_WG_Q3_MW10-MW_AG_07282021		
Sampler	: SH/DS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1A_WG_2021-07-12_N	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1B_WG_2021-07-12_N	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-07-12_N	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WS_2021-07-12_N	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WS_2021-07-12_N	E298	28-Jul-2021	31-Jul-2021	----	----		31-Jul-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW_AG1A_WG_2021-07-12_N	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW_AG1B_WG_2021-07-12_N	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE CM_MW10_WG_2021-07-12_N	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE CM_NNP2_WS_2021-07-12_N	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE CM_TRP_WS_2021-07-12_N	E235.Br-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE CM_MW_AG1A_WG_2021-07-12_N	E235.Cl-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE CM_MW_AG1B_WG_2021-07-12_N	E235.Cl-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE CM_MW10_WG_2021-07-12_N	E235.Cl-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE CM_NNP2_WS_2021-07-12_N	E235.Cl-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE CM_TRP_WS_2021-07-12_N	E235.Cl-L	28-Jul-2021	----	----	----		29-Jul-2021	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE CM_MW_AG1A_WG_2021-07-12_N	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW_AG1B_WG_2021-07-12_N	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW10_WG_2021-07-12_N	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_NNP2_WS_2021-07-12_N	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_TRP_WS_2021-07-12_N	E378-U	28-Jul-2021	----	----	----		29-Jul-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW_AG1A_WG_2021-07-12_N	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW_AG1B_WG_2021-07-12_N	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW10_WG_2021-07-12_N	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_NNP2_WS_2021-07-12_N	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_TRP_WS_2021-07-12_N	E235.F	28-Jul-2021	----	----	----		29-Jul-2021	28 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW_AG1A_WG_2021-07-12_N	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW_AG1B_WG_2021-07-12_N	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW10_WG_2021-07-12_N	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_NNP2_WS_2021-07-12_N	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_TRP_WS_2021-07-12_N	E235.NO3-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW_AG1A_WG_2021-07-12_N	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW_AG1B_WG_2021-07-12_N	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW10_WG_2021-07-12_N	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_NNP2_WS_2021-07-12_N	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_TRP_WS_2021-07-12_N	E235.NO2-L	28-Jul-2021	----	----	----		29-Jul-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW_AG1A_WG_2021-07-12_N	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW_AG1B_WG_2021-07-12_N	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW10_WG_2021-07-12_N	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_NNP2_WS_2021-07-12_N	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_TRP_WS_2021-07-12_N	E235.SO4	28-Jul-2021	----	----	----		29-Jul-2021	28 days	2 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
Amber glass total (sulfuric acid) CM_MW_AG1A_WG_2021-07-12_N	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
Amber glass total (sulfuric acid) CM_MW_AG1B_WG_2021-07-12_N	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
Amber glass total (sulfuric acid) CM_MW10_WG_2021-07-12_N	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WS_2021-07-12_N	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WS_2021-07-12_N	E318	28-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1A_WG_2021-07-12_N	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1B_WG_2021-07-12_N	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-07-12_N	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WS_2021-07-12_N	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WS_2021-07-12_N	E372-U	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW_AG1A_WG_2021-07-12_N	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW_AG1B_WG_2021-07-12_N	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW10_WG_2021-07-12_N	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNP2_WS_2021-07-12_N	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_TRP_WS_2021-07-12_N	E421.Cr-L	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW_AG1A_WG_2021-07-12_N	E509	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW_AG1B_WG_2021-07-12_N	E509	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW10_WG_2021-07-12_N	E509	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_NNP2_WS_2021-07-12_N	E509	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_TRP_WS_2021-07-12_N	E509	28-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW_AG1A_WG_2021-07-12_N	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW_AG1B_WG_2021-07-12_N	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW10_WG_2021-07-12_N	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNP2_WS_2021-07-12_N	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_TRP_WS_2021-07-12_N	E421	28-Jul-2021	02-Aug-2021	----	----		02-Aug-2021	180 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW_AG1A_WG_2021-07-12_N	E358-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW_AG1B_WG_2021-07-12_N	E358-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW10_WG_2021-07-12_N	E358-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_NNP2_WS_2021-07-12_N	E358-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_TRP_WS_2021-07-12_N	E358-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	6 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1A_WG_2021-07-12_N	E355-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1B_WG_2021-07-12_N	E355-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-07-12_N	E355-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	5 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WS_2021-07-12_N	E355-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WS_2021-07-12_N	E355-L	28-Jul-2021	01-Aug-2021	----	----		02-Aug-2021	28 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW_AG1A_WG_2021-07-12_N	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW_AG1B_WG_2021-07-12_N	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW10_WG_2021-07-12_N	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	1 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_NNP2_WS_2021-07-12_N	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	2 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE CM_TRP_WS_2021-07-12_N	E283	28-Jul-2021	----	----	----		29-Jul-2021	14 days	2 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW_AG1A_WG_2021-07-12_N	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW_AG1B_WG_2021-07-12_N	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW10_WG_2021-07-12_N	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_NNP2_WS_2021-07-12_N	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_TRP_WS_2021-07-12_N	E290	28-Jul-2021	----	----	----		06-Aug-2021	14 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW_AG1A_WG_2021-07-12_N	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW_AG1B_WG_2021-07-12_N	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW10_WG_2021-07-12_N	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_NNP2_WS_2021-07-12_N	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_TRP_WS_2021-07-12_N	E100	28-Jul-2021	----	----	----		06-Aug-2021	28 days	9 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW10_WG_2021-07-12_N	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	212 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW_AG1A_WG_2021-07-12_N	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	213 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW_AG1B_WG_2021-07-12_N	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	214 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_NNP2_WS_2021-07-12_N	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	226 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_TRP_WS_2021-07-12_N	E125	28-Jul-2021	----	----	----		06-Aug-2021	0.34 hrs	226 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW10_WG_2021-07-12_N	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	212 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW_AG1A_WG_2021-07-12_N	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	214 hrs	* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW_AG1B_WG_2021-07-12_N	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	215 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_NNP2_WS_2021-07-12_N	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	226 hrs	*	EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_TRP_WS_2021-07-12_N	E108	28-Jul-2021	----	----	----		06-Aug-2021	0.25 hrs	226 hrs	*	EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW_AG1A_WG_2021-07-12_N	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW_AG1B_WG_2021-07-12_N	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW10_WG_2021-07-12_N	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_NNP2_WS_2021-07-12_N	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	7 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_TRP_WS_2021-07-12_N	E162	28-Jul-2021	----	----	----		03-Aug-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW_AG1A_WG_2021-07-12_N	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW_AG1B_WG_2021-07-12_N	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW10_WG_2021-07-12_N	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	6 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_NNP2_WS_2021-07-12_N	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	7 days	✔	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_TRP_WS_2021-07-12_N	E160-L	28-Jul-2021	----	----	----		03-Aug-2021	7 days	7 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW_AG1B_WG_2021-07-12_N	E121	28-Jul-2021	----	----	----		29-Jul-2021	3 days	1 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW_AG1A_WG_2021-07-12_N	E121	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW10_WG_2021-07-12_N	E121	28-Jul-2021	----	----	----		30-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_NNP2_WS_2021-07-12_N	E121	28-Jul-2021	----	----	----		29-Jul-2021	3 days	2 days	✔	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_TRP_WS_2021-07-12_N	E121	28-Jul-2021	----	----	----		29-Jul-2021	3 days	2 days	✔	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 15 of 21  
Work Order : CG2102906  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	254787	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	260205	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	256377	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	254670	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	254671	1	20	5.0	5.0	✓
Conductivity in Water	E100	260207	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256833	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	258174	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	256834	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256783	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	254620	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	254674	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	254672	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	254673	1	20	5.0	5.0	✓
ORP by Electrode	E125	259268	1	20	5.0	5.0	✓
pH by Meter	E108	260206	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	254669	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	257005	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	256653	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256785	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	255589	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	254904	2	36	5.5	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	254787	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	260205	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	256377	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	254670	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	254671	1	20	5.0	5.0	✓
Conductivity in Water	E100	260207	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256833	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	258174	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	256834	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256783	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	254620	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	254674	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	254672	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	254673	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	259268	1	20	5.0	5.0	✔
pH by Meter	E108	260206	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	254669	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	257005	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	256653	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256785	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	255589	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	256996	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	254904	2	36	5.5	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	254787	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	260205	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	256377	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	254670	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	254671	1	20	5.0	5.0	✔
Conductivity in Water	E100	260207	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256833	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	258174	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	256834	2	20	10.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256783	1	18	5.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	254620	1	17	5.8	5.0	✔
Fluoride in Water by IC	E235.F	254674	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	254672	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	254673	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	254669	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	257005	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	256653	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256785	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	255589	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	256996	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	254904	2	36	5.5	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	256377	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	254670	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	254671	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	256833	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	258174	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	256834	2	20	10.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	256783	1	18	5.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	254620	1	17	5.8	5.0	✔



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	254674	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	254672	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	254673	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	254669	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	256653	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	256785	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	255589	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102906**

**Page** : 1 of 13

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q3\_MW10-MW\_AG\_07282021  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-Jul-2021 08:50  
**Date Analysis Commenced** : 29-Jul-2021  
**Issue Date** : 10-Aug-2021 12:50

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Elke Tabora		Inorganics, Calgary, Alberta
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 13  
Work Order : CG2102906  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 254787)</b>											
CG2102901-001	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	12.3	<10.0	2.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 254904)</b>											
CG2102901-004	Anonymous	turbidity	----	E121	0.10	NTU	0.20	0.19	0.01	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 255365)</b>											
CG2102901-002	Anonymous	turbidity	----	E121	0.10	NTU	0.16	0.15	0.005	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 257005)</b>											
CG2102904-005	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1410	1440	2.38%	20%	----
<b>Physical Tests (QC Lot: 259268)</b>											
CG2102905-004	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	238	246	3.35%	15%	----
<b>Physical Tests (QC Lot: 260205)</b>											
CG2102905-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	316	318	0.662%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	316	318	0.662%	20%	----
<b>Physical Tests (QC Lot: 260206)</b>											
CG2102905-002	Anonymous	pH	----	E108	0.10	pH units	7.97	7.99	0.251%	4%	----
<b>Physical Tests (QC Lot: 260207)</b>											
CG2102905-002	Anonymous	conductivity	----	E100	2.0	µS/cm	2780	2800	0.717%	10%	----
<b>Anions and Nutrients (QC Lot: 254620)</b>											
CG2102904-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 254669)</b>											
CG2102905-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	756	765	1.24%	20%	----
<b>Anions and Nutrients (QC Lot: 254670)</b>											
CG2102905-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 254671)</b>											
CG2102905-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	6.09	6.21	1.93%	20%	----
<b>Anions and Nutrients (QC Lot: 254672)</b>											
CG2102905-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	17.0	17.8	4.65%	20%	----
<b>Anions and Nutrients (QC Lot: 254673)</b>											
CG2102905-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0420	0.0447	0.0027	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 254674)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 254674) - continued</b>											
CG2102905-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.332	0.325	0.007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 255589)</b>											
CG2102904-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0174	0.0190	0.0016	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 256377)</b>											
CG2102906-001	CM_MW_AG1A_WG_2021-07-12_N	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0319	0.0283	0.0036	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 256653)</b>											
CG2102905-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 256783)</b>											
CG2102904-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.27	1.46	0.19	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 256785)</b>											
CG2102904-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	5.61	6.49	14.6%	20%	----
<b>Dissolved Metals (QC Lot: 256833)</b>											
CG2102905-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 256834)</b>											
CG2102905-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0019	0.0019	0.00004	Diff <2x LOR	----
CG2102905-001	Anonymous	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00016	0.00016	0.000005	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00048	0.00046	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.281	0.275	2.29%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.055	0.055	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	190	186	2.29%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.88 µg/L	0.00087	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00022	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.423	0.415	1.72%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0561	0.0556	0.907%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	114	113	1.11%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.44	1.44	0.0752%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00433	0.00428	1.17%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00202	0.00201	0.000005	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.52	1.50	0.927%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	132 µg/L	0.136	2.73%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.01	3.90	2.73%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 256834) - continued</b>											
CG2102905-001	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	13.8	13.7	0.918%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.662	0.665	0.423%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	252	248	1.65%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000042	0.000039	0.000003	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00743	0.00732	1.58%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0028	0.0010	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 258174)</b>											
CG2102846-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 254787)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 254904)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 255365)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 256996)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 257005)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 260205)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 260207)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Anions and Nutrients (QCLot: 254620)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 254669)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 254670)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 254671)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 254672)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 254673)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 254674)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 255589)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 256377)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 256377) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 256653)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Organic / Inorganic Carbon (QCLot: 256783)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 256785)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Dissolved Metals (QCLot: 256833)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 256834)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	MBRR
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 256834) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 258174)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

**Qualifiers**

Qualifier	Description
MBRR	Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 254787)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 254904)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.6	85.0	115	---
<b>Physical Tests (QCLot: 255365)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	95.5	85.0	115	---
<b>Physical Tests (QCLot: 256996)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	110	85.0	115	---
<b>Physical Tests (QCLot: 257005)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.4	85.0	115	---
<b>Physical Tests (QCLot: 259268)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	103	95.4	104	---
<b>Physical Tests (QCLot: 260205)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 260206)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 260207)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 254620)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	99.0	80.0	120	---
<b>Anions and Nutrients (QCLot: 254669)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 254670)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 254671)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 254672)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 254673)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 254674)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 255589)</b>									





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		
						Low	High		
<b>Anions and Nutrients (QCLot: 255589) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	97.5	80.0	120	----
<b>Anions and Nutrients (QCLot: 256377)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	95.8	85.0	115	----
<b>Anions and Nutrients (QCLot: 256653)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	117	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 256783)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 256785)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 256833)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
<b>Dissolved Metals (QCLot: 256834)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.5	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 256834) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.4	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 254620)</b>										
CG2102904-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0422 mg/L	0.05 mg/L	84.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 254669)</b>										
CG2102905-007	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	111 mg/L	100 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 254670)</b>										
CG2102905-007	Anonymous	bromide	24959-67-9	E235.Br-L	0.616 mg/L	0.5 mg/L	123	75.0	125	----
<b>Anions and Nutrients (QCLot: 254671)</b>										
CG2102905-007	Anonymous	chloride	16887-00-6	E235.Cl-L	109 mg/L	100 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 254672)</b>										
CG2102905-007	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.78 mg/L	2.5 mg/L	111	75.0	125	----
<b>Anions and Nutrients (QCLot: 254673)</b>										
CG2102905-007	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.580 mg/L	0.5 mg/L	116	75.0	125	----
<b>Anions and Nutrients (QCLot: 254674)</b>										
CG2102905-007	Anonymous	fluoride	16984-48-8	E235.F	1.22 mg/L	1 mg/L	122	75.0	125	----
<b>Anions and Nutrients (QCLot: 255589)</b>										
CG2102904-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0541 mg/L	0.0676 mg/L	80.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 256377)</b>										
CG2102906-003	CM_TRP_WS_2021-07-12_N	ammonia, total (as N)	7664-41-7	E298	0.0972 mg/L	0.1 mg/L	97.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 256653)</b>										
CG2102905-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.34 mg/L	2.5 mg/L	93.8	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 256783)</b>										
CG2102904-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.0 mg/L	23.9 mg/L	101	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 256785)</b>										
CG2102904-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.8 mg/L	23.9 mg/L	95.3	70.0	130	----
<b>Dissolved Metals (QCLot: 256833)</b>										
CG2102905-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0808 mg/L	0.08 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 256834)</b>										
CG2102905-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.405 mg/L	0.4 mg/L	101	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 256834) - continued</b>										
CG2102905-002	Anonymous	zinc, dissolved	7440-66-6	E421	0.764 mg/L	0.8 mg/L	95.5	70.0	130	----
CG2102905-002	Anonymous	antimony, dissolved	7440-36-0	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0756 mg/L	0.08 mg/L	94.5	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0176 mg/L	0.02 mg/L	88.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.186 mg/L	0.2 mg/L	93.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00799 mg/L	0.008 mg/L	99.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.84 mg/L	4 mg/L	95.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.177 mg/L	0.2 mg/L	88.4	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0754 mg/L	0.08 mg/L	94.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	8.08 mg/L	8 mg/L	101	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	18.8 mg/L	20 mg/L	94.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00787 mg/L	0.008 mg/L	98.3	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00741 mg/L	0.008 mg/L	92.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0410 mg/L	0.04 mg/L	103	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0819 mg/L	0.08 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.206 mg/L	0.2 mg/L	103	70.0	130	----
<b>Dissolved Metals (QCLot: 258174)</b>										
CG2102904-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----

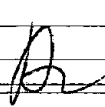
COC ID: <b>COC_WG_Q3_MW10-MW_AG_07282021</b>		TURNAROUND TIME: <b>REGULAR</b>		RUSH: <b>NO</b>					
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>			
Facility Name / Job# Coal Mountain Operations		Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD	
Project Manager Victoria Sharpe		Lab Contact Milica Papic		Email 1: Victoria.Sharpe@teck.com		X	X	X	
Email Victoria.Sharpe@teck.com		Email Milica.Papic@ALSGlobal.com		Email 2: teckcoal@equisonline.com				X	
Address PO Box 3000		Address 2559 29th St. NE		Email 3: jay.jones@teck.com		X	X	X	
City Sparwood		Province BC	City Calgary	Province AB	Email 4: don.sacino@teck.com		X	X	X
Postal Code V0B 2G0		Country Canada	Postal Code T1Y 7B5	Country Canada	Email 5: shelby.holden@teck.com		X	X	X
Phone Number 1-250-425-7522		Phone Number 403 407 1800		PO number <b>00741264</b>					

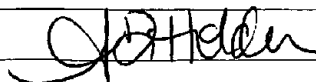

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None						
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA						
CM_MW_AG1A_WG_2021-07-12_N	CM_MW_AG1A	WG	No	2021/7/28	12:45	G	5	1	1	1	1	1						
CM_MW_AG1B_WG_2021-07-12_N	CM_MW_AG1B	WG	No	2021/7/28	11:45	G	5	1	1	1	1	1						
CM_TRP_WS_2021-07-12_N	CM_TRP	WG	No	2021/7/28	--	G	5	1	1	1	1	1						
CM_NNP2_WS_2021-07-12_N	CM_NNP2	WG	No	2021/7/28	--	G	5	1	1	1	1	1						
CM_MW10_WG_2021-07-12_N	CM_MW10	WG	No	2021/7/28	14:30	G	5	1	1	1	1	1						

Environmental Division  
Calgary  
Work Order Reference  
**CG2102906**



Telephone : +1 403 407 1800

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>		<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.							<b>7/29/20</b>

<b>SERVICE REQUEST (rush - subject to availability)</b>			
Regular (default) <input checked="" type="checkbox"/>	<b>Sampler's Name</b>	<b>SH/DS</b>	<b>Mobile #</b>
Priority (2-3 business days) - 50% surcharge			250-425-7529
Emergency (1 Business Day) - 100% surcharge	<b>Sampler's Signature</b>	<b>Date/Time</b>	<b>July 28, 2021</b>
For Emergency <1 Day, ASAP or Weekend - Contact ALS			



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2102945**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q3\_MW3\_07292021  
**Sampler** : DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 30-Jul-2021 08:50  
**Date Analysis Commenced** : 30-Jul-2021  
**Issue Date** : 11-Aug-2021 11:44

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW3-DP_ WG_2021-07-1 2_N	CM_MW3-SH_ WG_2021-07-1 2_N	----	----	----
Client sampling date / time					29-Jul-2021 12:20	29-Jul-2021 12:20	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102945-001 Result	CG2102945-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	2.5	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	208	176	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	208	176	----	----	----	
conductivity	----	E100	2.0	µS/cm	2590	320	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	47.6	178	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	507	426	----	----	----	
pH	----	E108	0.10	pH units	8.10	8.02	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	1440	197	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	4.8	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	8.52	0.49	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	254	214	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.585	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	2.50	<0.050 <sup>DLDS</sup>	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	732	0.70	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.336	0.080	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 <sup>TKN</sup>	<0.050	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.34	0.0253	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0010 <sup>DLDS</sup>	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0038	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0186	0.0046	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	10.9	16.8	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.59	1.19	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.80	0.96	----	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					CM_MW3-DP_WG_2021-07-12_N	CM_MW3-SH_WG_2021-07-12_N	---	---	---
Client sampling date / time					29-Jul-2021 12:20	29-Jul-2021 12:20	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2102945-001	CG2102945-002	-----	-----	-----
					Result	Result	---	---	---
<b>Ion Balance</b>									
anion sum	---	EC101	0.10	meq/L	25.1	3.89	---	---	---
cation sum	---	EC101	0.10	meq/L	24.8	3.74	---	---	---
ion balance (cations/anions ratio)	---	EC101	0.010	%	98.8	96.1	---	---	---
ion balance (cation-anion difference)	---	EC101	0.010	%	0.601	1.96	---	---	---
<b>Dissolved Metals</b>									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0069	<0.0010	---	---	---
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	---	---	---
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00043	0.00010	---	---	---
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.809	0.0789	---	---	---
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	---	---	---
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	---	---	---
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.491	0.021	---	---	---
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0100 <sup>DLA</sup>	0.0081	---	---	---
calcium, dissolved	7440-70-2	E421	0.050	mg/L	11.5	51.4	---	---	---
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	0.00022	---	---	---
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.10	---	---	---
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	0.00090	---	---	---
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.045	<0.010	---	---	---
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	0.000197	---	---	---
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	1.34	0.0071	---	---	---
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.60	12.1	---	---	---
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0232	0.00112	---	---	---
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000803	0.000707	---	---	---
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	---	---	---
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.16	0.672	---	---	---
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.100 <sup>DLA</sup>	0.306	---	---	---
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.25	2.49	---	---	---
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000050 <sup>DLA</sup>	<0.000010	---	---	---
sodium, dissolved	17341-25-2	E421	0.050	mg/L	545	3.66	---	---	---
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.08	0.269	---	---	---





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW3-DP_ WG_2021-07-1 2_N	CM_MW3-SH_ WG_2021-07-1 2_N	----	----	----
Client sampling date / time					29-Jul-2021 12:20	29-Jul-2021 12:20	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2102945-001	CG2102945-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<1.00 <sup>DLA</sup>	5.67	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000184	0.000183	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0020 <sup>DLA</sup>	0.0029	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2102945</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Milica Pasic
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 30-Jul-2021 08:50
PO	: VPO00741264	Issue Date	: 11-Aug-2021 11:45
C-O-C number	: COC_WG_Q3_MW3_07292021		
Sampler	: DS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-DP_WG_2021-07-12_N	E298	29-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-SH_WG_2021-07-12_N	E298	29-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-07-12_N	E235.Br-L	29-Jul-2021	----	----	----		31-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW3-SH_WG_2021-07-12_N	E235.Br-L	29-Jul-2021	----	----	----		31-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-07-12_N	E235.Cl-L	29-Jul-2021	----	----	----		31-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW3-SH_WG_2021-07-12_N	E235.Cl-L	29-Jul-2021	----	----	----		31-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-07-12_N	E378-U	29-Jul-2021	----	----	----		30-Jul-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW3-SH_WG_2021-07-12_N	E378-U	29-Jul-2021	----	----	----		30-Jul-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW3-DP_WG_2021-07-12_N	E235.F	29-Jul-2021	----	----	----		31-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW3-SH_WG_2021-07-12_N	E235.F	29-Jul-2021	----	----	----		31-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW3-DP_WG_2021-07-12_N	E235.NO3-L	29-Jul-2021	----	----	----		31-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW3-SH_WG_2021-07-12_N	E235.NO3-L	29-Jul-2021	----	----	----		31-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW3-DP_WG_2021-07-12_N	E235.NO2-L	29-Jul-2021	----	----	----		31-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW3-SH_WG_2021-07-12_N	E235.NO2-L	29-Jul-2021	----	----	----		31-Jul-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW3-DP_WG_2021-07-12_N	E235.SO4	29-Jul-2021	----	----	----		31-Jul-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW3-SH_WG_2021-07-12_N	E235.SO4	29-Jul-2021	----	----	----		31-Jul-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-DP_WG_2021-07-12_N	E318	29-Jul-2021	05-Aug-2021	----	----		05-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-SH_WG_2021-07-12_N	E318	29-Jul-2021	05-Aug-2021	----	----		05-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-DP_WG_2021-07-12_N	E372-U	29-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-SH_WG_2021-07-12_N	E372-U	29-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW3-DP_WG_2021-07-12_N	E421.Cr-L	29-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW3-SH_WG_2021-07-12_N	E421.Cr-L	29-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW3-DP_WG_2021-07-12_N	E509	29-Jul-2021	07-Aug-2021	----	----		07-Aug-2021	28 days	9 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW3-SH_WG_2021-07-12_N	E509	29-Jul-2021	07-Aug-2021	----	----		07-Aug-2021	28 days	9 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW3-DP_WG_2021-07-12_N	E421	29-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	180 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW3-SH_WG_2021-07-12_N	E421	29-Jul-2021	06-Aug-2021	----	----		06-Aug-2021	180 days	8 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW3-DP_WG_2021-07-12_N	E358-L	29-Jul-2021	03-Aug-2021	----	----		04-Aug-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW3-SH_WG_2021-07-12_N	E358-L	29-Jul-2021	03-Aug-2021	----	----		04-Aug-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-DP_WG_2021-07-12_N	E355-L	29-Jul-2021	03-Aug-2021	----	----		04-Aug-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW3-SH_WG_2021-07-12_N	E355-L	29-Jul-2021	03-Aug-2021	----	----		04-Aug-2021	28 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-07-12_N	E283	29-Jul-2021	----	----	----		06-Aug-2021	14 days	8 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW3-SH_WG_2021-07-12_N	E283	29-Jul-2021	----	----	----		06-Aug-2021	14 days	8 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW3-DP_WG_2021-07-12_N	E290	29-Jul-2021	----	----	----		07-Aug-2021	14 days	9 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW3-SH_WG_2021-07-12_N	E290	29-Jul-2021	----	----	----		07-Aug-2021	14 days	9 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
Rec	Actual	Rec		Actual						
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW3-DP_WG_2021-07-12_N	E100	29-Jul-2021	----	----	----		07-Aug-2021	28 days	9 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW3-SH_WG_2021-07-12_N	E100	29-Jul-2021	----	----	----		07-Aug-2021	28 days	9 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW3-DP_WG_2021-07-12_N	E125	29-Jul-2021	----	----	----		09-Aug-2021	0.34 hrs	264 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW3-SH_WG_2021-07-12_N	E125	29-Jul-2021	----	----	----		09-Aug-2021	0.34 hrs	266 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW3-DP_WG_2021-07-12_N	E108	29-Jul-2021	----	----	----		07-Aug-2021	0.25 hrs	216 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW3-SH_WG_2021-07-12_N	E108	29-Jul-2021	----	----	----		07-Aug-2021	0.25 hrs	216 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW3-DP_WG_2021-07-12_N	E162	29-Jul-2021	----	----	----		04-Aug-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW3-SH_WG_2021-07-12_N	E162	29-Jul-2021	----	----	----		04-Aug-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] CM_MW3-DP_WG_2021-07-12_N	E160-L	29-Jul-2021	----	----	----		04-Aug-2021	7 days	6 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> CM_MW3-SH_WG_2021-07-12_N	E160-L	29-Jul-2021	----	----	----		04-Aug-2021	7 days	6 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW3-DP_WG_2021-07-12_N	E121	29-Jul-2021	----	----	----		01-Aug-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW3-SH_WG_2021-07-12_N	E121	29-Jul-2021	----	----	----		01-Aug-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	260613	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	261175	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	258088	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	256291	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	256292	1	9	11.1	5.0	✓
Conductivity in Water	E100	261173	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	260515	1	8	12.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	260907	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	260516	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	257246	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	255860	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	256295	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	256293	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	256294	1	9	11.1	5.0	✓
ORP by Electrode	E125	261201	2	21	9.5	5.0	✓
pH by Meter	E108	261174	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	256290	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	257842	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	258083	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	257247	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258023	1	14	7.1	5.0	✓
Turbidity by Nephelometry	E121	256592	1	6	16.6	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	260613	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	261175	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	258088	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	256291	1	9	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	256292	1	9	11.1	5.0	✓
Conductivity in Water	E100	261173	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	260515	1	8	12.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	260907	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	260516	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	257246	1	13	7.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	255860	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	256295	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	256293	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	256294	1	9	11.1	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	261201	2	21	9.5	5.0	✔
pH by Meter	E108	261174	1	19	5.2	5.0	✔
Sulfate in Water by IC	E235.SO4	256290	1	9	11.1	5.0	✔
TDS by Gravimetry	E162	257842	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	258083	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	257247	1	13	7.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258023	1	14	7.1	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	257836	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	256592	1	6	16.6	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	260613	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	261175	1	14	7.1	5.0	✔
Ammonia by Fluorescence	E298	258088	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	256291	1	9	11.1	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	256292	1	9	11.1	5.0	✔
Conductivity in Water	E100	261173	1	14	7.1	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	260515	1	8	12.5	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	260907	1	19	5.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	260516	1	18	5.5	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	257246	1	13	7.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	255860	1	19	5.2	5.0	✔
Fluoride in Water by IC	E235.F	256295	1	9	11.1	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	256293	1	9	11.1	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	256294	1	9	11.1	5.0	✔
Sulfate in Water by IC	E235.SO4	256290	1	9	11.1	5.0	✔
TDS by Gravimetry	E162	257842	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	258083	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	257247	1	13	7.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258023	1	14	7.1	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	257836	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	256592	1	6	16.6	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	258088	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	256291	0	9	0.0	5.0	✖
Chloride in Water by IC (Low Level)	E235.Cl-L	256292	0	9	0.0	5.0	✖
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	260515	1	8	12.5	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	260907	1	19	5.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	260516	1	18	5.5	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	257246	1	13	7.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	255860	1	19	5.2	5.0	✔



Matrix: **Water** Evaluation: ✘ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	256295	0	9	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	256293	0	9	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	256294	0	9	0.0	5.0	✘
Sulfate in Water by IC	E235.SO4	256290	0	9	0.0	5.0	✘
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	258083	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	257247	1	13	7.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	258023	1	14	7.1	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2102945**

**Page** : 1 of 13

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q3\_MW3\_07292021  
**Sampler** : DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 30-Jul-2021 08:50  
**Date Analysis Commenced** : 30-Jul-2021  
**Issue Date** : 11-Aug-2021 11:44

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 13  
Work Order : CG2102945  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 256592)</b>											
CG2102943-006	Anonymous	turbidity	----	E121	0.10	NTU	0.39	0.40	0.02	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 257842)</b>											
CG2102943-002	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1000	1020	1.34%	20%	----
<b>Physical Tests (QC Lot: 260613)</b>											
CG2102943-004	Anonymous	acidity (as CaCO <sub>3</sub> )	----	E283	2.0	mg/L	8.7	8.4	0.2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 261173)</b>											
CG2102941-017	Anonymous	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 261174)</b>											
CG2102941-017	Anonymous	pH	----	E108	0.10	pH units	5.18	5.29	2.10%	4%	----
<b>Physical Tests (QC Lot: 261175)</b>											
CG2102941-017	Anonymous	alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 261201)</b>											
CG2102941-006	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	300	315	4.62%	15%	----
<b>Physical Tests (QC Lot: 261202)</b>											
CG2102945-002	CM_MW3-SH_WG_2021-07-12_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	426	415	2.59%	15%	----
<b>Anions and Nutrients (QC Lot: 255860)</b>											
CG2102941-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0179	0.0174	2.33%	20%	----
<b>Anions and Nutrients (QC Lot: 256290)</b>											
CG2102943-001	Anonymous	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	1.50	mg/L	901	895	0.657%	20%	----
<b>Anions and Nutrients (QC Lot: 256291)</b>											
CG2102943-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 256292)</b>											
CG2102943-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	4.68	4.61	0.06	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 256293)</b>											
CG2102943-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	128	127	0.442%	20%	----
<b>Anions and Nutrients (QC Lot: 256294)</b>											
CG2102943-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0068	0.0050	0.0018	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 256295)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 256295) - continued</b>											
CG2102943-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.162	0.159	0.003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 258023)</b>											
CG2102943-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 258083)</b>											
CG2102941-011	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 258088)</b>											
CG2102931-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.854	0.855	0.211%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 257246)</b>											
CG2102931-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 257247)</b>											
CG2102931-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 260515)</b>											
CG2102945-001	CM_MW3-DP_WG_2021-07-12_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 260516)</b>											
CG2102945-001	CM_MW3-DP_WG_2021-07-12_N	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0069	0.0066	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00043	0.00042	0.000009	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.809	0.819	1.30%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.491	0.508	3.41%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	<0.0100 µg/L	<0.0000100	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	11.5	11.7	1.66%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	0.045	0.045	0.00002	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	1.34	1.36	1.91%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	4.60	4.65	0.930%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.0232	0.0236	2.01%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.000803	0.000848	0.000045	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	2.16	2.21	2.18%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 260516) - continued</b>											
CG2102945-001	CM_MW3-DP_WG_2021-07-12_N	silicon, dissolved	7440-21-3	E421	0.100	mg/L	3.25	3.36	3.20%	20%	----
		silver, dissolved	7440-22-4	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	545	552	1.23%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	1.08	1.06	2.19%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.000184	0.000189	0.000005	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 260907)</b>											
CG2102945-001	CM_MW3-DP_WG_2021-07-12_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 256592)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 257836)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 257842)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 260613)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 261173)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 261175)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 255860)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 256290)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 256291)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 256292)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 256293)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 256294)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 256295)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 258023)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 258083)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 258088)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 258088) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 257246)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 257247)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 260515)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 260516)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 260516) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 260907)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 256592)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	96.5	85.0	115	----
<b>Physical Tests (QCLot: 257836)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	96.5	85.0	115	----
<b>Physical Tests (QCLot: 257842)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	100	85.0	115	----
<b>Physical Tests (QCLot: 260613)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	99.4	85.0	115	----
<b>Physical Tests (QCLot: 261173)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	99.5	90.0	110	----
<b>Physical Tests (QCLot: 261174)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 261175)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	104	85.0	115	----
<b>Physical Tests (QCLot: 261201)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	----
<b>Physical Tests (QCLot: 261202)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	101	95.4	104	----
<b>Anions and Nutrients (QCLot: 255860)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 256290)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 256291)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 256292)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.6	90.0	110	----
<b>Anions and Nutrients (QCLot: 256293)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 256294)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.8	90.0	110	----
<b>Anions and Nutrients (QCLot: 256295)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.5	90.0	110	----
<b>Anions and Nutrients (QCLot: 258023)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 258023) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 258083)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	95.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 258088)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 257246)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 257247)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 260515)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 260516)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.0	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.1	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.3	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	92.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.4	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	109	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	105	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	112	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.4	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.4	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.8	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 260516) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.6	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	94.8	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	108	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.4	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.2	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	107	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.7	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

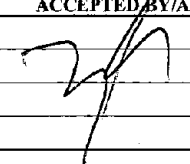
Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 255860)</b>										
CG2102941-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0471 mg/L	0.05 mg/L	94.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 258023)</b>										
CG2102943-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0773 mg/L	0.0676 mg/L	114	70.0	130	----
<b>Anions and Nutrients (QCLot: 258083)</b>										
CG2102941-012	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.79 mg/L	2.5 mg/L	71.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 258088)</b>										
CG2102931-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 257246)</b>										
CG2102931-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.6 mg/L	23.9 mg/L	98.7	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 257247)</b>										
CG2102931-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.0 mg/L	23.9 mg/L	104	70.0	130	----
<b>Dissolved Metals (QCLot: 260515)</b>										
CG2102945-002	CM_MW3-SH_WG_2021-07-12_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 260516)</b>										
CG2102945-002	CM_MW3-SH_WG_2021-07-12_N	aluminum, dissolved	7429-90-5	E421	0.194 mg/L	0.2 mg/L	97.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00908 mg/L	0.01 mg/L	90.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	99.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.95 mg/L	2 mg/L	97.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.109 mg/L	0.1 mg/L	109	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 260516) - continued</b>										
CG2102945-002	CM_MW3-SH_WG_2021-07-12_N	manganese, dissolved	7439-96-5	E421	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0370 mg/L	0.04 mg/L	92.5	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.47 mg/L	4 mg/L	112	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0460 mg/L	0.04 mg/L	115	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.42 mg/L	10 mg/L	94.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00390 mg/L	0.004 mg/L	97.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	20.2 mg/L	20 mg/L	101	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00397 mg/L	0.004 mg/L	99.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00385 mg/L	0.004 mg/L	96.3	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
zinc, dissolved	7440-66-6	E421	0.420 mg/L	0.4 mg/L	105	70.0	130	----		
<b>Dissolved Metals (QCLot: 260907)</b>										
CG2102945-002	CM_MW3-SH_WG_2021-07-12_N	mercury, dissolved	7439-97-6	E509	0.0000946 mg/L	0.0001 mg/L	94.6	70.0	130	----

COC ID:		COC_WG_Q3_MW3_07292021		TURNAROUND TIME:		REGULAR		RUSH:		NO									
PROJECT/CLIENT INFO						LABORATORY				OTHER INFO									
Facility Name / Job#		Coal Mountain Operations				Lab Name		ALS Calgary		Report Format / Distribution		Excel	PDF	EDD					
Project Manager		Victoria Sharpe				Lab Contact		Milica Papis		Email 1:		Victoria.Sharpe@teck.com	X	X	X				
Email		Victoria.Sharpe@teck.com				Email		Milica.Papis@ALSGlobal.com		Email 2:		teckcoal@equisonline.com			X				
Address		PO Box 3000				Address		2559 29th St. NE		Email 3:		jay.jones@teck.com	X	X	X				
City		Sparwood		Province	BC	City		Calgary	Province	AB	Email 4:		don.sacino@teck.com	X	X	X			
Postal Code		V0B 2G0		Country	Canada	Postal Code		T1Y 7B5	Country	Canada	Email 5:		shelby.holden@teck.com	X	X	X			
Phone Number		1-250-425-7522				Phone Number		403 407 1800		PO number		00741264							
SAMPLE DETAILS						ANALYSIS REQUESTED						Filtered - F: Field, L: Lab, FL: Field & Lab, N: None							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PHIL	F	N	F	F	N						
								PRESERV.	H2SO4	H2SO4	HCL	HNO3	NONE						
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA						
CM_MW3-DP_WG_2021-07-12_N	CM_MW3-DP	WG		2021/7/29	12:20	G	5		1	1	1	1	1						
CM_MW3-SH_WG_2021-07-12_N	CM_MW3-SH	WG		2021/7/29	12:20	G	5		1	1	1	1	1						
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS			RELINQUISHED BY/AFFILIATION			DATE/TIME			ACCEPTED BY/AFFILIATION			DATE/TIME							
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.												30/07/2021							
SERVICE REQUEST (rush - subject to availability)																			
Priority (2-3 business days) - 50% surcharge		Regular (default) X	Sampler's Name			DS			Mobile #			250-425-7522							
Priority (2-3 business days) - 100% surcharge			Sampler's Signature						Date/Time			July 29, 2021							

Handwritten initials: X40

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2102945**



Telephone: +1 403 407 1800



CERTIFICATE OF ANALYSIS

Work Order : **CG2103064**  
Client : **Teck Coal Limited**  
Contact : Victoria Sharpe  
Address : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
Sparwood BC Canada V0B 2G0  
Telephone : ----  
Project : COAL MOUNTAIN OPERATIONS  
PO : VPO00741264  
C-O-C number : COC\_WG\_Q3\_MW5\_08042021  
Sampler : DS  
Site : ----  
Quote number : Teck Coal Master Quote  
No. of samples received : 2  
No. of samples analysed : 2

Page : 1 of 5  
Laboratory : Calgary - Environmental  
Account Manager : Milica Papic  
Address : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
Telephone : +1 403 407 1800  
Date Samples Received : 05-Aug-2021 09:25  
Date Analysis Commenced : 05-Aug-2021  
Issue Date : 17-Aug-2021 13:16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW5-DP_ WG_2021-07-1 2_N	CM_MW5-SH_ WG_2021-07-1 2_N	----	----	----
Client sampling date / time					04-Aug-2021 13:00	04-Aug-2021 13:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103064-001 Result	CG2103064-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	2.3	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	388	232	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	3.2	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	388	235	----	----	----	
conductivity	----	E100	2.0	µS/cm	650	925	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	314	541	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	466	439	----	----	----	
pH	----	E108	0.10	pH units	8.10	8.31	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	434	650	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.4	<1.0	----	----	----	
turbidity	----	E121	0.10	NTU	14.6	0.19	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	473	282	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	1.9	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.668	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.250 <sup>DLDS</sup>	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	11.9	3.57	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.297	0.196	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.721	0.215	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	1.35	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0050 <sup>DLDS</sup>	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0021	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0033	0.0034	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1.07	334	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.60	0.93	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.52	0.84	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW5-DP_ WG_2021-07-1 2_N	CM_MW5-SH_ WG_2021-07-1 2_N	---	---	---
Client sampling date / time					04-Aug-2021 13:00	04-Aug-2021 13:00	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2103064-001 Result	CG2103064-002 Result	-----	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	8.13	11.8	----	----	----	
cation sum	----	EC101	0.10	meq/L	9.52	11.4	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	117	96.6	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	7.88	1.72	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0022	<0.0010	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00027	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00019	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	1.35	0.0618	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.116	0.040	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0296	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	79.3	123	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00028	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	1.21	<0.010	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0683	0.0231	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	28.2	56.8	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0394	<0.00010	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000764	0.00183	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00051	0.00160	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.63	2.07	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	10.4	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.37	2.20	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	70.2	13.7	----	----	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW5-DP_ WG_2021-07-1 2_N	CM_MW5-SH_ WG_2021-07-1 2_N	----	----	----
Client sampling date / time					04-Aug-2021 13:00	04-Aug-2021 13:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2103064-001 Result	CG2103064-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.94	0.389	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	114	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000039	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000064	0.00293	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0084	0.0020	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2103064</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Milica Pasic
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 05-Aug-2021 09:25
PO	: VPO00741264	Issue Date	: 17-Aug-2021 13:16
C-O-C number	: COC_WG_Q3_MW5_08042021		
Sampler	: DS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-DP_WG_2021-07-12_N	E298	04-Aug-2021	08-Aug-2021	----	----		08-Aug-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-SH_WG_2021-07-12_N	E298	04-Aug-2021	08-Aug-2021	----	----		08-Aug-2021	28 days	4 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW5-DP_WG_2021-07-12_N	E235.Br-L	04-Aug-2021	----	----	----		05-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW5-SH_WG_2021-07-12_N	E235.Br-L	04-Aug-2021	----	----	----		05-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW5-DP_WG_2021-07-12_N	E235.Cl-L	04-Aug-2021	----	----	----		05-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW5-SH_WG_2021-07-12_N	E235.Cl-L	04-Aug-2021	----	----	----		05-Aug-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> CM_MW5-DP_WG_2021-07-12_N	E378-U	04-Aug-2021	----	----	----		05-Aug-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE CM_MW5-SH_WG_2021-07-12_N	E378-U	04-Aug-2021	----	----	----		05-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW5-DP_WG_2021-07-12_N	E235.F	04-Aug-2021	----	----	----		05-Aug-2021	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW5-SH_WG_2021-07-12_N	E235.F	04-Aug-2021	----	----	----		05-Aug-2021	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW5-DP_WG_2021-07-12_N	E235.NO3-L	04-Aug-2021	----	----	----		05-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW5-SH_WG_2021-07-12_N	E235.NO3-L	04-Aug-2021	----	----	----		05-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW5-DP_WG_2021-07-12_N	E235.NO2-L	04-Aug-2021	----	----	----		05-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW5-SH_WG_2021-07-12_N	E235.NO2-L	04-Aug-2021	----	----	----		05-Aug-2021	3 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW5-DP_WG_2021-07-12_N	E235.SO4	04-Aug-2021	----	----	----		05-Aug-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW5-SH_WG_2021-07-12_N	E235.SO4	04-Aug-2021	----	----	----		05-Aug-2021	28 days	1 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-DP_WG_2021-07-12_N	E318	04-Aug-2021	10-Aug-2021	----	----		10-Aug-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-SH_WG_2021-07-12_N	E318	04-Aug-2021	10-Aug-2021	----	----		10-Aug-2021	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-DP_WG_2021-07-12_N	E372-U	04-Aug-2021	11-Aug-2021	----	----		11-Aug-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-SH_WG_2021-07-12_N	E372-U	04-Aug-2021	11-Aug-2021	----	----		11-Aug-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW5-DP_WG_2021-07-12_N	E421.Cr-L	04-Aug-2021	10-Aug-2021	----	----		11-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW5-SH_WG_2021-07-12_N	E421.Cr-L	04-Aug-2021	10-Aug-2021	----	----		11-Aug-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW5-DP_WG_2021-07-12_N	E509	04-Aug-2021	10-Aug-2021	----	----		10-Aug-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW5-SH_WG_2021-07-12_N	E509	04-Aug-2021	10-Aug-2021	----	----		10-Aug-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW5-DP_WG_2021-07-12_N	E421	04-Aug-2021	10-Aug-2021	----	----		11-Aug-2021	180 days	7 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> CM_MW5-SH_WG_2021-07-12_N	E421	04-Aug-2021	10-Aug-2021	----	----		11-Aug-2021	180 days	7 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW5-DP_WG_2021-07-12_N	E358-L	04-Aug-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	2 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW5-SH_WG_2021-07-12_N	E358-L	04-Aug-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	2 days	✓
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW5-DP_WG_2021-07-12_N	E355-L	04-Aug-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	2 days	✓
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW5-SH_WG_2021-07-12_N	E355-L	04-Aug-2021	06-Aug-2021	----	----		06-Aug-2021	28 days	2 days	✓
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> CM_MW5-DP_WG_2021-07-12_N	E283	04-Aug-2021	----	----	----		10-Aug-2021	14 days	6 days	✓
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> CM_MW5-SH_WG_2021-07-12_N	E283	04-Aug-2021	----	----	----		10-Aug-2021	14 days	6 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> CM_MW5-DP_WG_2021-07-12_N	E290	04-Aug-2021	----	----	----		10-Aug-2021	14 days	6 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
<b>HDPE</b> CM_MW5-SH_WG_2021-07-12_N	E290	04-Aug-2021	----	----	----		10-Aug-2021	14 days	6 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW5-DP_WG_2021-07-12_N	E100	04-Aug-2021	----	----	----		10-Aug-2021	28 days	6 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW5-SH_WG_2021-07-12_N	E100	04-Aug-2021	----	----	----		10-Aug-2021	28 days	6 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW5-DP_WG_2021-07-12_N	E125	04-Aug-2021	----	----	----		12-Aug-2021	0.34 hrs	189 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW5-SH_WG_2021-07-12_N	E125	04-Aug-2021	----	----	----		12-Aug-2021	0.34 hrs	189 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW5-DP_WG_2021-07-12_N	E108	04-Aug-2021	----	----	----		10-Aug-2021	0.25 hrs	142 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW5-SH_WG_2021-07-12_N	E108	04-Aug-2021	----	----	----		10-Aug-2021	0.25 hrs	142 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW5-DP_WG_2021-07-12_N	E162	04-Aug-2021	----	----	----		10-Aug-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW5-SH_WG_2021-07-12_N	E162	04-Aug-2021	----	----	----		10-Aug-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] CM_MW5-DP_WG_2021-07-12_N	E160-L	04-Aug-2021	----	----	----		10-Aug-2021	7 days	6 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> CM_MW5-SH_WG_2021-07-12_N	E160-L	04-Aug-2021	----	----	----		10-Aug-2021	7 days	6 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW5-DP_WG_2021-07-12_N	E121	04-Aug-2021	----	----	----		07-Aug-2021	3 days	3 days	✔
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW5-SH_WG_2021-07-12_N	E121	04-Aug-2021	----	----	----		07-Aug-2021	3 days	3 days	✔

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).





## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	262925	1	14	7.1	5.0	✓
Alkalinity Species by Titration	E290	262910	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	261500	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	259656	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	259657	1	20	5.0	5.0	✓
Conductivity in Water	E100	262909	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	261502	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	262570	2	37	5.4	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	261503	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	260184	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	259405	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	259654	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	259658	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	259659	1	20	5.0	5.0	✓
ORP by Electrode	E125	264131	1	20	5.0	5.0	✓
pH by Meter	E108	262908	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	259655	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	262582	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	261576	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	260186	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	262689	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	260025	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	262925	1	14	7.1	5.0	✓
Alkalinity Species by Titration	E290	262910	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	261500	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	259656	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	259657	1	20	5.0	5.0	✓
Conductivity in Water	E100	262909	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	261502	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	262570	2	37	5.4	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	261503	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	260184	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	259405	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	259654	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	259658	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	259659	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	264131	1	20	5.0	5.0	✔
pH by Meter	E108	262908	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	259655	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	262582	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	261576	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	260186	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	262689	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	262575	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	260025	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	262925	1	14	7.1	5.0	✔
Alkalinity Species by Titration	E290	262910	1	14	7.1	5.0	✔
Ammonia by Fluorescence	E298	261500	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	259656	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	259657	1	20	5.0	5.0	✔
Conductivity in Water	E100	262909	1	14	7.1	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	261502	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	262570	2	37	5.4	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	261503	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	260184	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	259405	1	14	7.1	5.0	✔
Fluoride in Water by IC	E235.F	259654	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	259658	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	259659	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	259655	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	262582	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	261576	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	260186	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	262689	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	262575	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	260025	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	261500	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	259656	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	259657	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	261502	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	262570	2	37	5.4	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	261503	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	260184	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	259405	1	14	7.1	5.0	✔



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	259654	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	259658	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	259659	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	259655	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	261576	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	260186	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	262689	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2103064**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q3\_MW5\_08042021  
**Sampler** : DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 05-Aug-2021 09:25  
**Date Analysis Commenced** : 05-Aug-2021  
**Issue Date** : 17-Aug-2021 13:16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
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Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2103064  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.





### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 260025)</b>											
CG2103055-030	Anonymous	turbidity	----	E121	0.10	NTU	8.10	7.75	4.39%	15%	----
<b>Physical Tests (QC Lot: 262582)</b>											
CG2103055-030	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	3000	3020	0.532%	20%	----
<b>Physical Tests (QC Lot: 262908)</b>											
CG2103056-001	Anonymous	pH	----	E108	0.10	pH units	8.15	8.18	0.367%	4%	----
<b>Physical Tests (QC Lot: 262909)</b>											
CG2103059-003	Anonymous	conductivity	----	E100	2.0	µS/cm	1370	1360	0.293%	10%	----
<b>Physical Tests (QC Lot: 262910)</b>											
CG2103059-003	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	239	239	0.209%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	239	239	0.209%	20%	----
<b>Physical Tests (QC Lot: 262925)</b>											
CG2103059-004	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	86.4	82.0	4.4	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 264131)</b>											
CG2103063-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	444	446	0.427%	15%	----
<b>Anions and Nutrients (QC Lot: 259405)</b>											
CG2103059-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 259654)</b>											
CG2103060-001	Anonymous	fluoride	16984-48-8	E235.F	0.400	mg/L	<0.400	<0.400	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 259655)</b>											
CG2103060-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	6.00	mg/L	1120	1130	0.456%	20%	----
<b>Anions and Nutrients (QC Lot: 259656)</b>											
CG2103060-001	Anonymous	bromide	24959-67-9	E235.Br-L	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 259657)</b>											
CG2103060-001	Anonymous	chloride	16887-00-6	E235.Cl-L	2.00	mg/L	8.49	8.21	0.28	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 259658)</b>											
CG2103060-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.100	mg/L	285	286	0.368%	20%	----
<b>Anions and Nutrients (QC Lot: 259659)</b>											
CG2103060-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 261500)</b>											



Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 261500) - continued</b>											
CG2103055-030	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.883	0.901	2.03%	20%	----
<b>Anions and Nutrients (QC Lot: 261576)</b>											
CG2103063-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.068	0.074	0.007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 262689)</b>											
CG2103060-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 260184)</b>											
CG2103059-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.59	0.62	0.02	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 260186)</b>											
CG2103059-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.67	0.61	0.06	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 261502)</b>											
CG2103064-001	CM_MW5-DP_WG_2021-07-12_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 261503)</b>											
CG2103064-001	CM_MW5-DP_WG_2021-07-12_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0022	0.0021	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	1.35	1.34	0.422%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.116	0.117	0.609%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	79.3	74.9	5.68%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	1.21	1.22	1.52%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0683	0.0668	2.22%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	28.2	28.7	1.66%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0394	0.0387	1.75%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000764	0.000743	2.76%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00051	0.00053	0.00001	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.63	3.69	1.78%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.37	6.49	1.78%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 261503) - continued</b>											
CG2103064-001	CM_MW5-DP_WG_2021-07-12_N	sodium, dissolved	17341-25-2	E421	0.050	mg/L	70.2	70.8	0.845%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.94	1.99	2.19%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000064	0.000063	0.00000007	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0084	0.0089	0.0005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 262570)</b>											
CG2103048-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 262571)</b>											
CG2103064-002	CM_MW5-SH_WG_2021-07-12_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 260025)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 262575)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 262582)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 262909)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 262910)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 262925)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Anions and Nutrients (QCLot: 259405)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 259654)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 259655)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 259656)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 259657)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 259658)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 259659)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 261500)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 261576)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 262689)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 262689) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 260184)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 260186)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 261502)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 261503)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 261503) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 262570)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 262571)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 260025)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	95.5	85.0	115	---
<b>Physical Tests (QCLot: 262575)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	89.0	85.0	115	---
<b>Physical Tests (QCLot: 262582)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	101	85.0	115	---
<b>Physical Tests (QCLot: 262908)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 262909)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	94.6	90.0	110	---
<b>Physical Tests (QCLot: 262910)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 262925)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 264131)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	104	95.4	104	---
<b>Anions and Nutrients (QCLot: 259405)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	105	80.0	120	---
<b>Anions and Nutrients (QCLot: 259654)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 259655)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 259656)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.9	85.0	115	---
<b>Anions and Nutrients (QCLot: 259657)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 259658)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 259659)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 261500)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	---
<b>Anions and Nutrients (QCLot: 261576)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 261576) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	96.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 262689)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.8	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 260184)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	96.6	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 260186)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 261502)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 261503)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.5	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	91.2	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.0	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.0	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	87.7	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.7	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.4	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 261503) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	106	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.7	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	106	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.8	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.4	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 259405)</b>										
CG2103059-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0473 mg/L	0.05 mg/L	94.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 259654)</b>										
CG2103065-003	Anonymous	fluoride	16984-48-8	E235.F	1.21 mg/L	1 mg/L	121	75.0	125	----
<b>Anions and Nutrients (QCLot: 259655)</b>										
CG2103065-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 259656)</b>										
CG2103065-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.617 mg/L	0.5 mg/L	123	75.0	125	----
<b>Anions and Nutrients (QCLot: 259657)</b>										
CG2103065-003	Anonymous	chloride	16887-00-6	E235.Cl-L	104 mg/L	100 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 259658)</b>										
CG2103065-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.58 mg/L	2.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 259659)</b>										
CG2103065-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.592 mg/L	0.5 mg/L	118	75.0	125	----
<b>Anions and Nutrients (QCLot: 261500)</b>										
CG2103055-031	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 261576)</b>										
CG2103063-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.06 mg/L	2.5 mg/L	82.6	70.0	130	----
<b>Anions and Nutrients (QCLot: 262689)</b>										
CG2103062-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0550 mg/L	0.0676 mg/L	81.3	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 260184)</b>										
CG2103059-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	20.4 mg/L	23.9 mg/L	85.6	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 260186)</b>										
CG2103059-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.5 mg/L	23.9 mg/L	94.0	70.0	130	----
<b>Dissolved Metals (QCLot: 261502)</b>										
CG2103064-002	CM_MW5-SH_WG_2021-07-12_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 261503)</b>										
CG2103064-002	CM_MW5-SH_WG_2021-07-12_N	aluminum, dissolved	7429-90-5	E421	0.204 mg/L	0.2 mg/L	102	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 261503) - continued</b>										
CG2103064-002	CM_MW5-SH_WG_2021-07-12_N	antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00848 mg/L	0.01 mg/L	84.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.097 mg/L	0.1 mg/L	97.4	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00425 mg/L	0.004 mg/L	106	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.00 mg/L	2 mg/L	100	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0178 mg/L	0.02 mg/L	88.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0891 mg/L	0.1 mg/L	89.1	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.06 mg/L	4 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0460 mg/L	0.04 mg/L	115	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.87 mg/L	10 mg/L	98.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00370 mg/L	0.004 mg/L	92.6	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----		
thallium, dissolved	7440-28-0	E421	0.00353 mg/L	0.004 mg/L	88.2	70.0	130	----		
tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----		
titanium, dissolved	7440-32-6	E421	0.0417 mg/L	0.04 mg/L	104	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00369 mg/L	0.004 mg/L	92.2	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.421 mg/L	0.4 mg/L	105	70.0	130	----		
<b>Dissolved Metals (QCLot: 262570)</b>										
CG2103048-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000979 mg/L	0.0001 mg/L	97.9	70.0	130	----
<b>Dissolved Metals (QCLot: 262571)</b>										
CG2103065-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000994 mg/L	0.0001 mg/L	99.4	70.0	130	----

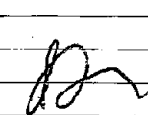
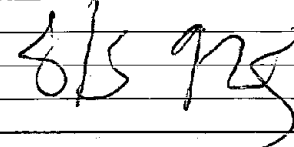
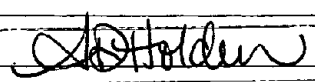
Page : 14 of 14  
Work Order : CG2103064  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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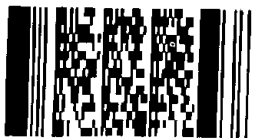


<b>COC ID:</b> COC_WG_Q3_MW5_08042021		<b>TURNAROUND TIME:</b>		REGULAR		<b>RUSH:</b>		NO									
<b>PROJECT/CLIENT INFO</b>					<b>LABORATORY</b>					<b>OTHER INFO</b>							
Facility Name / Job# Coal Mountain Operations					Lab Name ALS Calgary					Report Format / Distribution							
Project Manager Victoria Sharpe					Lab Contact Milica Papic					Email 1: Victoria.Sharpe@teck.com		Excel	PDF	EDD			
Fmail Victoria.Sharpe@teck.com					Email Milica.Papic@ALSGlobal.com					Email 2: teckcoal@equisonline.com		X	X	X			
Address PO Box 3000					Address 2559 29th St. NE					Email 3: jay.jones@teck.com		X	X	X			
City Sparwood					Province BC		City Calgary			Province AB		Email 4: don.sacino@teck.com		X	X	X	
Postal Code V0B 2G0					Country Canada		Postal Code T1Y 7B5			Country Canada		Email 5: shelby.holden@teck.com		X	X	X	
Phone Number 1-250-425-7522					Phone Number 403 407 1800					PO number		00741264					

SAMPLE DETAILS								ANALYSIS REQUESTED							Filtered - F: Field, L: Lab, FL: Field & Lab, N: None																								
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	PRESERV.	FIL	F	N	F	F	N																								
CM_MW5-DP_WG_2021-07-12_N	CM_MW5-DP	WG	No	8/4/2021	13:00	G	5	ALS_Package-DOC	H2SO4																														
CM_MW5-SH_WG_2021-07-12_N	CM_MW5-SH	WG	No	8/4/2021	13:00	G	5	ALS_Package-TKN/TOC	H2SO4																														
								HG-D-CVAF-VA																															
								TECKCOAL-MET-D-VA																															
								TECKCOAL-ROUTINE-VA																															

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>			<b>RELINQUISHED BY/AFFILIATION</b>			<b>DATE/TIME</b>			<b>ACCEPTED BY/AFFILIATION</b>			<b>DATE/TIME</b>		
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.														
<b>SERVICE REQUEST (rush - subject to availability)</b>														
Regular (default) <input checked="" type="checkbox"/>			<b>Sampler's Name</b>			DS			<b>Mobile #</b>			250-425-7529		
Priority (2-3 business days) - 50% surcharge			<b>Sampler's Signature</b>						<b>Date/Time</b>			8/4/2021 14:00:00 PM		
Emergency (1 Business Day) - 100% surcharge														
Weekend - Contact ALS														

Environmental Division  
Calgary  
Work Order Reference  
**CG2103064**





## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2104895**  
**Client** : **Teck Coal Limited**  
**Contact** : Jay Jones  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
Sparwood BC Canada V0B 2G0  
**Telephone** : 250 425 6305 / 250-425-2555  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q4\_20211013  
**Sampler** : KS/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 14-Oct-2021 08:40  
**Date Analysis Commenced** : 14-Oct-2021  
**Issue Date** : 28-Oct-2021 18:33

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruby Pham	Lab Assistant	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
RRV	Reported result verified by repeat analysis.





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW4-SH_ WG_2021-10-1 1_N	CM_MW7-DP_ WG_2021-10-1 1_N	CM_MW7-SH_ WG_2021-10-1 1_N	CM_MW8_WG_ 2021-10-11_N	CM_MW4-DP_ WG_2021-10-1 1_N
Client sampling date / time					13-Oct-2021 14:32	13-Oct-2021 12:23	13-Oct-2021 12:13	13-Oct-2021 11:35	13-Oct-2021 14:32	
Analyte	CAS Number	Method	LOR	Unit	CG2104895-001 Result	CG2104895-002 Result	CG2104895-003 Result	CG2104895-004 Result	CG2104895-005 Result	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	15.2	3.7	3.0	<2.0	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	760	322	233	295	824	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	927	393	284	360	1000	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	15.4	<2.0	<2.0	12.2	106	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	9.2	<2.0	<2.0	7.3	63.5	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	648	322	233	307	929	
conductivity	----	E100	2.0	µS/cm	1500	1580	705	648	3290	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	31.0	1330	388	267	33.5	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	448	436	439	427	458	
pH	----	E108	0.10	pH units	8.25	8.01	8.09	8.36	8.82	
solids, total dissolved [TDS]	----	E162	10	mg/L	949	1980	495	401	1890	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	14.6	49.6	3.0	3.2	
turbidity	----	E121	0.10	NTU	1.37	6.30	24.2	19.3	8.05	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.440	0.0150	0.0803	0.814	0.638	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.712	<0.250 <sup>DLHC</sup>	0.064	<0.050	2.14	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	169	3.72	12.5	1.72	561	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.300	<0.100 <sup>DLHC</sup>	0.195	0.226	0.300	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.456	<0.050	0.104	0.908	0.611	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.103	0.0376	<0.0050	0.0054	<0.0250 <sup>DLHC</sup>	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0180	0.0135	0.0012	0.0029	0.0183	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0101	0.0012	0.0014	0.0012	0.0104	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0117	0.0217	0.0146	0.0252	0.0178	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	6.10 <sup>RRV</sup>	1100	140	58.0	9.94 <sup>RRV</sup>	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	2.18	1.98	0.56	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	3.76	3.67	2.96	0.56	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					CM_MW4-SH_WG_2021-10-11_N	CM_MW7-DP_WG_2021-10-11_N	CM_MW7-SH_WG_2021-10-11_N	CM_MW8_WG_2021-10-11_N	CM_MW4-DP_WG_2021-10-11_N
Client sampling date / time					13-Oct-2021 14:32	13-Oct-2021 12:23	13-Oct-2021 12:13	13-Oct-2021 11:35	13-Oct-2021 14:32
Analyte	CAS Number	Method	LOR	Unit	CG2104895-001	CG2104895-002	CG2104895-003	CG2104895-004	CG2104895-005
					Result	Result	Result	Result	Result
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	17.9	29.4	7.93	7.40	34.6
cation sum	----	EC101	0.10	meq/L	17.7	27.8	8.49	7.60	35.2
ion balance (cations/anions ratio)	----	EC101	0.010	%	98.9	94.6	107	103	102
ion balance (cation-anion difference)	----	EC101	0.010	%	0.562	2.80	3.41	1.33	0.860
<b>Dissolved Metals</b>									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0017	0.0026	0.0011	0.0036	0.0043
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	0.00135	0.00028	<0.00020 <sup>DLA</sup>
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.326	0.0124	0.0266	0.102	0.614
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.040 <sup>DLA</sup>	<0.020	<0.020	<0.040 <sup>DLA</sup>
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.337	0.053	0.019	0.243	0.396
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0308	<0.0050	<0.0050	<0.0100 <sup>DLA</sup>
calcium, dissolved	7440-70-2	E421	0.050	mg/L	7.81	299	98.3	71.6	9.42
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	0.00016	<0.00020 <sup>DLA</sup>
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	1.36	0.32	0.27	<0.20 <sup>DLA</sup>
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00040 <sup>DLA</sup>	<0.00020	<0.00020	<0.00040 <sup>DLA</sup>
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.100	0.044	1.42	1.60	0.100
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	<0.000050	<0.000100 <sup>DLA</sup>
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.520	0.0518	0.0067	0.0643	1.18
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.79	142	34.6	21.4	2.42
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00509	0.556	0.136	0.154	0.00411
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000703	0.000112	0.000995	0.000637	0.000253
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.0123	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.13	2.67	1.56	2.79	1.50
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	0.238	0.330	<0.050	<0.100 <sup>DLA</sup>
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.07	2.80	5.07	6.33	3.98
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>
sodium, dissolved	17341-25-2	E421	0.050	mg/L	392	26.1	14.6	47.6	791



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW4-SH_ WG_2021-10-1 1_N	CM_MW7-DP_ WG_2021-10-1 1_N	CM_MW7-SH_ WG_2021-10-1 1_N	CM_MW8_WG_ 2021-10-11_N	CM_MW4-DP_ WG_2021-10-1 1_N
Client sampling date / time					13-Oct-2021 14:32	13-Oct-2021 12:23	13-Oct-2021 12:13	13-Oct-2021 11:35	13-Oct-2021 14:32	
Analyte	CAS Number	Method	LOR	Unit	CG2104895-001	CG2104895-002	CG2104895-003	CG2104895-004	CG2104895-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.890	0.754	0.430	5.18	1.38	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50 <sup>RRV</sup>	405	47.7	19.2	<1.00 <sup>RRV</sup>	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	0.00015	<0.00020 <sup>DLA</sup>	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	<0.00060 <sup>DLA</sup>	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	0.00407	0.000498	0.000396	<0.000020 <sup>DLA</sup>	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	<0.00050	<0.00100 <sup>DLA</sup>	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0011	0.0082	<0.0010	<0.0010	<0.0020 <sup>DLA</sup>	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2104895</b>	Page	: 1 of 22
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jay Jones	Account Manager	: Milica Pasic
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 6305 / 250-425-2555	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 14-Oct-2021 08:40
PO	: VPO00741264	Issue Date	: 28-Oct-2021 18:33
C-O-C number	: COC_WG_Q4_20211013		
Sampler	: KS/DS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.111 % TKND	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

**Result Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-DP_WG_2021-10-11_N	E298	13-Oct-2021	24-Oct-2021	----	----		24-Oct-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-SH_WG_2021-10-11_N	E298	13-Oct-2021	24-Oct-2021	----	----		24-Oct-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-10-11_N	E298	13-Oct-2021	24-Oct-2021	----	----		24-Oct-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-10-11_N	E298	13-Oct-2021	24-Oct-2021	----	----		24-Oct-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-10-11_N	E298	13-Oct-2021	24-Oct-2021	----	----		24-Oct-2021	28 days	11 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW4-DP_WG_2021-10-11_N	E235.Br-L	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW4-SH_WG_2021-10-11_N	E235.Br-L	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE CM_MW7-DP_WG_2021-10-11_N	E235.Br-L	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE CM_MW7-SH_WG_2021-10-11_N	E235.Br-L	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE CM_MW8_WG_2021-10-11_N	E235.Br-L	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW4-DP_WG_2021-10-11_N	E235.Cl-L	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW4-SH_WG_2021-10-11_N	E235.Cl-L	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW7-DP_WG_2021-10-11_N	E235.Cl-L	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW7-SH_WG_2021-10-11_N	E235.Cl-L	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW8_WG_2021-10-11_N	E235.Cl-L	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW4-DP_WG_2021-10-11_N	E378-U	13-Oct-2021	----	----	----		14-Oct-2021	3 days	1 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW4-SH_WG_2021-10-11_N	E378-U	13-Oct-2021	----	----	----		14-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW7-DP_WG_2021-10-11_N	E378-U	13-Oct-2021	----	----	----		14-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW7-SH_WG_2021-10-11_N	E378-U	13-Oct-2021	----	----	----		14-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW8_WG_2021-10-11_N	E378-U	13-Oct-2021	----	----	----		14-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW4-DP_WG_2021-10-11_N	E235.F	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW4-SH_WG_2021-10-11_N	E235.F	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW7-DP_WG_2021-10-11_N	E235.F	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW7-SH_WG_2021-10-11_N	E235.F	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW8_WG_2021-10-11_N	E235.F	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW4-DP_WG_2021-10-11_N	E235.NO3-L	13-Oct-2021	----	----	----		15-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW4-SH_WG_2021-10-11_N	E235.NO3-L	13-Oct-2021	----	----	----		15-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW7-DP_WG_2021-10-11_N	E235.NO3-L	13-Oct-2021	----	----	----		15-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW7-SH_WG_2021-10-11_N	E235.NO3-L	13-Oct-2021	----	----	----		15-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW8_WG_2021-10-11_N	E235.NO3-L	13-Oct-2021	----	----	----		15-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW4-DP_WG_2021-10-11_N	E235.NO2-L	13-Oct-2021	----	----	----		15-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW4-SH_WG_2021-10-11_N	E235.NO2-L	13-Oct-2021	----	----	----		15-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW7-DP_WG_2021-10-11_N	E235.NO2-L	13-Oct-2021	----	----	----		15-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW7-SH_WG_2021-10-11_N	E235.NO2-L	13-Oct-2021	----	----	----		15-Oct-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW8_WG_2021-10-11_N	E235.NO2-L	13-Oct-2021	----	----	----		15-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_MW4-DP_WG_2021-10-11_N	E235.SO4	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_MW4-SH_WG_2021-10-11_N	E235.SO4	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_MW7-DP_WG_2021-10-11_N	E235.SO4	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_MW7-SH_WG_2021-10-11_N	E235.SO4	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE</b> CM_MW8_WG_2021-10-11_N	E235.SO4	13-Oct-2021	----	----	----		15-Oct-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-DP_WG_2021-10-11_N	E318	13-Oct-2021	19-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-SH_WG_2021-10-11_N	E318	13-Oct-2021	19-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-10-11_N	E318	13-Oct-2021	19-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-10-11_N	E318	13-Oct-2021	19-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-10-11_N	E318	13-Oct-2021	19-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-DP_WG_2021-10-11_N	E372-U	13-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-SH_WG_2021-10-11_N	E372-U	13-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-10-11_N	E372-U	13-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-10-11_N	E372-U	13-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-10-11_N	E372-U	13-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW4-DP_WG_2021-10-11_N	E421.Cr-L	13-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW4-SH_WG_2021-10-11_N	E421.Cr-L	13-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	8 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW7-DP_WG_2021-10-11_N	E421.Cr-L	13-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW7-SH_WG_2021-10-11_N	E421.Cr-L	13-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW8_WG_2021-10-11_N	E421.Cr-L	13-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW4-DP_WG_2021-10-11_N	E509	13-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW4-SH_WG_2021-10-11_N	E509	13-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW7-DP_WG_2021-10-11_N	E509	13-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW7-SH_WG_2021-10-11_N	E509	13-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW8_WG_2021-10-11_N	E509	13-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW4-DP_WG_2021-10-11_N	E421	13-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	8 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW4-SH_WG_2021-10-11_N	E421	13-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW7-DP_WG_2021-10-11_N	E421	13-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW7-SH_WG_2021-10-11_N	E421	13-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	8 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW8_WG_2021-10-11_N	E421	13-Oct-2021	20-Oct-2021	----	----		21-Oct-2021	180 days	8 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW4-DP_WG_2021-10-11_N	E358-L	13-Oct-2021	20-Oct-2021	----	----		23-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW4-SH_WG_2021-10-11_N	E358-L	13-Oct-2021	20-Oct-2021	----	----		23-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW7-DP_WG_2021-10-11_N	E358-L	13-Oct-2021	20-Oct-2021	----	----		23-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW7-SH_WG_2021-10-11_N	E358-L	13-Oct-2021	20-Oct-2021	----	----		23-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW8_WG_2021-10-11_N	E358-L	13-Oct-2021	20-Oct-2021	----	----		24-Oct-2021	28 days	11 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-DP_WG_2021-10-11_N	E355-L	13-Oct-2021	20-Oct-2021	----	----		23-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW4-SH_WG_2021-10-11_N	E355-L	13-Oct-2021	20-Oct-2021	----	----		23-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-DP_WG_2021-10-11_N	E355-L	13-Oct-2021	20-Oct-2021	----	----		23-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW7-SH_WG_2021-10-11_N	E355-L	13-Oct-2021	20-Oct-2021	----	----		23-Oct-2021	28 days	10 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW8_WG_2021-10-11_N	E355-L	13-Oct-2021	20-Oct-2021	----	----		24-Oct-2021	28 days	11 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW4-DP_WG_2021-10-11_N	E283	13-Oct-2021	----	----	----		18-Oct-2021	14 days	5 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW4-SH_WG_2021-10-11_N	E283	13-Oct-2021	----	----	----		18-Oct-2021	14 days	5 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW7-DP_WG_2021-10-11_N	E283	13-Oct-2021	----	----	----		18-Oct-2021	14 days	5 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW7-SH_WG_2021-10-11_N	E283	13-Oct-2021	----	----	----		18-Oct-2021	14 days	5 days	✔	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE CM_MW8_WG_2021-10-11_N	E283	13-Oct-2021	----	----	----		18-Oct-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW4-DP_WG_2021-10-11_N	E290	13-Oct-2021	----	----	----		18-Oct-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW4-SH_WG_2021-10-11_N	E290	13-Oct-2021	----	----	----		18-Oct-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW7-DP_WG_2021-10-11_N	E290	13-Oct-2021	----	----	----		18-Oct-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW7-SH_WG_2021-10-11_N	E290	13-Oct-2021	----	----	----		18-Oct-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW8_WG_2021-10-11_N	E290	13-Oct-2021	----	----	----		18-Oct-2021	14 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW4-DP_WG_2021-10-11_N	E100	13-Oct-2021	----	----	----		18-Oct-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW4-SH_WG_2021-10-11_N	E100	13-Oct-2021	----	----	----		18-Oct-2021	28 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW7-DP_WG_2021-10-11_N	E100	13-Oct-2021	----	----	----		18-Oct-2021	28 days	5 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW7-SH_WG_2021-10-11_N	E100	13-Oct-2021	----	----	----		18-Oct-2021	28 days	5 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW8_WG_2021-10-11_N	E100	13-Oct-2021	----	----	----		18-Oct-2021	28 days	5 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW4-DP_WG_2021-10-11_N	E125	13-Oct-2021	----	----	----		19-Oct-2021	0.25 hrs	146 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW4-SH_WG_2021-10-11_N	E125	13-Oct-2021	----	----	----		19-Oct-2021	0.25 hrs	146 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW7-DP_WG_2021-10-11_N	E125	13-Oct-2021	----	----	----		19-Oct-2021	0.25 hrs	149 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW7-SH_WG_2021-10-11_N	E125	13-Oct-2021	----	----	----		19-Oct-2021	0.25 hrs	149 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW8_WG_2021-10-11_N	E125	13-Oct-2021	----	----	----		19-Oct-2021	0.25 hrs	149 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW4-DP_WG_2021-10-11_N	E108	13-Oct-2021	----	----	----		18-Oct-2021	0.25 hrs	117 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW4-SH_WG_2021-10-11_N	E108	13-Oct-2021	----	----	----		18-Oct-2021	0.25 hrs	117 hrs		* EHTR-FM





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW7-DP_WG_2021-10-11_N	E108	13-Oct-2021	----	----	----		18-Oct-2021	0.25 hrs	119 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW7-SH_WG_2021-10-11_N	E108	13-Oct-2021	----	----	----		18-Oct-2021	0.25 hrs	119 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW8_WG_2021-10-11_N	E108	13-Oct-2021	----	----	----		18-Oct-2021	0.25 hrs	120 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW4-DP_WG_2021-10-11_N	E162	13-Oct-2021	----	----	----		19-Oct-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW4-SH_WG_2021-10-11_N	E162	13-Oct-2021	----	----	----		19-Oct-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW7-DP_WG_2021-10-11_N	E162	13-Oct-2021	----	----	----		19-Oct-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW7-SH_WG_2021-10-11_N	E162	13-Oct-2021	----	----	----		19-Oct-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW8_WG_2021-10-11_N	E162	13-Oct-2021	----	----	----		19-Oct-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE CM_MW4-DP_WG_2021-10-11_N	E160-L	13-Oct-2021	----	----	----		19-Oct-2021	7 days	6 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW4-SH_WG_2021-10-11_N	E160-L	13-Oct-2021	----	----	----		19-Oct-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW7-DP_WG_2021-10-11_N	E160-L	13-Oct-2021	----	----	----		19-Oct-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW7-SH_WG_2021-10-11_N	E160-L	13-Oct-2021	----	----	----		19-Oct-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW8_WG_2021-10-11_N	E160-L	13-Oct-2021	----	----	----		19-Oct-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW4-DP_WG_2021-10-11_N	E121	13-Oct-2021	----	----	----		16-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW4-SH_WG_2021-10-11_N	E121	13-Oct-2021	----	----	----		16-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW7-DP_WG_2021-10-11_N	E121	13-Oct-2021	----	----	----		16-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW7-SH_WG_2021-10-11_N	E121	13-Oct-2021	----	----	----		16-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW8_WG_2021-10-11_N	E121	13-Oct-2021	----	----	----		16-Oct-2021	3 days	3 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Page : 16 of 22  
Work Order : CG2104895  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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Rec. HT: ALS recommended hold time (see units).

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## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	322429	1	16	6.2	5.0	✓
Alkalinity Species by Titration	E290	322391	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	328413	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	320549	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	320550	1	20	5.0	5.0	✓
Conductivity in Water	E100	322392	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	324293	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	324576	1	13	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	324292	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	325108	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	319841	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	320548	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	320542	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	320543	1	20	5.0	5.0	✓
ORP by Electrode	E125	323898	1	15	6.6	5.0	✓
pH by Meter	E108	322390	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	320546	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	323241	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	323682	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	325109	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	322247	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	321266	3	42	7.1	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	322429	1	16	6.2	5.0	✓
Alkalinity Species by Titration	E290	322391	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	328413	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	320549	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	320550	1	20	5.0	5.0	✓
Conductivity in Water	E100	322392	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	324293	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	324576	1	13	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	324292	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	325108	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	319841	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	320548	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	320542	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	320543	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	323898	1	15	6.6	5.0	✔
pH by Meter	E108	322390	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	320546	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	323241	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	323682	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	325109	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	322247	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	323237	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	321266	3	42	7.1	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	322429	1	16	6.2	5.0	✔
Alkalinity Species by Titration	E290	322391	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	328413	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	320549	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	320550	1	20	5.0	5.0	✔
Conductivity in Water	E100	322392	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	324293	1	5	20.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	324576	1	13	7.6	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	324292	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	325108	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	319841	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	320548	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	320542	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	320543	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	320546	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	323241	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	323682	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	325109	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	322247	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	323237	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	321266	3	42	7.1	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	328413	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	320549	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	320550	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	324293	1	5	20.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	324576	1	13	7.6	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	324292	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	325108	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	319841	1	20	5.0	5.0	✔



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	320548	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	320542	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	320543	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	320546	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	323682	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	325109	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	322247	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2104895**

**Page** : 1 of 13

**Client** : Teck Coal Limited  
**Contact** : Jay Jones  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : 250 425 6305 / 250-425-2555  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q4\_20211013  
**Sampler** : KS/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 14-Oct-2021 08:40  
**Date Analysis Commenced** : 14-Oct-2021  
**Issue Date** : 28-Oct-2021 18:33

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilhaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruby Pham	Lab Assistant	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 321266)</b>											
CG2104873-001	Anonymous	turbidity	----	E121	0.10	NTU	0.81	0.80	0.007	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 321267)</b>											
CG2104895-004	CM_MW8_WG_2021-10-11_N	turbidity	----	E121	0.10	NTU	19.3	19.5	0.825%	15%	----
<b>Physical Tests (QC Lot: 321303)</b>											
CG2104866-003	Anonymous	turbidity	----	E121	0.10	NTU	1.26	1.26	0.004	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 322390)</b>											
CG2104881-001	Anonymous	pH	----	E108	0.10	pH units	8.37	8.39	0.239%	4%	----
<b>Physical Tests (QC Lot: 322391)</b>											
CG2104881-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	249	250	0.200%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	15.6	16.8	7.41%	20%	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	265	267	0.639%	20%	----
<b>Physical Tests (QC Lot: 322392)</b>											
CG2104881-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1100	1100	0.272%	10%	----
<b>Physical Tests (QC Lot: 322429)</b>											
CG2104886-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 323241)</b>											
CG2104886-002	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	679	678	0.221%	20%	----
<b>Physical Tests (QC Lot: 323898)</b>											
CG2104886-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	458	458	0.0874%	15%	----
<b>Anions and Nutrients (QC Lot: 319841)</b>											
CG2104891-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0013	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 320542)</b>											
CG2104854-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	1.10	1.11	0.916%	20%	----
<b>Anions and Nutrients (QC Lot: 320543)</b>											
CG2104854-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0261	0.0205	0.0056	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 320546)</b>											
CG2104858-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	532	535	0.506%	20%	----
<b>Anions and Nutrients (QC Lot: 320548)</b>											
CG2104858-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.460	0.482	0.022	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 320549)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 320549) - continued</b>											
CG2104866-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 320550)</b>											
CG2104866-003	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	2.47	2.58	0.11	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 322247)</b>											
CG2104881-005	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0023	<0.0020	0.0003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 323682)</b>											
CG2104881-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.256	# 0.146	0.111	Diff <2x LOR	TKND
<b>Anions and Nutrients (QC Lot: 328413)</b>											
CG2104881-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 325108)</b>											
CG2104894-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.79	0.82	0.02	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 325109)</b>											
CG2104881-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.07	3.28	0.20	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 324292)</b>											
CG2104895-001	CM_MW4-SH_WG_2021-1 0-11_N	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
CG2104895-001	CM_MW4-SH_WG_2021-1 0-11_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0017	0.0026	0.0009	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.326	0.337	3.46%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.337	0.357	5.62%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	7.81	8.21	4.95%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.100	0.104	3.64%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.520	0.540	3.76%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.79	2.85	2.05%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00509	0.00527	3.46%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000703	0.000716	1.86%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.13	1.20	6.67%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 324292) - continued</b>											
CG2104895-001	CM_MW4-SH_WG_2021-1 0-11_N	selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.07	4.14	1.67%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	392	404	2.98%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.890	0.912	2.43%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0011	0.0012	0.0001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 324293)</b>											
CG2104895-001	CM_MW4-SH_WG_2021-1 0-11_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 324576)</b>											
CG2104895-001	CM_MW4-SH_WG_2021-1 0-11_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

**Qualifiers**

Qualifier	Description
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 321266)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 321267)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 321303)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 322391)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 322392)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 322429)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 323237)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 323241)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 319841)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 320542)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 320543)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 320546)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 320548)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 320549)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 320550)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 322247)</b>						





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 322247) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.200	---
<b>Anions and Nutrients (QCLot: 323682)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 328413)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 325108)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 325109)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 324292)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Page : 8 of 13  
 Work Order : CG2104895  
 Client : Teck Coal Limited  
 Project : COAL MOUNTAIN OPERATIONS



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 324292) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 324293)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 324576)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 321266)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	99.4	85.0	115	---
<b>Physical Tests (QCLot: 321267)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.8	85.0	115	---
<b>Physical Tests (QCLot: 321303)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	98.8	85.0	115	---
<b>Physical Tests (QCLot: 322390)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 322391)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	111	85.0	115	---
<b>Physical Tests (QCLot: 322392)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	---
<b>Physical Tests (QCLot: 322429)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 323237)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.0	85.0	115	---
<b>Physical Tests (QCLot: 323241)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.6	85.0	115	---
<b>Physical Tests (QCLot: 323898)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.7	95.4	104	---
<b>Anions and Nutrients (QCLot: 319841)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	104	80.0	120	---
<b>Anions and Nutrients (QCLot: 320542)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 320543)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 320546)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 320548)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.1	90.0	110	---
<b>Anions and Nutrients (QCLot: 320549)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 320550)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 320550) - continued</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 322247)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	98.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 323682)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	91.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 328413)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 325108)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	104	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 325109)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 324292)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.3	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.8	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	94.1	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	96.9	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	88.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.1	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.6	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.7	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	100.0	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.2	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.0	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.3	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 324292) - continued</b>									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.1	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.5	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	86.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	112	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	91.9	80.0	120	----
<b>Dissolved Metals (QCLot: 324293)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 319841)</b>										
CG2104891-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0556 mg/L	0.05 mg/L	111	70.0	130	----
<b>Anions and Nutrients (QCLot: 320542)</b>										
CG2104866-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 320543)</b>										
CG2104866-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.574 mg/L	0.5 mg/L	115	75.0	125	----
<b>Anions and Nutrients (QCLot: 320546)</b>										
CG2104860-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	93.6 mg/L	100 mg/L	93.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 320548)</b>										
CG2104860-001	Anonymous	fluoride	16984-48-8	E235.F	1.08 mg/L	1 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 320549)</b>										
CG2104866-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.412 mg/L	0.5 mg/L	82.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 320550)</b>										
CG2104866-004	Anonymous	chloride	16887-00-6	E235.Cl-L	95.0 mg/L	100 mg/L	95.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 322247)</b>										
CG2104881-006	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0606 mg/L	0.0676 mg/L	89.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 323682)</b>										
CG2104881-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.20 mg/L	2.5 mg/L	87.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 328413)</b>										
CG2104900-008	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 325108)</b>										
CG2104894-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.9 mg/L	23.9 mg/L	100	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 325109)</b>										
CG2104881-001	Anonymous	carbon, total organic [TOC]	----	E355-L	25.9 mg/L	23.9 mg/L	108	70.0	130	----
<b>Dissolved Metals (QCLot: 324292)</b>										
CG2104895-002	CM_MW7-DP_WG_2021-10-11_N	aluminum, dissolved	7429-90-5	E421	0.405 mg/L	0.4 mg/L	101	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----



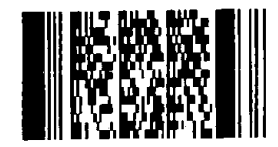
Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 324292) - continued</b>										
CG2104895-002	CM_MW7-DP_WG_2021-10-11_N	beryllium, dissolved	7440-41-7	E421	0.0773 mg/L	0.08 mg/L	96.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.167 mg/L	0.2 mg/L	83.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00788 mg/L	0.008 mg/L	98.5	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0380 mg/L	0.04 mg/L	95.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0365 mg/L	0.04 mg/L	91.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.98 mg/L	4 mg/L	99.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.203 mg/L	0.2 mg/L	102	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0734 mg/L	0.08 mg/L	91.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	8.03 mg/L	8 mg/L	100	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0882 mg/L	0.08 mg/L	110	70.0	130	----
		silicon, dissolved	7440-21-3	E421	19.1 mg/L	20 mg/L	95.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00816 mg/L	0.008 mg/L	102	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00799 mg/L	0.008 mg/L	99.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0861 mg/L	0.08 mg/L	108	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.761 mg/L	0.8 mg/L	95.1	70.0	130	----
<b>Dissolved Metals (QCLot: 324293)</b>										
CG2104895-002	CM_MW7-DP_WG_2021-10-11_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0795 mg/L	0.08 mg/L	99.4	70.0	130	----
<b>Dissolved Metals (QCLot: 324576)</b>										
CG2104895-002	CM_MW7-DP_WG_2021-10-11_N	mercury, dissolved	7439-97-6	E509	0.0000972 mg/L	0.0001 mg/L	97.2	70.0	130	----

COC ID: <b>COC_WG_Q4_20211013</b>		TURNAROUND TIME:		REGULAR		RUSH:		NO				
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#		Coal Mountain Operations		Lab Name		ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager		Victoria Sharpe		Lab Contact		Milica Papic		Email 1:		X	X	X
Email		Victoria.Sharpe@teck.com		Email		Milica.Papic@ALSGlobal.com		Email 2:				X
Address		PO Box 3000		Address		2559 29th St. NE		Email 3:		X	X	X
City		Sparwood		City		Calgary		Email 4:		X	X	X
Province		BC		Province		AB		Email 5:		X	X	X
Postal Code		V0B 2G0		Postal Code		T1Y 7B5						
Country		Canada		Country		Canada						
Phone Number		1-250-425-7522		Phone Number		403 407 1800		PO number		00741264		

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None				
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FR.	F	N	F	F	N				
								PRESERV.	H2SO4	H2SO4	HCL	HNO3	NONE				
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA				
CM_MW4-SH_WG_2021-10-11_N	CM_MW4-SH	WG	No	10/13/2021	14:32	G	5		1	1	1	1	1				
CM_MW7-DP_WG_2021-10-11_N	CM_MW7-DP	WG	No	10/13/2021	12:23	G	5		1	1	1	1	1				
CM_MW7-SH_WG_2021-10-11_N	CM_MW7-SH	WG	No	10/13/2021	12:13	G	5		1	1	1	1	1				
CM_MW8_WG_2021-10-11_N	CM_MW8	WG	No	10/13/2021	11:35	G	5		1	1	1	1	1				
CM_MW4-DP_WG_2021-10-11_N	CM_MW4-DP	WG	No	10/13/2021	14:32	G	5		1	1	1	1	1				
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS			RELINQUISHED BY/AFFILIATION			DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME							
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.								AK		10/14/2021							
SERVICE REQUEST (rush - subject to availability)																	
Regular (default) <input checked="" type="checkbox"/>			Sampler's Name			KS/DS		Mobile #		250-425-7529							
Priority (2-3 business days) - 50% surcharge			Sampler's Signature			<i>Handwritten Signature</i>		Date/Time		10/13/2021 14:00:00 PM							
Emergency (1 Business Day) - 100% surcharge																	
For Emergency <1 Day, ASAP or Weekend - Contact ALS																	

Environmental Division  
Calgary  
Work Order Reference  
**CG2104895**



Telephone: +1 403 407 1900

60



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105080**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q4\_20211020  
**Sampler** : DARREN SIMPSON  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Oct-2021 08:50  
**Date Analysis Commenced** : 21-Oct-2021  
**Issue Date** : 02-Nov-2021 20:01

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID	CM_NNP_WS_2 021-10-11_N	CM_NNT_WS_2 021-10-11_N	CM_MW10_WG _2021-10-11_N	----	----
(Matrix: Water)					Client sampling date / time	20-Oct-2021 10:25	20-Oct-2021 10:25	20-Oct-2021 10:25	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105080-001	CG2105080-002	CG2105080-003	-----	-----	
					Result	Result	Result	----	----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	3.9	<2.0	5.3	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	275	<1.0	270	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	335	<1.0	329	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	275	<1.0	270	----	----	
conductivity	----	E100	2.0	µS/cm	650	<2.0	643	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	302	<0.50	301	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	422	524	418	----	----	
pH	----	E108	0.10	pH units	8.18	5.79	8.15	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	391	<10	398	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.9	<1.0	3.5	----	----	
turbidity	----	E121	0.10	NTU	33.4	<0.10	32.7	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0304	<0.0050	0.0380	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.46	<0.10	0.46	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.878	<0.020	0.901	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0.057	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0.0024	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0104	<0.0020	0.0090	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	92.7	<0.30	91.8	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.03	<0.50	2.96 <small>DTC. RRV</small>	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.70	<0.50	0.86 <small>DTC. RRV</small>	----	----	
<b>Ion Balance</b>										



## Analytical Results

Sub-Matrix: Water					Client sample ID	CM_NNP_WS_2 021-10-11_N	CM_NNT_WS_2 021-10-11_N	CM_MW10_WG _2021-10-11_N	----	----
(Matrix: Water)					Client sampling date / time	20-Oct-2021 10:25	20-Oct-2021 10:25	20-Oct-2021 10:25	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2105080-001	CG2105080-002	CG2105080-003	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	7.48	<0.10	7.37	----	----	
cation sum	----	EC101	0.10	meq/L	7.35	<0.10	7.38	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	98.3	100	100	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	0.877	<0.010	0.068	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	<0.0010	0.0010	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00390	<0.00010	0.00402	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.188	<0.00010	0.188	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.021	<0.010	0.022	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0050	<0.0050	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	84.5	<0.050	85.4	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.59	<0.10	0.60	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	2.78	<0.010	2.86	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0124	<0.0010	0.0115	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	22.2	<0.0050	21.3	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0778	<0.00010	0.0747	----	----	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00408	<0.000050	0.00395	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00059	<0.00050	0.00058	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.777	<0.050	0.782	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	<0.050	<0.050	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.96	<0.050	4.73	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	27.3	<0.050	28.5	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.280	<0.00020	0.279	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_NNP_WS_2 021-10-11_N	CM_NNT_WS_2 021-10-11_N	CM_MW10_WG _2021-10-11_N	----	----
Client sampling date / time					20-Oct-2021 10:25	20-Oct-2021 10:25	20-Oct-2021 10:25	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105080-001	CG2105080-002	CG2105080-003	-----	-----	
					Result	Result	Result	---	---	
<b>Dissolved Metals</b>										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	32.2	<0.50	32.4	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000379	<0.000010	0.000353	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105080</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Milica Pasic
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 21-Oct-2021 08:50
PO	: VPO00741264	Issue Date	: 02-Nov-2021 20:01
C-O-C number	: COC_WG_Q4_20211020		
Sampler	: DARREN SIMPSON		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-10-11_N	E298	20-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP_WS_2021-10-11_N	E298	20-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNT_WS_2021-10-11_N	E298	20-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW10_WG_2021-10-11_N	E235.Br-L	20-Oct-2021	----	----	----		21-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_NNP_WS_2021-10-11_N	E235.Br-L	20-Oct-2021	----	----	----		21-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_NNT_WS_2021-10-11_N	E235.Br-L	20-Oct-2021	----	----	----		21-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW10_WG_2021-10-11_N	E235.Cl-L	20-Oct-2021	----	----	----		21-Oct-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE CM_NNP_WS_2021-10-11_N	E235.Cl-L	20-Oct-2021	----	----	----		21-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
HDPE CM_NNT_WS_2021-10-11_N	E235.Cl-L	20-Oct-2021	----	----	----		21-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE CM_MW10_WG_2021-10-11_N	E378-U	20-Oct-2021	----	----	----		21-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE CM_NNP_WS_2021-10-11_N	E378-U	20-Oct-2021	----	----	----		21-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
HDPE CM_NNT_WS_2021-10-11_N	E378-U	20-Oct-2021	----	----	----		21-Oct-2021	3 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_MW10_WG_2021-10-11_N	E235.F	20-Oct-2021	----	----	----		21-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_NNP_WS_2021-10-11_N	E235.F	20-Oct-2021	----	----	----		21-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE CM_NNT_WS_2021-10-11_N	E235.F	20-Oct-2021	----	----	----		21-Oct-2021	28 days	1 days	✔
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_MW10_WG_2021-10-11_N	E235.NO3-L	20-Oct-2021	----	----	----		21-Oct-2021	3 days	1 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_NNP_WS_2021-10-11_N	E235.NO3-L	20-Oct-2021	----	----	----		21-Oct-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE CM_NNT_WS_2021-10-11_N	E235.NO3-L	20-Oct-2021	----	----	----		21-Oct-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW10_WG_2021-10-11_N	E235.NO2-L	20-Oct-2021	----	----	----		21-Oct-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_NNP_WS_2021-10-11_N	E235.NO2-L	20-Oct-2021	----	----	----		21-Oct-2021	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_NNT_WS_2021-10-11_N	E235.NO2-L	20-Oct-2021	----	----	----		21-Oct-2021	3 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW10_WG_2021-10-11_N	E235.SO4	20-Oct-2021	----	----	----		21-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_NNP_WS_2021-10-11_N	E235.SO4	20-Oct-2021	----	----	----		21-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_NNT_WS_2021-10-11_N	E235.SO4	20-Oct-2021	----	----	----		21-Oct-2021	28 days	1 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-10-11_N	E318	20-Oct-2021	25-Oct-2021	----	----		27-Oct-2021	28 days	7 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP_WS_2021-10-11_N	E318	20-Oct-2021	25-Oct-2021	----	----		27-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNT_WS_2021-10-11_N	E318	20-Oct-2021	25-Oct-2021	----	----		27-Oct-2021	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-10-11_N	E372-U	20-Oct-2021	29-Oct-2021	----	----		29-Oct-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP_WS_2021-10-11_N	E372-U	20-Oct-2021	29-Oct-2021	----	----		29-Oct-2021	28 days	9 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNT_WS_2021-10-11_N	E372-U	20-Oct-2021	29-Oct-2021	----	----		29-Oct-2021	28 days	9 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW10_WG_2021-10-11_N	E421.Cr-L	20-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNP_WS_2021-10-11_N	E421.Cr-L	20-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNT_WS_2021-10-11_N	E421.Cr-L	20-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW10_WG_2021-10-11_N	E509	20-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	7 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_NNP_WS_2021-10-11_N	E509	20-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_NNT_WS_2021-10-11_N	E509	20-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW10_WG_2021-10-11_N	E421	20-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNP_WS_2021-10-11_N	E421	20-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNT_WS_2021-10-11_N	E421	20-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	180 days	5 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW10_WG_2021-10-11_N	E358-L	20-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_NNP_WS_2021-10-11_N	E358-L	20-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_NNT_WS_2021-10-11_N	E358-L	20-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW10_WG_2021-10-11_N	E355-L	20-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	6 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP_WS_2021-10-11_N	E355-L	20-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	6 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNT_WS_2021-10-11_N	E355-L	20-Oct-2021	26-Oct-2021	----	----		26-Oct-2021	28 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW10_WG_2021-10-11_N	E283	20-Oct-2021	----	----	----		26-Oct-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_NNP_WS_2021-10-11_N	E283	20-Oct-2021	----	----	----		26-Oct-2021	14 days	6 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_NNT_WS_2021-10-11_N	E283	20-Oct-2021	----	----	----		26-Oct-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW10_WG_2021-10-11_N	E290	20-Oct-2021	----	----	----		26-Oct-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_NNP_WS_2021-10-11_N	E290	20-Oct-2021	----	----	----		26-Oct-2021	14 days	6 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_NNT_WS_2021-10-11_N	E290	20-Oct-2021	----	----	----		26-Oct-2021	14 days	6 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> CM_MW10_WG_2021-10-11_N	E100	20-Oct-2021	----	----	----		26-Oct-2021	28 days	6 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_NNP_WS_2021-10-11_N	E100	20-Oct-2021	----	----	----		26-Oct-2021	28 days	6 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_NNT_WS_2021-10-11_N	E100	20-Oct-2021	----	----	----		26-Oct-2021	28 days	6 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW10_WG_2021-10-11_N	E125	20-Oct-2021	----	----	----		28-Oct-2021	0.25 hrs	191 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_NNP_WS_2021-10-11_N	E125	20-Oct-2021	----	----	----		28-Oct-2021	0.25 hrs	191 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_NNT_WS_2021-10-11_N	E125	20-Oct-2021	----	----	----		28-Oct-2021	0.25 hrs	191 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW10_WG_2021-10-11_N	E108	20-Oct-2021	----	----	----		26-Oct-2021	0.25 hrs	151 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_NNP_WS_2021-10-11_N	E108	20-Oct-2021	----	----	----		26-Oct-2021	0.25 hrs	151 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_NNT_WS_2021-10-11_N	E108	20-Oct-2021	----	----	----		26-Oct-2021	0.25 hrs	151 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW10_WG_2021-10-11_N	E162	20-Oct-2021	----	----	----		26-Oct-2021	7 days	6 days		✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_NNP_WS_2021-10-11_N	E162	20-Oct-2021	----	----	----		26-Oct-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_NNT_WS_2021-10-11_N	E162	20-Oct-2021	----	----	----		26-Oct-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW10_WG_2021-10-11_N	E160-L	20-Oct-2021	----	----	----		26-Oct-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_NNP_WS_2021-10-11_N	E160-L	20-Oct-2021	----	----	----		26-Oct-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_NNT_WS_2021-10-11_N	E160-L	20-Oct-2021	----	----	----		26-Oct-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW10_WG_2021-10-11_N	E121	20-Oct-2021	----	----	----		23-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_NNP_WS_2021-10-11_N	E121	20-Oct-2021	----	----	----		23-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_NNT_WS_2021-10-11_N	E121	20-Oct-2021	----	----	----		23-Oct-2021	3 days	3 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	329742	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	330197	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	330295	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	325854	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	325855	1	20	5.0	5.0	✓
Conductivity in Water	E100	330196	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328719	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	331108	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	328718	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	330260	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	326003	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	325852	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	325856	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	325857	1	20	5.0	5.0	✓
ORP by Electrode	E125	331778	1	20	5.0	5.0	✓
pH by Meter	E108	330195	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	325853	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	329438	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	329050	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	330267	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	331585	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	327721	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	329742	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	330197	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	330295	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	325854	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	325855	1	20	5.0	5.0	✓
Conductivity in Water	E100	330196	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328719	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	331108	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	328718	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	330260	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	326003	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	325852	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	325856	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	325857	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	331778	1	20	5.0	5.0	✔
pH by Meter	E108	330195	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	325853	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	329438	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	329050	1	13	7.6	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	330267	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	331585	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	329433	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	327721	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	329742	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	330197	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	330295	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	325854	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	325855	1	20	5.0	5.0	✔
Conductivity in Water	E100	330196	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328719	1	19	5.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	331108	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	328718	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	330260	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	326003	1	19	5.2	5.0	✔
Fluoride in Water by IC	E235.F	325852	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	325856	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	325857	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	325853	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	329438	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	329050	1	13	7.6	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	330267	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	331585	1	20	5.0	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	329433	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	327721	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	330295	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	325854	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	325855	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	328719	1	19	5.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	331108	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	328718	1	19	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	330260	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	326003	1	19	5.2	5.0	✔



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	325852	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	325856	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	325857	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	325853	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	329050	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	330267	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	331585	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105080**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q4\_20211020  
**Sampler** : DARREN SIMPSON  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 21-Oct-2021 08:50  
**Date Analysis Commenced** : 21-Oct-2021  
**Issue Date** : 02-Nov-2021 20:01

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2105080  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 327721)</b>											
CG2105074-009	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 329438)</b>											
CG2105079-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	904	911	0.772%	20%	----
<b>Physical Tests (QC Lot: 329742)</b>											
CG2105079-001	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	11.9	10.8	1.1	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 330195)</b>											
CG2105079-001	Anonymous	pH	----	E108	0.10	pH units	7.73	7.83	1.28%	4%	----
<b>Physical Tests (QC Lot: 330196)</b>											
CG2105079-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1250	1260	0.398%	10%	----
<b>Physical Tests (QC Lot: 330197)</b>											
CG2105079-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	639	611	4.37%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	639	611	4.37%	20%	----
<b>Physical Tests (QC Lot: 331778)</b>											
CG2105079-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	415	421	1.41%	15%	----
<b>Anions and Nutrients (QC Lot: 325852)</b>											
CG2105076-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.080	0.082	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325853)</b>											
CG2105076-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	11.0	11.0	0.342%	20%	----
<b>Anions and Nutrients (QC Lot: 325854)</b>											
CG2105076-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325855)</b>											
CG2105076-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.58	0.58	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 325856)</b>											
CG2105076-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.04	1.05	1.20%	20%	----
<b>Anions and Nutrients (QC Lot: 325857)</b>											
CG2105076-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0012	0.0010	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 326003)</b>											
CG2105080-001	CM_NNP_WS_2021-10-11_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0010	0.000006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 329050)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 329050) - continued</b>											
CG2105080-001	CM_NNP_WS_2021-10-11_N	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.071	0.021	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330295)</b>											
CG2105079-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0500	mg/L	1.42	1.41	0.947%	20%	----
<b>Anions and Nutrients (QC Lot: 331585)</b>											
CG2105079-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0100	mg/L	0.249	0.252	1.37%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 330260)</b>											
CG2105079-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	8.39	8.61	2.58%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 330267)</b>											
CG2105076-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.36	1.30	0.06	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 328718)</b>											
CG2105050-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0021	0.0022	0.00008	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0285	0.0307	7.48%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.251 µg/L	0.000300	17.8%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	396	382	3.59%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00042	0.00043	0.000009	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.0397	0.0387	2.60%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	129	132	2.31%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.0693	0.0714	3.02%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.000505	0.000531	0.000025	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.00252	0.00275	0.00023	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	1.72	1.79	3.64%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	23.3 µg/L	0.0239	2.36%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	3.60	3.58	0.558%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	2.13	2.21	3.60%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.214	0.212	0.898%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	432	453	4.85%	20%	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 328718) - continued</b>											
CG2105050-001	Anonymous	thallium, dissolved	7440-28-0	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.00440	0.00441	0.199%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0134	0.0150	0.0016	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 328719)</b>											
CG2105050-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 331108)</b>											
CG2105074-014	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 327721)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 329433)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 329438)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 329742)</b>						
acidity (as CaCO <sub>3</sub> )	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 330196)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 330197)</b>						
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Anions and Nutrients (QCLot: 325852)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 325853)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 325854)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 325855)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 325856)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 325857)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 326003)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 329050)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 330295)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 331585)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 331585) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 330260)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 330267)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 328718)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 328718) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 328719)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 331108)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 327721)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	94.0	85.0	115	---
<b>Physical Tests (QCLot: 329433)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.0	85.0	115	---
<b>Physical Tests (QCLot: 329438)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	98.1	85.0	115	---
<b>Physical Tests (QCLot: 329742)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 330195)</b>									
pH	---	E108	---	pH units	7 pH units	101	98.6	101	---
<b>Physical Tests (QCLot: 330196)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 330197)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	98.8	85.0	115	---
<b>Physical Tests (QCLot: 331778)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	100	95.4	104	---
<b>Anions and Nutrients (QCLot: 325852)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.0	90.0	110	---
<b>Anions and Nutrients (QCLot: 325853)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 325854)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 325855)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 325856)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 325857)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 326003)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	89.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 329050)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	99.6	75.0	125	---
<b>Anions and Nutrients (QCLot: 330295)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 330295) - continued</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	94.9	85.0	115	----
<b>Anions and Nutrients (QCLot: 331585)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	108	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 330260)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	96.4	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 330267)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	100	80.0	120	----
<b>Dissolved Metals (QCLot: 328718)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	112	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	85.7	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.3	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	116	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	91.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	109	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.9	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.9	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	110	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	93.4	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.7	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.0	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 328718) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 328719)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 325852)</b>										
CG2105076-003	Anonymous	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 325853)</b>										
CG2105076-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	101 mg/L	100 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 325854)</b>										
CG2105076-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.529 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 325855)</b>										
CG2105076-003	Anonymous	chloride	16887-00-6	E235.Cl-L	103 mg/L	100 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 325856)</b>										
CG2105076-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.57 mg/L	2.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 325857)</b>										
CG2105076-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.508 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 326003)</b>										
CG2105080-002	CM_NNT_WS_2021-10-11_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0563 mg/L	0.05 mg/L	113	70.0	130	----
<b>Anions and Nutrients (QCLot: 329050)</b>										
CG2105080-002	CM_NNT_WS_2021-10-11_N	Kjeldahl nitrogen, total [TKN]	----	E318	2.50 mg/L	2.5 mg/L	100.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 330295)</b>										
CG2105080-002	CM_NNT_WS_2021-10-11_N	ammonia, total (as N)	7664-41-7	E298	0.0989 mg/L	0.1 mg/L	98.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 331585)</b>										
CG2105079-002	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 330260)</b>										
CG2105079-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	26.0 mg/L	23.9 mg/L	109	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 330267)</b>										
CG2105076-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.8 mg/L	23.9 mg/L	99.4	70.0	130	----
<b>Dissolved Metals (QCLot: 328718)</b>										
CG2105050-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.212 mg/L	0.2 mg/L	106	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 328718) - continued</b>										
CG2105050-002	Anonymous	arsenic, dissolved	7440-38-2	E421	0.0219 mg/L	0.02 mg/L	109	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00865 mg/L	0.01 mg/L	86.5	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.092 mg/L	0.1 mg/L	91.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00434 mg/L	0.004 mg/L	108	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.09 mg/L	2 mg/L	104	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.21 mg/L	4 mg/L	105	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0469 mg/L	0.04 mg/L	117	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.76 mg/L	10 mg/L	97.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00390 mg/L	0.004 mg/L	97.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	2.16 mg/L	2 mg/L	108	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00379 mg/L	0.004 mg/L	94.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0425 mg/L	0.04 mg/L	106	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00406 mg/L	0.004 mg/L	102	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.432 mg/L	0.4 mg/L	108	70.0	130	----
<b>Dissolved Metals (QCLot: 328719)</b>										
CG2105050-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0422 mg/L	0.04 mg/L	106	70.0	130	----
<b>Dissolved Metals (QCLot: 331108)</b>										
CG2105074-015	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000986 mg/L	0.0001 mg/L	98.6	70.0	130	----



Page : 14 of 14  
Work Order : CG2105080  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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COC ID: **COC\_WG\_Q4\_20211020**      TURNAROUND TIME: **REGULAR**      RUSH: **NO**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excl	PDF	EDD
Project Manager	Victoria Sharpe			Lab Contact	Milica Papic			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	Victoria.Sharpe@teck.com			Email	Milica.Papic@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
		Province	BC	City	Calgary	Province	AB	Email 4:	don.sacino@teck.com	X	X	X
		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	shelby.holden@teck.com	X	X	X
				Phone Number	403 407 1800			PO number	00741264			

Environmental Division  
Calgary  
Work Order Reference  
**CG2105080**



Telephone : +1 403 407 1800

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**      Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED												
								ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA								
CM_NNP_WS_2021-10-11_N	CM_NNP	WG	No	10/20/2021	10:25	G	5	1	1	1	1	1								
CM_NNT_WS_2021-10-11_N	CM_NNT	WG	No	10/20/2021	10:25	G	5	1	1	1	1	1								
CM_MW10_WG_2021-10-11_N	CM_MW10	WG	No	10/20/2021	10:25	G	5	1	1	1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO <sub>3</sub> , hydroxide as OH and carbonate as CO <sub>3</sub> rather than bicarbonate as CaCO <sub>3</sub> , Carbonate as CaCO <sub>3</sub> and hydroxide as CaCO <sub>3</sub> .			5°C	10/21 8:50 AM
<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	Darren Simpson	Mobile #	250-425-7529
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	10/20/2021 14:00:00 PM
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105119**  
**Client** : **Teck Coal Limited**  
**Contact** : Jay Jones  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : 250 425 6305 / 250-425-2555  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q4\_20211021  
**Sampler** : KS/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Oct-2021 08:55  
**Date Analysis Commenced** : 22-Oct-2021  
**Issue Date** : 01-Nov-2021 11:19

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW6-DP_ WG_2021-10-1 1_N	CM_MW6-SH_ WG_2021-10-1 1_N	----	----	----
Client sampling date / time					21-Oct-2021 13:30	21-Oct-2021 13:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105119-001 Result	CG2105119-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	663	202	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	809	246	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	18.6	8.2	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	11.2	4.9	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	694	210	----	----	----	
conductivity	----	E100	2.0	µS/cm	1260	422	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	37.0	78.3	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	436	434	----	----	----	
pH	----	E108	0.10	pH units	8.51	8.47	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	798	248	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	4.3	1.3	----	----	----	
turbidity	----	E121	0.10	NTU	2.81	1.36	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.533	0.0384	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	0.078	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	35.1	19.0	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.279	1.56	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.492	0.069	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0250 <sup>DLDS</sup>	<0.0050	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	<0.0010	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0168	0.0019	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0320	0.0110	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<1.50	1.49	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	2.44	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	2.29	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW6-DP_ WG_2021-10-1 1_N	CM_MW6-SH_ WG_2021-10-1 1_N	---	---	---
Client sampling date / time					21-Oct-2021 13:30	21-Oct-2021 13:30	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2105119-001 Result	CG2105119-002 Result	----- ---	----- ---	----- ---	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	14.9	4.84	----	----	----	
cation sum	----	EC101	0.10	meq/L	15.3	4.75	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	103	98.1	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.32	0.938	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0057	0.0040	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00053	0.00064	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.396	0.137	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.040 <sup>DLA</sup>	<0.020	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.316	0.038	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0100 <sup>DLA</sup>	<0.0050	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	10.1	19.6	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.20 <sup>DLA</sup>	<0.10	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00040 <sup>DLA</sup>	<0.00020	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.250	0.180	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000100 <sup>DLA</sup>	<0.000050	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.421	0.0406	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.87	7.12	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0742	0.275	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00151	0.00411	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.91	0.323	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.100 <sup>DLA</sup>	0.234	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.09	3.29	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	333	72.6	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW6-DP_ WG_2021-10-1 1_N	CM_MW6-SH_ WG_2021-10-1 1_N	----	----	----
Client sampling date / time					21-Oct-2021 13:30	21-Oct-2021 13:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105119-001 Result	CG2105119-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.15	0.214	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50 <sup>RRV</sup>	1.09	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000020 <sup>DLA</sup>	<0.000010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00020 <sup>DLA</sup>	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00060 <sup>DLA</sup>	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000399	0.000372	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00100 <sup>DLA</sup>	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0032	<0.0010	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105119</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Jay Jones	Account Manager	: Milica Pasic
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 6305 / 250-425-2555	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 22-Oct-2021 08:55
PO	: VPO00741264	Issue Date	: 01-Nov-2021 11:20
C-O-C number	: COC_WG_Q4_20211021		
Sampler	: KS/DS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-DP_WG_2021-10-11_N	E298	21-Oct-2021	24-Oct-2021	----	----		24-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-SH_WG_2021-10-11_N	E298	21-Oct-2021	24-Oct-2021	----	----		24-Oct-2021	28 days	3 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW6-DP_WG_2021-10-11_N	E235.Br-L	21-Oct-2021	----	----	----		22-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW6-SH_WG_2021-10-11_N	E235.Br-L	21-Oct-2021	----	----	----		22-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW6-DP_WG_2021-10-11_N	E235.Cl-L	21-Oct-2021	----	----	----		22-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW6-SH_WG_2021-10-11_N	E235.Cl-L	21-Oct-2021	----	----	----		22-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> CM_MW6-DP_WG_2021-10-11_N	E378-U	21-Oct-2021	----	----	----		23-Oct-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW6-SH_WG_2021-10-11_N	E378-U	21-Oct-2021	----	----	----		23-Oct-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW6-DP_WG_2021-10-11_N	E235.F	21-Oct-2021	----	----	----		22-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW6-SH_WG_2021-10-11_N	E235.F	21-Oct-2021	----	----	----		22-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW6-DP_WG_2021-10-11_N	E235.NO3-L	21-Oct-2021	----	----	----		22-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW6-SH_WG_2021-10-11_N	E235.NO3-L	21-Oct-2021	----	----	----		22-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW6-DP_WG_2021-10-11_N	E235.NO2-L	21-Oct-2021	----	----	----		22-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW6-SH_WG_2021-10-11_N	E235.NO2-L	21-Oct-2021	----	----	----		22-Oct-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW6-DP_WG_2021-10-11_N	E235.SO4	21-Oct-2021	----	----	----		22-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW6-SH_WG_2021-10-11_N	E235.SO4	21-Oct-2021	----	----	----		22-Oct-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-DP_WG_2021-10-11_N	E318	21-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-SH_WG_2021-10-11_N	E318	21-Oct-2021	25-Oct-2021	----	----		26-Oct-2021	28 days	5 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-DP_WG_2021-10-11_N	E372-U	21-Oct-2021	29-Oct-2021	----	----		29-Oct-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-SH_WG_2021-10-11_N	E372-U	21-Oct-2021	29-Oct-2021	----	----		29-Oct-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW6-DP_WG_2021-10-11_N	E421.Cr-L	21-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW6-SH_WG_2021-10-11_N	E421.Cr-L	21-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	180 days	5 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW6-DP_WG_2021-10-11_N	E509	21-Oct-2021	28-Oct-2021	----	----		28-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW6-SH_WG_2021-10-11_N	E509	21-Oct-2021	28-Oct-2021	----	----		28-Oct-2021	28 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW6-DP_WG_2021-10-11_N	E421	21-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	180 days	5 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW6-SH_WG_2021-10-11_N	E421	21-Oct-2021	26-Oct-2021	----	----		27-Oct-2021	180 days	5 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW6-DP_WG_2021-10-11_N	E358-L	21-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW6-SH_WG_2021-10-11_N	E358-L	21-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-DP_WG_2021-10-11_N	E355-L	21-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	6 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW6-SH_WG_2021-10-11_N	E355-L	21-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	6 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW6-DP_WG_2021-10-11_N	E283	21-Oct-2021	----	----	----		25-Oct-2021	14 days	4 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW6-SH_WG_2021-10-11_N	E283	21-Oct-2021	----	----	----		25-Oct-2021	14 days	4 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW6-DP_WG_2021-10-11_N	E290	21-Oct-2021	----	----	----		25-Oct-2021	14 days	4 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW6-SH_WG_2021-10-11_N	E290	21-Oct-2021	----	----	----		25-Oct-2021	14 days	4 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW6-DP_WG_2021-10-11_N	E100	21-Oct-2021	----	----	----		25-Oct-2021	28 days	4 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW6-SH_WG_2021-10-11_N	E100	21-Oct-2021	----	----	----		25-Oct-2021	28 days	4 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW6-DP_WG_2021-10-11_N	E125	21-Oct-2021	----	----	----		23-Oct-2021	0.25 hrs	47 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW6-SH_WG_2021-10-11_N	E125	21-Oct-2021	----	----	----		23-Oct-2021	0.25 hrs	47 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW6-DP_WG_2021-10-11_N	E108	21-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	95 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW6-SH_WG_2021-10-11_N	E108	21-Oct-2021	----	----	----		25-Oct-2021	0.25 hrs	95 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW6-DP_WG_2021-10-11_N	E162	21-Oct-2021	----	----	----		28-Oct-2021	7 days	7 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW6-SH_WG_2021-10-11_N	E162	21-Oct-2021	----	----	----		28-Oct-2021	7 days	7 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE CM_MW6-DP_WG_2021-10-11_N	E160-L	21-Oct-2021	----	----	----		28-Oct-2021	7 days	7 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE</b> CM_MW6-SH_WG_2021-10-11_N	E160-L	21-Oct-2021	----	----	----		28-Oct-2021	7 days	7 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW6-DP_WG_2021-10-11_N	E121	21-Oct-2021	----	----	----		23-Oct-2021	3 days	2 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW6-SH_WG_2021-10-11_N	E121	21-Oct-2021	----	----	----		23-Oct-2021	3 days	2 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	328828	1	8	12.5	5.0	✓
Alkalinity Species by Titration	E290	328827	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	328283	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	327567	1	12	8.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	327568	1	12	8.3	5.0	✓
Conductivity in Water	E100	328825	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	329800	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	331611	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	329799	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	331308	1	8	12.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	327744	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	327565	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	327569	1	12	8.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	327570	1	12	8.3	5.0	✓
ORP by Electrode	E125	328044	1	7	14.2	5.0	✓
pH by Meter	E108	328826	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	327566	1	12	8.3	5.0	✓
TDS by Gravimetry	E162	330617	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	328935	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	331309	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	331589	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	327722	1	12	8.3	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	328828	1	8	12.5	5.0	✓
Alkalinity Species by Titration	E290	328827	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	328283	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	327567	1	12	8.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	327568	1	12	8.3	5.0	✓
Conductivity in Water	E100	328825	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	329800	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	331611	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	329799	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	331308	1	8	12.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	327744	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	327565	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	327569	1	12	8.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	327570	1	12	8.3	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	328044	1	7	14.2	5.0	✓
pH by Meter	E108	328826	1	8	12.5	5.0	✓
Sulfate in Water by IC	E235.SO4	327566	1	12	8.3	5.0	✓
TDS by Gravimetry	E162	330617	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	328935	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	331309	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	331589	1	16	6.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	330616	1	7	14.2	5.0	✓
Turbidity by Nephelometry	E121	327722	1	12	8.3	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	328828	1	8	12.5	5.0	✓
Alkalinity Species by Titration	E290	328827	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	328283	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	327567	1	12	8.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	327568	1	12	8.3	5.0	✓
Conductivity in Water	E100	328825	1	8	12.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	329800	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	331611	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	329799	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	331308	1	8	12.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	327744	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	327565	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	327569	1	12	8.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	327570	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	327566	1	12	8.3	5.0	✓
TDS by Gravimetry	E162	330617	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	328935	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	331309	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	331589	1	16	6.2	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	330616	1	7	14.2	5.0	✓
Turbidity by Nephelometry	E121	327722	1	12	8.3	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	328283	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	327567	1	12	8.3	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	327568	1	12	8.3	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	329800	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	331611	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	329799	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	331308	1	8	12.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	327744	1	20	5.0	5.0	✓





Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	327565	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	327569	1	12	8.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	327570	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	327566	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	328935	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	331309	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	331589	1	16	6.2	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105119**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Jay Jones  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : 250 425 6305 / 250-425-2555  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q4\_20211021  
**Sampler** : KS/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
                   Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Oct-2021 08:55  
**Date Analysis Commenced** : 22-Oct-2021  
**Issue Date** : 01-Nov-2021 11:20

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2105119  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 327722)</b>											
CG2105097-002	Anonymous	turbidity	----	E121	0.10	NTU	0.31	0.31	0.001	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 328044)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	436	432	0.876%	15%	----
<b>Physical Tests (QC Lot: 328825)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	conductivity	----	E100	2.0	µS/cm	1260	1280	1.42%	10%	----
<b>Physical Tests (QC Lot: 328826)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	pH	----	E108	0.10	pH units	8.51	8.44	0.826%	4%	----
<b>Physical Tests (QC Lot: 328827)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	663	741	11.0%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	18.6	16.9	1.7	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	694	741	6.47%	20%	----
<b>Physical Tests (QC Lot: 328828)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 330617)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	solids, total dissolved [TDS]	----	E162	20	mg/L	798	750	6.27%	20%	----
<b>Anions and Nutrients (QC Lot: 327565)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	fluoride	16984-48-8	E235.F	0.100	mg/L	0.279	0.274	0.005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 327566)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	<1.50	<1.50	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 327567)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 327568)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	35.1	36.1	2.67%	20%	----
<b>Anions and Nutrients (QC Lot: 327569)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 327570)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 327570) - continued</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 327744)</b>											
CG2105108-011	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0202	0.0202	0.00695%	20%	----
<b>Anions and Nutrients (QC Lot: 328283)</b>											
CG2104846-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 328935)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.492	0.547	10.6%	20%	----
<b>Anions and Nutrients (QC Lot: 331589)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0320	0.0305	4.68%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 331308)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 331309)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 329799)</b>											
CG2105019-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0016	0.0016	0.000009	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00027	0.00025	0.00002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00037	0.00038	0.000007	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0534	0.0556	3.89%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	0.015	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0135 µg/L	0.0000190	0.0000056	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	247	270	9.09%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.83 µg/L	0.00086	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.024	0.024	0.0001	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0279	0.0310	10.4%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	149	152	1.97%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0496	0.0507	2.28%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00158	0.00151	3.96%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00403	0.00410	0.00007	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.21	3.33	3.55%	20%	----





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 329799) - continued</b>											
CG2105019-008	Anonymous	selenium, dissolved	7782-49-2	E421	0.050	mg/L	145 µg/L	0.146	0.297%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.66	3.58	2.36%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.89	3.94	1.16%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.262	0.254	3.09%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	275	264	3.87%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00986	0.00963	2.41%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0033	0.0028	0.0004	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 329800)</b>											
CG2105019-008	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 331611)</b>											
CG2105119-001	CM_MW6-DP_WG_2021-1 0-11_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 327722)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 328825)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 328827)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 328828)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 330616)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 330617)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 327565)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 327566)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 327567)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 327568)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 327569)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 327570)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 327744)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 328283)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 328935)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 331589)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 331589) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 331308)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 331309)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 329799)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 329799) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 329800)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 331611)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 327722)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	92.4	85.0	115	---
<b>Physical Tests (QCLot: 328044)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.5	95.4	104	---
<b>Physical Tests (QCLot: 328825)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	104	90.0	110	---
<b>Physical Tests (QCLot: 328826)</b>									
pH	---	E108	---	pH units	7 pH units	99.1	98.6	101	---
<b>Physical Tests (QCLot: 328827)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 328828)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 330616)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	102	85.0	115	---
<b>Physical Tests (QCLot: 330617)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	94.4	85.0	115	---
<b>Anions and Nutrients (QCLot: 327565)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 327566)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	107	90.0	110	---
<b>Anions and Nutrients (QCLot: 327567)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 327568)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	108	90.0	110	---
<b>Anions and Nutrients (QCLot: 327569)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	108	90.0	110	---
<b>Anions and Nutrients (QCLot: 327570)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 327744)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	89.4	80.0	120	---
<b>Anions and Nutrients (QCLot: 328283)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 328935)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 328935) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	96.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 331589)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	107	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 331308)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 331309)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 329799)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.2	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.0	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	87.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	88.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	95.6	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.4	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	90.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	94.1	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	94.0	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.8	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.2	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.3	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.4	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.1	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 329799) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	114	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	95.0	80.0	120	----
<b>Dissolved Metals (QCLot: 329800)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	104	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 327565)</b>										
CG2105119-002	CM_MW6-SH_WG_2021-10-11_N	fluoride	16984-48-8	E235.F	ND mg/L	1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 327566)</b>										
CG2105119-002	CM_MW6-SH_WG_2021-10-11_N	sulfate (as SO4)	14808-79-8	E235.SO4	95.3 mg/L	100 mg/L	95.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 327567)</b>										
CG2105119-002	CM_MW6-SH_WG_2021-10-11_N	bromide	24959-67-9	E235.Br-L	0.484 mg/L	0.5 mg/L	96.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 327568)</b>										
CG2105119-002	CM_MW6-SH_WG_2021-10-11_N	chloride	16887-00-6	E235.Cl-L	97.0 mg/L	100 mg/L	97.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 327569)</b>										
CG2105119-002	CM_MW6-SH_WG_2021-10-11_N	nitrate (as N)	14797-55-8	E235.NO3-L	2.42 mg/L	2.5 mg/L	96.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 327570)</b>										
CG2105119-002	CM_MW6-SH_WG_2021-10-11_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.486 mg/L	0.5 mg/L	97.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 327744)</b>										
CG2105108-012	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0559 mg/L	0.05 mg/L	112	70.0	130	----
<b>Anions and Nutrients (QCLot: 328283)</b>										
CG2104846-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.119 mg/L	0.1 mg/L	119	75.0	125	----
<b>Anions and Nutrients (QCLot: 328935)</b>										
CG2105119-002	CM_MW6-SH_WG_2021-10-11_N	Kjeldahl nitrogen, total [TKN]	----	E318	2.28 mg/L	2.5 mg/L	91.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 331589)</b>										
CG2105119-002	CM_MW6-SH_WG_2021-10-11_N	phosphorus, total	7723-14-0	E372-U	0.0673 mg/L	0.0676 mg/L	99.6	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 331308)</b>										
CG2105119-001	CM_MW6-DP_WG_2021-10-11_N	carbon, dissolved organic [DOC]	----	E358-L	25.5 mg/L	23.9 mg/L	107	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 331309)</b>										
CG2105119-001	CM_MW6-DP_WG_2021-10-11_N	carbon, total organic [TOC]	----	E355-L	24.4 mg/L	23.9 mg/L	102	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 329799)</b>										
CG2105019-009	Anonymous	aluminum, dissolved	7429-90-5	E421	0.198 mg/L	0.2 mg/L	99.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0366 mg/L	0.04 mg/L	91.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00807 mg/L	0.01 mg/L	80.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.087 mg/L	0.1 mg/L	87.4	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00385 mg/L	0.004 mg/L	96.3	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0178 mg/L	0.02 mg/L	89.3	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0181 mg/L	0.02 mg/L	90.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.87 mg/L	2 mg/L	93.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0183 mg/L	0.02 mg/L	91.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0900 mg/L	0.1 mg/L	90.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0444 mg/L	0.04 mg/L	111	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.26 mg/L	10 mg/L	92.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00384 mg/L	0.004 mg/L	96.1	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0385 mg/L	0.04 mg/L	96.2	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.360 mg/L	0.4 mg/L	90.0	70.0	130	----
<b>Dissolved Metals (QCLot: 329800)</b>										
CG2105019-009	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
<b>Dissolved Metals (QCLot: 331611)</b>										
CG2105119-002	CM_MW6-SH_WG_2021-10-11_N	mercury, dissolved	7439-97-6	E509	0.0000978 mg/L	0.0001 mg/L	97.8	70.0	130	----

Page : 14 of 14  
Work Order : CG2105119  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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COC ID: <b>COC_WG_Q4_20211021</b>		TURNAROUND TIME:		REGULAR		RUSH: NO						
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>				<b>OTHER INFO</b>				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Victoria Sharpe			Lab Contact	Milica Papis			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	Victoria.Sharpe@teck.com			Email	Milica.Papis@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	don.sacino@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	shelby.holden@teck.com	X	X	X
Phone Number	1-250-425-7522			Phone Number	403 407 1800			PO number	00741264			

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	PRESERV.	F	N	F	F	N						
CM_MW6-DP_WG_2021-10-11_N	CM_MW6-DP	WG	No	10/21/2021	13:30	G	5	ALS_Package-DOC	H2SO4	1	1	1	1	1						
CM_MW6-SH_WG_2021-10-11_N	CM_MW6-SH	WG	No	10/21/2021	13:30	G	5	ALS_Package-TKN/TOC	H2SO4	1	1	1	1	1						
								HG-D-CVAF-VA	HCL											
								TECKCOAL-MET-D-VA	HNO3											
								TECKCOAL-ROUTINE-VA	NONE											

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>		<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>	
Request analyses of bicarbonate and HCO <sub>3</sub> , hydroxide as OH and carbonate as CO <sub>3</sub> rather than bicarbonate as CaCO <sub>3</sub> . Carbonate as CaCO <sub>3</sub> and hydroxide as CaCO <sub>3</sub> .						[Signature]		22/10/2021	
<b>SERVICE REQUEST (rush - subject to availability)</b>									
Regular (default) <input checked="" type="checkbox"/>		<b>Sampler's Name</b>		KS/DS		<b>Mobile #</b>		250-425-7529	
Priority (2-3 business days) - 50% surcharge		<b>Sampler's Signature</b>		[Signature]		<b>Date/Time</b>		10/21/2021 14:00:00 PM	
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									

Environmental Division  
Calgary

Work Order Reference  
**CG2105119**



Telephone : +1 403 407 1800

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105206**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
                   Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q4\_20211025  
**Sampler** : Darren Simpson  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
                   Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Oct-2021 08:40  
**Date Analysis Commenced** : 26-Oct-2021  
**Issue Date** : 04-Nov-2021 14:18

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.



## Analytical Results

Sub-Matrix: Water					Client sample ID	CM_MW2-SH_	---	---	---	---
(Matrix: Water)					WG_2021-10-1					
					Client sampling date / time	25-Oct-2021	---	---	---	---
					13:10					
Analyte	CAS Number	Method	LOR	Unit	CG2105206-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Physical Tests</b>										
acidity (as CaCO3)	---	E283	2.0	mg/L	17.9	---	---	---	---	---
alkalinity, bicarbonate (as CaCO3)	---	E290	2.0	mg/L	374	---	---	---	---	---
alkalinity, carbonate (as CaCO3)	---	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, hydroxide (as CaCO3)	---	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, total (as CaCO3)	---	E290	2.0	mg/L	374	---	---	---	---	---
conductivity	---	E100	2.0	µS/cm	1350	---	---	---	---	---
hardness (as CaCO3), dissolved	---	EC100	0.50	mg/L	700	---	---	---	---	---
oxidation-reduction potential [ORP]	---	E125	0.10	mV	456	---	---	---	---	---
pH	---	E108	0.10	pH units	7.37	---	---	---	---	---
solids, total dissolved [TDS]	---	E162	10	mg/L	971	---	---	---	---	---
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	1.0	---	---	---	---	---
turbidity	---	E121	0.10	NTU	0.24	---	---	---	---	---
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	2.0	mg/L	456	---	---	---	---	---
alkalinity, carbonate (as CO3)	3812-32-6	E290	2.0	mg/L	<2.0	---	---	---	---	---
alkalinity, hydroxide (as OH)	14280-30-9	E290	2.0	mg/L	<2.0	---	---	---	---	---
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	---	---	---	---	---
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 <sup>DLDS</sup>	---	---	---	---	---
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.99	---	---	---	---	---
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.100 <sup>DLDS</sup>	---	---	---	---	---
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	<0.050	---	---	---	---	---
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0560	---	---	---	---	---
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 <sup>DLDS</sup>	---	---	---	---	---
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0017	---	---	---	---	---
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0054	---	---	---	---	---
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	476	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	1.88	---	---	---	---	---
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	1.30	---	---	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW2-SH_	----	----	----	----
					WG_2021-10-1					
					1_N					
					Client sampling date / time	25-Oct-2021	----	----	----	----
					13:10					
Analyte	CAS Number	Method	LOR	Unit	CG2105206-001	-----	-----	-----	-----	-----
					Result	----	----	----	----	----
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	17.5	----	----	----	----	----
cation sum	----	EC101	0.10	meq/L	15.7	----	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	89.7	----	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	5.42	----	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.114	----	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.038	----	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.152	----	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	191	----	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00016	----	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	----	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00063	----	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	----	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0267	----	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	54.1	----	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000134	----	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00061	----	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.71	----	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.057	----	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.09	----	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	38.9	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW2-SH_	---	---	---	---
					WG_2021-10-1					
					1_N					
					Client sampling date / time	25-Oct-2021	---	---	---	---
					13:10					
Analyte	CAS Number	Method	LOR	Unit	CG2105206-001	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.632	---	---	---	---	---
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	160	---	---	---	---	---
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000012	---	---	---	---	---
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	---	---	---	---	---
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000199	---	---	---	---	---
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	---	---	---	---	---
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0025	---	---	---	---	---
dissolved mercury filtration location	---	EP509	-	-	Field	---	---	---	---	---
dissolved metals filtration location	---	EP421	-	-	Field	---	---	---	---	---

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105206</b>	Page	: 1 of 11
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Milica Pasic
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 26-Oct-2021 08:40
PO	: VPO00741264	Issue Date	: 04-Nov-2021 14:18
C-O-C number	: COC_WG_Q4_20211025		
Sampler	: Darren Simpson		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	45.1 % <sup>MSTN</sup>	70.0-130%	Recovery less than lower data quality objective

**Result Qualifiers**

Qualifier	Description
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW2-SH_WG_2021-10-11_N	E298	25-Oct-2021	27-Oct-2021	----	----		27-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_MW2-SH_WG_2021-10-11_N	E235.Br-L	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_MW2-SH_WG_2021-10-11_N	E235.Cl-L	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>										
<b>HDPE</b> CM_MW2-SH_WG_2021-10-11_N	E378-U	25-Oct-2021	----	----	----		26-Oct-2021	3 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
<b>HDPE</b> CM_MW2-SH_WG_2021-10-11_N	E235.F	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_MW2-SH_WG_2021-10-11_N	E235.NO3-L	25-Oct-2021	----	----	----		27-Oct-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_MW2-SH_WG_2021-10-11_N	E235.NO2-L	25-Oct-2021	----	----	----		27-Oct-2021	3 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
<b>HDPE</b> CM_MW2-SH_WG_2021-10-11_N	E235.SO4	25-Oct-2021	----	----	----		27-Oct-2021	28 days	2 days	✔
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW2-SH_WG_2021-10-11_N	E318	25-Oct-2021	31-Oct-2021	----	----		01-Nov-2021	28 days	7 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW2-SH_WG_2021-10-11_N	E372-U	25-Oct-2021	03-Nov-2021	----	----		03-Nov-2021	28 days	9 days	✔
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>										
<b>HDPE dissolved (nitric acid)</b> CM_MW2-SH_WG_2021-10-11_N	E421.Cr-L	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW2-SH_WG_2021-10-11_N	E509	25-Oct-2021	01-Nov-2021	----	----		01-Nov-2021	28 days	7 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
<b>HDPE dissolved (nitric acid)</b> CM_MW2-SH_WG_2021-10-11_N	E421	25-Oct-2021	01-Nov-2021	----	----		02-Nov-2021	180 days	8 days	✔
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW2-SH_WG_2021-10-11_N	E358-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✔
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW2-SH_WG_2021-10-11_N	E355-L	25-Oct-2021	31-Oct-2021	----	----		03-Nov-2021	28 days	9 days	✔
<b>Physical Tests : Acidity by Titration</b>										
<b>HDPE</b> CM_MW2-SH_WG_2021-10-11_N	E283	25-Oct-2021	----	----	----		28-Oct-2021	14 days	3 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW2-SH_WG_2021-10-11_N	E290	25-Oct-2021	----	----	----		28-Oct-2021	14 days	3 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW2-SH_WG_2021-10-11_N	E100	25-Oct-2021	----	----	----		28-Oct-2021	28 days	3 days	✓	
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW2-SH_WG_2021-10-11_N	E125	25-Oct-2021	----	----	----		28-Oct-2021	0.25 hrs	70 hrs	* EHTR-FM	
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW2-SH_WG_2021-10-11_N	E108	25-Oct-2021	----	----	----		28-Oct-2021	0.25 hrs	71 hrs	* EHTR-FM	
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW2-SH_WG_2021-10-11_N	E162	25-Oct-2021	----	----	----		01-Nov-2021	7 days	7 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
HDPE CM_MW2-SH_WG_2021-10-11_N	E160-L	25-Oct-2021	----	----	----		01-Nov-2021	7 days	7 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
HDPE CM_MW2-SH_WG_2021-10-11_N	E121	25-Oct-2021	----	----	----		27-Oct-2021	3 days	2 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	332227	1	12	8.3	5.0	✓
Alkalinity Species by Titration	E290	331968	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	330933	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	330793	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	330794	1	16	6.2	5.0	✓
Conductivity in Water	E100	331966	1	12	8.3	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334856	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	334922	1	14	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334855	2	19	10.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334442	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330134	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	330791	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	330795	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	330796	1	16	6.2	5.0	✓
ORP by Electrode	E125	331774	1	20	5.0	5.0	✓
pH by Meter	E108	331967	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	330792	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	334914	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	334331	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334447	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334633	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	330808	1	19	5.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	332227	1	12	8.3	5.0	✓
Alkalinity Species by Titration	E290	331968	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	330933	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	330793	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	330794	1	16	6.2	5.0	✓
Conductivity in Water	E100	331966	1	12	8.3	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334856	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	334922	1	14	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334855	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334442	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330134	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	330791	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	330795	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	330796	1	16	6.2	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	331774	1	20	5.0	5.0	✓
pH by Meter	E108	331967	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	330792	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	334914	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	334331	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334447	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334633	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	334585	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	330808	1	19	5.2	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	332227	1	12	8.3	5.0	✓
Alkalinity Species by Titration	E290	331968	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	330933	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	330793	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	330794	1	16	6.2	5.0	✓
Conductivity in Water	E100	331966	1	12	8.3	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334856	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	334922	1	14	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334855	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334442	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330134	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	330791	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	330795	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	330796	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	330792	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	334914	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	334331	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334447	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334633	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	334585	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	330808	1	19	5.2	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	330933	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	330793	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	330794	1	16	6.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	334856	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	334922	1	14	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	334855	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	334442	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	330134	1	17	5.8	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	330791	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	330795	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	330796	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	330792	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	334331	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	334447	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	334633	1	20	5.0	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105206**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q4\_20211025  
**Sampler** : Darren Simpson  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 26-Oct-2021 08:40  
**Date Analysis Commenced** : 26-Oct-2021  
**Issue Date** : 04-Nov-2021 14:18

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2105206  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 330808)</b>											
CG2105180-003	Anonymous	turbidity	----	E121	0.10	NTU	2.52	2.52	0.0793%	15%	----
<b>Physical Tests (QC Lot: 331774)</b>											
CG2105206-001	CM_MW2-SH_WG_2021-1 0-11_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	456	454	0.439%	15%	----
<b>Physical Tests (QC Lot: 331966)</b>											
CG2105193-002	Anonymous	conductivity	----	E100	2.0	µS/cm	2180	2180	0.00%	10%	----
<b>Physical Tests (QC Lot: 331967)</b>											
CG2105193-002	Anonymous	pH	----	E108	0.10	pH units	7.98	7.98	0.00%	4%	----
<b>Physical Tests (QC Lot: 331968)</b>											
CG2105193-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	482	492	1.95%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	482	492	1.95%	20%	----
<b>Physical Tests (QC Lot: 332227)</b>											
CG2105193-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	15.8	15.5	0.3	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 334914)</b>											
CG2105202-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	222	218	2.04%	20%	----
<b>Anions and Nutrients (QC Lot: 330134)</b>											
CG2105197-007	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0025	0.0029	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330791)</b>											
CG2105206-001	CM_MW2-SH_WG_2021-1 0-11_N	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330792)</b>											
CG2105206-001	CM_MW2-SH_WG_2021-1 0-11_N	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	476	491	3.18%	20%	----
<b>Anions and Nutrients (QC Lot: 330793)</b>											
CG2105206-001	CM_MW2-SH_WG_2021-1 0-11_N	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330794)</b>											
CG2105206-001	CM_MW2-SH_WG_2021-1 0-11_N	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	2.99	2.77	0.21	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330795)</b>											
CG2105206-001	CM_MW2-SH_WG_2021-1 0-11_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.0560	0.0475	0.0085	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330796)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 330796) - continued</b>											
CG2105206-001	CM_MW2-SH_WG_2021-1 0-11_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 330933)</b>											
CG2105193-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 334331)</b>											
CG2105200-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.394	0.330	0.064	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 334633)</b>											
CG2105200-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0030	<0.0020	0.0010	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334442)</b>											
CG2105201-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	0.58	0.08	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 334447)</b>											
CG2105201-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 334855)</b>											
CG2105201-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
CG2105201-001	Anonymous	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0694	0.0693	0.124%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	57.7	55.9	3.14%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00043	0.00042	0.00001	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0050	0.0049	0.0001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	17.5	17.8	1.88%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.00014	0.00004	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00133	0.00126	5.12%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.570	0.577	1.15%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	1.16 µg/L	0.00115	1.44%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.13	3.22	2.82%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.70	2.83	4.75%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 334855) - continued</b>											
CG2105201-001	Anonymous	strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.169	0.165	2.63%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	9.53	9.87	3.43%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	0.00058	0.00028	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00121	0.00119	1.39%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0013	0.00005	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 334856)</b>											
CG2105201-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00063	0.00065	0.00002	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 334922)</b>											
CG2105193-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 330808)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 331966)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 331968)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 332227)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 334585)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 334914)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 330134)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 330791)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 330792)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 330793)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 330794)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 330795)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 330796)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 330933)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 334331)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 334633)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 334633) - continued</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 334442)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 334447)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 334855)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 334855) - continued</b>						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 334856)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 334922)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 330808)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	97.4	85.0	115	----
<b>Physical Tests (QCLot: 331774)</b>									
oxidation-reduction potential [ORP]	---	E125	----	mV	220 mV	100	95.4	104	----
<b>Physical Tests (QCLot: 331966)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	----
<b>Physical Tests (QCLot: 331967)</b>									
pH	---	E108	----	pH units	7 pH units	100	98.6	101	----
<b>Physical Tests (QCLot: 331968)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	100	85.0	115	----
<b>Physical Tests (QCLot: 332227)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	107	85.0	115	----
<b>Physical Tests (QCLot: 334585)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	91.8	85.0	115	----
<b>Physical Tests (QCLot: 334914)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	98.2	85.0	115	----
<b>Anions and Nutrients (QCLot: 330134)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	110	80.0	120	----
<b>Anions and Nutrients (QCLot: 330791)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	105	90.0	110	----
<b>Anions and Nutrients (QCLot: 330792)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	108	90.0	110	----
<b>Anions and Nutrients (QCLot: 330793)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	----
<b>Anions and Nutrients (QCLot: 330794)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	108	90.0	110	----
<b>Anions and Nutrients (QCLot: 330795)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	107	90.0	110	----
<b>Anions and Nutrients (QCLot: 330796)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	109	90.0	110	----
<b>Anions and Nutrients (QCLot: 330933)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.6	85.0	115	----
<b>Anions and Nutrients (QCLot: 334331)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 334331) - continued</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 334633)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	98.7	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 334442)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	107	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 334447)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
<b>Dissolved Metals (QCLot: 334855)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	91.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	83.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	91.7	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.7	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	96.9	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.4	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	94.1	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.6	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.9	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	87.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.2	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.3	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 334855) - continued</b>									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.9	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100.0	80.0	120	----
<b>Dissolved Metals (QCLot: 334856)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 330134)</b>										
CG2105197-008	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0514 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 330791)</b>										
CG2105220-001	Anonymous	fluoride	16984-48-8	E235.F	1.18 mg/L	1 mg/L	118	75.0	125	----
<b>Anions and Nutrients (QCLot: 330792)</b>										
CG2105220-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 330793)</b>										
CG2105220-001	Anonymous	bromide	24959-67-9	E235.Br-L	ND mg/L	0.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 330794)</b>										
CG2105220-001	Anonymous	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 330795)</b>										
CG2105220-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.58 mg/L	2.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 330796)</b>										
CG2105220-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.528 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 330933)</b>										
CG2105193-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 334331)</b>										
CG2105200-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	1.13 mg/L	2.5 mg/L	45.1	70.0	130	MSTN
<b>Anions and Nutrients (QCLot: 334633)</b>										
CG2105201-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0579 mg/L	0.0676 mg/L	85.7	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 334442)</b>										
CG2105201-003	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.3 mg/L	23.9 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 334447)</b>										
CG2105201-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.0 mg/L	23.9 mg/L	100	70.0	130	----
<b>Dissolved Metals (QCLot: 334855)</b>										
CG2105201-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.209 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 334855) - continued</b>										
CG2105201-002	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00863 mg/L	0.01 mg/L	86.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	87.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00403 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0938 mg/L	0.1 mg/L	93.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.89 mg/L	4 mg/L	97.3	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.69 mg/L	10 mg/L	86.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00398 mg/L	0.004 mg/L	99.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	19.5 mg/L	20 mg/L	97.5	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00372 mg/L	0.004 mg/L	93.1	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00380 mg/L	0.004 mg/L	95.1	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.399 mg/L	0.4 mg/L	99.6	70.0	130	----
<b>Dissolved Metals (QCLot: 334856)</b>										
CG2105201-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 334922)</b>										
CG2105193-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.000106 mg/L	0.0001 mg/L	106	70.0	130	----

**Qualifiers**

Qualifier	Description
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.





COC ID: **COC\_WG\_Q4\_20211025**      TURNAROUND TIME: **REGULAR**      RUSH: **NO**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Victoria Sharpe			Lab Contact	Milica Papic			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	Victoria.Sharpe@teck.com			Email	Milica.Papic@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jayjones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	don.sacino@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	shelby.holden@teck.com	X	X	X
				Phone Number	403 407 1800			PO number	00741264			

Environmental Division  
Calgary

Work Order Reference  
**CG2105206**



Telephone : + 1 403 407 1800

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**      Filtered: F=Field, L=Lab, FE=Field & Lab, NE=None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FIL	PRESERV.	ANALYSIS	F	N	F	F	N					
											ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA					
CM_MW2-SH_WG_2021-10-11_N	CM_MW2-SH	WG	No	10/25/2021	13:10	G	5		H2SO4	H2SO4	HCL	HNO3	NONE							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO <sub>3</sub> , hydroxide as OH and carbonate as CO <sub>3</sub> rather than bicarbonate as CaCO <sub>3</sub> , Carbonate as CaCO <sub>3</sub> and hydroxide as CaCO <sub>3</sub> .			<i>[Signature]</i>	10/26 <i>[Signature]</i>

SERVICE REQUEST (rush - subject to availability)					
Regular (default)	X	Sampler's Name	Darren Simpson	Mobile #	250-425-7529
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time	10/25/2021 14:00:00 PM
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

7



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105264**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q4\_MW1\_20211027  
**Sampler** : KS/SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 28-Oct-2021 09:00  
**Date Analysis Commenced** : 28-Oct-2021  
**Issue Date** : 11-Nov-2021 11:45

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLIS	Detection Limit Adjusted due to insufficient sample.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW1-SH_ WG_2021-10-1 1_N	CM_MW1-DP_ WG_2021-10-1 1_N	CM_MW1-OB_ WG_2021-10-1 1_N	----	----
Client sampling date / time					27-Oct-2021 12:20	27-Oct-2021 13:00	27-Oct-2021 12:25	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105264-001 Result	CG2105264-002 Result	CG2105264-003 Result	----- ---	----- ---	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	9.8	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	204	356	301	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	248	434	367	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	204	356	301	----	----	
conductivity	----	E100	2.0	µS/cm	966	1330	1090	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	123	154	475	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	450	454	446	----	----	
pH	----	E108	0.10	pH units	8.18	8.23	7.66	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	513	718	692	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.0	124	1.5	----	----	
turbidity	----	E121	0.10	NTU	1.57	72.6	1.24	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0557	0.612	<0.0050	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.701	2.93	<0.250 <sup>DLDS</sup>	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	174	230	83.0	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.770	0.108	<0.100 <sup>DLDS</sup>	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.187	0.693	<0.100 <sup>DLIS</sup>	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0116	0.183	0.549	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0061	0.0099	0.0034	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0100	0.167 <sup>DLHC</sup>	0.0038	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	2.10	8.38 <sup>RRV</sup>	201	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.24 <sup>DTC,RRV</sup>	2.97	0.82 <sup>DTC,RRV</sup>	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.88 <sup>DTC,RRV</sup>	3.69	0.69 <sup>DTC,RRV</sup>	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW1-SH_ WG_2021-10-1 1_N	CM_MW1-DP_ WG_2021-10-1 1_N	CM_MW1-OB_ WG_2021-10-1 1_N	----	----
Client sampling date / time					27-Oct-2021 12:20	27-Oct-2021 13:00	27-Oct-2021 12:25	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105264-001	CG2105264-002	CG2105264-003	-----	-----	
					Result	Result	Result	----	----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	9.07	13.8	12.6	----	----	
cation sum	----	EC101	0.10	meq/L	9.37	12.8	12.1	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	103	92.8	96.0	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	1.63	3.76	2.02	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0052	0.0074	0.0022	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	0.00018	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00176	0.00190	0.00014	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.514	11.1	0.0799	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.040 <sup>DLA</sup>	<0.020	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	<0.000050	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.047	0.217	0.034	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	<0.0100 <sup>DLA</sup>	0.0572	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	31.4	31.5	123	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00023	<0.00020 <sup>DLA</sup>	0.00048	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.20 <sup>DLA</sup>	<0.10	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00040 <sup>DLA</sup>	0.00161	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.230	0.772	<0.010	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	0.000086	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0192	0.674	0.0190	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	10.8	18.3	40.8	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.127	0.101	0.00029	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0427	0.00400	0.000309	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.947	4.88	1.86	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	2.14	0.182	2.97	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.77	4.89	3.64	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	0.000066	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	158	220	58.0	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW1-SH_ WG_2021-10-1 1_N	CM_MW1-DP_ WG_2021-10-1 1_N	CM_MW1-OB_ WG_2021-10-1 1_N	----	----
Client sampling date / time					27-Oct-2021 12:20	27-Oct-2021 13:00	27-Oct-2021 12:25	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105264-001 Result	CG2105264-002 Result	CG2105264-003 Result	----- ----	----- ----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.269	2.35	0.322	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.82	<1.00 <sup>DLA,RRV</sup>	68.3	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	0.000013	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00016	<0.00020 <sup>DLA</sup>	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000586	0.000366	0.00116	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	<0.00050	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0015	0.0141	0.0134	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105264</b>	Page	: 1 of 15
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Milica Pasic
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 28-Oct-2021 09:00
PO	: VPO00741264	Issue Date	: 11-Nov-2021 11:45
C-O-C number	: COC_WG_Q4_MW1_20211027		
Sampler	: KS/SH/DS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-DP_WG_2021-10-11_N	E298	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-10-11_N	E298	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-SH_WG_2021-10-11_N	E298	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW1-DP_WG_2021-10-11_N	E235.Br-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-10-11_N	E235.Br-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW1-SH_WG_2021-10-11_N	E235.Br-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW1-DP_WG_2021-10-11_N	E235.Cl-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW1-OB_WG_2021-10-11_N	E235.Cl-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW1-SH_WG_2021-10-11_N	E235.Cl-L	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW1-DP_WG_2021-10-11_N	E378-U	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW1-OB_WG_2021-10-11_N	E378-U	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW1-SH_WG_2021-10-11_N	E378-U	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW1-DP_WG_2021-10-11_N	E235.F	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW1-OB_WG_2021-10-11_N	E235.F	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW1-SH_WG_2021-10-11_N	E235.F	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW1-DP_WG_2021-10-11_N	E235.NO3-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW1-OB_WG_2021-10-11_N	E235.NO3-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW1-SH_WG_2021-10-11_N	E235.NO3-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW1-DP_WG_2021-10-11_N	E235.NO2-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW1-OB_WG_2021-10-11_N	E235.NO2-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW1-SH_WG_2021-10-11_N	E235.NO2-L	27-Oct-2021	----	----	----		28-Oct-2021	3 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW1-DP_WG_2021-10-11_N	E235.SO4	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW1-OB_WG_2021-10-11_N	E235.SO4	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW1-SH_WG_2021-10-11_N	E235.SO4	27-Oct-2021	----	----	----		28-Oct-2021	28 days	1 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-DP_WG_2021-10-11_N	E318	27-Oct-2021	02-Nov-2021	----	----		07-Nov-2021	28 days	11 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-10-11_N	E318	27-Oct-2021	02-Nov-2021	----	----		07-Nov-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-SH_WG_2021-10-11_N	E318	27-Oct-2021	02-Nov-2021	----	----		07-Nov-2021	28 days	11 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-DP_WG_2021-10-11_N	E372-U	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-10-11_N	E372-U	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-SH_WG_2021-10-11_N	E372-U	27-Oct-2021	04-Nov-2021	----	----		04-Nov-2021	28 days	8 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-DP_WG_2021-10-11_N	E421.Cr-L	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-OB_WG_2021-10-11_N	E421.Cr-L	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-SH_WG_2021-10-11_N	E421.Cr-L	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW1-DP_WG_2021-10-11_N	E509	27-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	6 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW1-OB_WG_2021-10-11_N	E509	27-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW1-SH_WG_2021-10-11_N	E509	27-Oct-2021	02-Nov-2021	----	----		02-Nov-2021	28 days	6 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-DP_WG_2021-10-11_N	E421	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-OB_WG_2021-10-11_N	E421	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW1-SH_WG_2021-10-11_N	E421	27-Oct-2021	02-Nov-2021	----	----		03-Nov-2021	180 days	7 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW1-DP_WG_2021-10-11_N	E358-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW1-OB_WG_2021-10-11_N	E358-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW1-SH_WG_2021-10-11_N	E358-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-DP_WG_2021-10-11_N	E355-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-OB_WG_2021-10-11_N	E355-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW1-SH_WG_2021-10-11_N	E355-L	27-Oct-2021	02-Nov-2021	----	----		05-Nov-2021	28 days	9 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW1-DP_WG_2021-10-11_N	E283	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-10-11_N	E283	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW1-SH_WG_2021-10-11_N	E283	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW1-DP_WG_2021-10-11_N	E290	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-10-11_N	E290	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW1-SH_WG_2021-10-11_N	E290	27-Oct-2021	----	----	----		01-Nov-2021	14 days	5 days	✓	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE</b> CM_MW1-DP_WG_2021-10-11_N	E100	27-Oct-2021	----	----	----		01-Nov-2021	28 days	5 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW1-OB_WG_2021-10-11_N	E100	27-Oct-2021	----	----	----		01-Nov-2021	28 days	5 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW1-SH_WG_2021-10-11_N	E100	27-Oct-2021	----	----	----		01-Nov-2021	28 days	5 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW1-DP_WG_2021-10-11_N	E125	27-Oct-2021	----	----	----		04-Nov-2021	0.25 hrs	191 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW1-OB_WG_2021-10-11_N	E125	27-Oct-2021	----	----	----		04-Nov-2021	0.25 hrs	191 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW1-SH_WG_2021-10-11_N	E125	27-Oct-2021	----	----	----		04-Nov-2021	0.25 hrs	191 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW1-DP_WG_2021-10-11_N	E108	27-Oct-2021	----	----	----		01-Nov-2021	0.25 hrs	122 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW1-OB_WG_2021-10-11_N	E108	27-Oct-2021	----	----	----		01-Nov-2021	0.25 hrs	123 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW1-SH_WG_2021-10-11_N	E108	27-Oct-2021	----	----	----		01-Nov-2021	0.25 hrs	123 hrs		* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>											
HDPE CM_MW1-DP_WG_2021-10-11_N	E162	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days		✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-10-11_N	E162	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE</b> CM_MW1-SH_WG_2021-10-11_N	E162	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> CM_MW1-DP_WG_2021-10-11_N	E160-L	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> CM_MW1-OB_WG_2021-10-11_N	E160-L	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>											
<b>HDPE [TSS-WB]</b> CM_MW1-SH_WG_2021-10-11_N	E160-L	27-Oct-2021	----	----	----		02-Nov-2021	7 days	6 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> CM_MW1-DP_WG_2021-10-11_N	E121	27-Oct-2021	----	----	----		30-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> CM_MW1-OB_WG_2021-10-11_N	E121	27-Oct-2021	----	----	----		30-Oct-2021	3 days	3 days	✓	
<b>Physical Tests : Turbidity by Nephelometry</b>											
<b>HDPE</b> CM_MW1-SH_WG_2021-10-11_N	E121	27-Oct-2021	----	----	----		30-Oct-2021	3 days	3 days	✓	

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	334965	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334961	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	337890	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332007	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332008	1	20	5.0	5.0	✓
Conductivity in Water	E100	334959	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335935	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336098	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	335936	2	19	10.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	336041	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	332279	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	332011	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	332009	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	332010	1	20	5.0	5.0	✓
ORP by Electrode	E125	336155	1	20	5.0	5.0	✓
pH by Meter	E108	334960	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	332006	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	335406	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335931	1	14	7.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	336046	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336748	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	333701	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	334965	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334961	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	337890	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332007	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332008	1	20	5.0	5.0	✓
Conductivity in Water	E100	334959	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335935	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336098	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	335936	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	336041	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	332279	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	332011	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	332009	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	332010	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	336155	1	20	5.0	5.0	✓
pH by Meter	E108	334960	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	332006	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	335406	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335931	1	14	7.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	336046	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336748	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	335398	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	333701	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	334965	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	334961	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	337890	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332007	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332008	1	20	5.0	5.0	✓
Conductivity in Water	E100	334959	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335935	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336098	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	335936	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	336041	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	332279	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	332011	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	332009	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	332010	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	332006	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	335406	1	10	10.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335931	1	14	7.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	336046	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336748	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	335398	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	333701	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	337890	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	332007	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	332008	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	335935	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	336098	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	335936	2	19	10.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	336041	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	332279	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	332011	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	332009	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	332010	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	332006	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	335931	1	14	7.1	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	336046	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	336748	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.



## QUALITY CONTROL REPORT

**Work Order** : **CG2105264**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q4\_MW1\_20211027  
**Sampler** : KS/SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 28-Oct-2021 09:00  
**Date Analysis Commenced** : 28-Oct-2021  
**Issue Date** : 11-Nov-2021 11:45

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dion Chan	Lab Assistant	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
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Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



Page : 2 of 14  
Work Order : CG2105264  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 333701)</b>											
CG2105264-001	CM_MW1-SH_WG_2021-1 0-11_N	turbidity	----	E121	0.10	NTU	1.57	1.59	1.52%	15%	----
<b>Physical Tests (QC Lot: 334959)</b>											
CG2105242-001	Anonymous	conductivity	----	E100	2.0	µS/cm	1890	1910	1.21%	10%	----
<b>Physical Tests (QC Lot: 334960)</b>											
CG2105242-001	Anonymous	pH	----	E108	0.10	pH units	8.11	8.12	0.123%	4%	----
<b>Physical Tests (QC Lot: 334961)</b>											
CG2105242-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	207	228	9.66%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	207	228	9.66%	20%	----
<b>Physical Tests (QC Lot: 334965)</b>											
CG2105242-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	7.4	7.4	0.04	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 335406)</b>											
CG2105264-001	CM_MW1-SH_WG_2021-1 0-11_N	solids, total dissolved [TDS]	----	E162	20	mg/L	513	501	2.46%	20%	----
<b>Physical Tests (QC Lot: 336155)</b>											
CG2105242-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	470	472	0.212%	15%	----
<b>Anions and Nutrients (QC Lot: 332006)</b>											
CG2105263-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	420	421	0.416%	20%	----
<b>Anions and Nutrients (QC Lot: 332007)</b>											
CG2105263-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332008)</b>											
CG2105263-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	3.30	3.28	0.02	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332009)</b>											
CG2105263-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	4.92	4.94	0.284%	20%	----
<b>Anions and Nutrients (QC Lot: 332010)</b>											
CG2105263-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332011)</b>											
CG2105263-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.195	0.196	0.001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 332279)</b>											
CG2105260-004	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0012	0.0002	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 335931)</b>											
CG2105264-001	CM_MW1-SH_WG_2021-1 0-11_N	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.187	0.196	0.009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 336748)</b>											
CG2105242-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0021	<0.0020	0.00008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 337890)</b>											
CG2105242-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0067	0.0076	0.0009	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 336041)</b>											
CG2105242-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.14	1.13	0.01	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 336046)</b>											
CG2105242-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.37	1.40	0.03	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 335935)</b>											
CG2105246-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 335936)</b>											
CG2105246-001	Anonymous	selenium, dissolved	7782-49-2	E421	0.050	mg/L	3.50 µg/L	0.00366	4.57%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.82	2.88	0.06	Diff <2x LOR	----
CG2105246-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0134	0.0141	5.56%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00793	0.00826	4.09%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00120	0.00122	1.45%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	4.99	5.12	2.62%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.130	0.132	1.61%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0350	mg/L	<0.0350 µg/L	<0.0000350	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	39.4	38.5	2.36%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	1.88 µg/L	0.00188	0.0303%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	2.42	2.41	0.484%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	16.9	18.0	6.50%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0604	0.0617	2.03%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0644	0.0667	3.47%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0154	0.0155	0.104%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	10.5	10.9	2.97%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.72	4.79	1.46%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
<b>Dissolved Metals (QC Lot: 335936) - continued</b>											
CG2105246-001	Anonymous	sodium, dissolved	17341-25-2	E421	0.050	mg/L	314	318	1.23%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.167	0.173	3.60%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000083	0.000084	0.000001	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00039	0.00040	0.00001	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000649	0.000651	0.312%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00068	0.00071	0.00003	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0034	0.0036	0.0001	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 336098)</b>											
CG2105259-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 333701)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 334959)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 334961)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 334965)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 335398)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 335406)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 332006)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 332007)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 332008)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 332009)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 332010)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 332011)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 332279)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 335931)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 336748)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 337890)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 337890) - continued</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 336041)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 336046)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 335935)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	MBRR
<b>Dissolved Metals (QCLot: 335936)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 335936) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 336098)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

**Qualifiers**

Qualifier	Description
MBRR	Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 333701)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	102	85.0	115	---
<b>Physical Tests (QCLot: 334959)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	---
<b>Physical Tests (QCLot: 334960)</b>									
pH	---	E108	---	pH units	7 pH units	99.8	98.6	101	---
<b>Physical Tests (QCLot: 334961)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	95.3	85.0	115	---
<b>Physical Tests (QCLot: 334965)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	93.5	85.0	115	---
<b>Physical Tests (QCLot: 335398)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	98.4	85.0	115	---
<b>Physical Tests (QCLot: 335406)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	93.7	85.0	115	---
<b>Physical Tests (QCLot: 336155)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 332006)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 332007)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.2	85.0	115	---
<b>Anions and Nutrients (QCLot: 332008)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 332009)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 332010)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 332011)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 332279)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	108	80.0	120	---
<b>Anions and Nutrients (QCLot: 335931)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	103	75.0	125	---
<b>Anions and Nutrients (QCLot: 336748)</b>									





Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 336748) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	111	80.0	120	----
<b>Anions and Nutrients (QCLot: 337890)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.4	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 336041)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 336046)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 335935)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
<b>Dissolved Metals (QCLot: 335936)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	97.7	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.2	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.5	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	113	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.9	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	107	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	108	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.7	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	108	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 335936) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.4	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.7	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 332006)</b>										
CG2105275-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	93.8 mg/L	100 mg/L	93.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 332007)</b>										
CG2105275-004	Anonymous	bromide	24959-67-9	E235.Br-L	0.441 mg/L	0.5 mg/L	88.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 332008)</b>										
CG2105275-004	Anonymous	chloride	16887-00-6	E235.Cl-L	92.3 mg/L	100 mg/L	92.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 332009)</b>										
CG2105275-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.30 mg/L	2.5 mg/L	91.9	75.0	125	----
<b>Anions and Nutrients (QCLot: 332010)</b>										
CG2105275-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.467 mg/L	0.5 mg/L	93.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 332011)</b>										
CG2105275-004	Anonymous	fluoride	16984-48-8	E235.F	0.903 mg/L	1 mg/L	90.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 332279)</b>										
CG2105260-005	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0570 mg/L	0.05 mg/L	114	70.0	130	----
<b>Anions and Nutrients (QCLot: 335931)</b>										
CG2105264-002	CM_MW1-DP_WG_2021-10-11_N	Kjeldahl nitrogen, total [TKN]	----	E318	2.73 mg/L	2.5 mg/L	109	70.0	130	----
<b>Anions and Nutrients (QCLot: 336748)</b>										
CG2105264-001	CM_MW1-SH_WG_2021-10-11_N	phosphorus, total	7723-14-0	E372-U	0.0552 mg/L	0.0676 mg/L	81.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 337890)</b>										
CG2105264-001	CM_MW1-SH_WG_2021-10-11_N	ammonia, total (as N)	7664-41-7	E298	0.100 mg/L	0.1 mg/L	100	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 336041)</b>										
CG2105242-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	27.2 mg/L	23.9 mg/L	114	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 336046)</b>										
CG2105242-001	Anonymous	carbon, total organic [TOC]	----	E355-L	28.8 mg/L	23.9 mg/L	120	70.0	130	----
<b>Dissolved Metals (QCLot: 335935)</b>										
CG2105246-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 335936)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 335936) - continued</b>										
CG2105246-002	Anonymous	selenium, dissolved	7782-49-2	E421	0.0431 mg/L	0.04 mg/L	108	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	23.1 mg/L	20 mg/L	116	70.0	130	----
CG2105246-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.207 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0429 mg/L	0.04 mg/L	107	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00750 mg/L	0.01 mg/L	75.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00386 mg/L	0.004 mg/L	96.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.98 mg/L	2 mg/L	98.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0175 mg/L	0.02 mg/L	87.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0370 mg/L	0.04 mg/L	92.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.43 mg/L	10 mg/L	94.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00379 mg/L	0.004 mg/L	94.7	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00359 mg/L	0.004 mg/L	89.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0381 mg/L	0.04 mg/L	95.4	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.390 mg/L	0.4 mg/L	97.5	70.0	130	----
<b>Dissolved Metals (QCLot: 336098)</b>										
CG2105259-004	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000977 mg/L	0.0001 mg/L	97.7	70.0	130	----



COC ID: **COC WG\_Q4\_MW1\_20211027**

TURNAROUND TIME:

REGULAR

RUSH:

NO

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Victoria Sharpe			Lab Contact	Milica Papic			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	Victoria.Sharpe@teck.com			Email	Milica.Papic@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	don.sacino@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	shelby.holden@teck.com	X	X	X
Phone Number	1-250-425-7522			Phone Number	403 407 1800			PO number	00741264			

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FIL	PRESERV.					ANALYSIS
									F	N	F	F	N	
CM_MW1-SH_WG_2021-10-11_N	CM_MW1-SH	WG	No	10/27/2021	12:20	G	5		H2SO4	H2SO4	HCL	HNO3	NONE	ALS_Package-DOC
CM_MW1-DP_WG_2021-10-11_N	CM_MW1-DP	WG	No	10/27/2021	13:00	G	5							ALS_Package-TKN/TOC
CM_MW1-OB_WG_2021-10-11_N	CM_MW1-OB	WG	No	10/27/2021	12:25	G	5							HG-D-CVAF-VA
														TECKCOAL-MET-D-VA
														TECKCOAL-ROUTINE-VA

Environmental Division  
Calgary  
Work Order Reference  
**CG2105264**



Telephone: +1 403 407 1800

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

Request analyses of bicarbonate and HCO<sub>3</sub>, hydroxide as OH and carbonate as CO<sub>3</sub> rather than bicarbonate as CaCO<sub>3</sub>, Carbonate as CaCO<sub>3</sub> and hydroxide as CaCO<sub>3</sub>.

*[Handwritten signature]*  
28/10 9:00

**SERVICE REQUEST (rush - subject to availability)**

Regular (default)	X	Sampler's Name	KS/SH/DS	Mobile #	250-425-7529
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Handwritten signature]</i>	Date/Time	10/27/2021 14:00:00 PM
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

*[Handwritten circled '10']*



**CERTIFICATE OF ANALYSIS**

**Work Order** : **CG2105325**  
**Amendment** : **1**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q4\_MW3\_20211028  
**Sampler** : Darren Simpson, Kelly Stewart  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 29-Oct-2021 08:45  
**Date Analysis Commenced** : 29-Oct-2021  
**Issue Date** : 06-Dec-2021 14:10

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta







## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLA	Detection Limit adjusted for required dilution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW3-SH_ WG_2021-10-1 1_N	CM_MW3-DP_ WG_2021-10-1 1_N	----	----	----
Client sampling date / time					28-Oct-2021 11:50	28-Oct-2021 12:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105325-001 Result	CG2105325-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	179	226	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	218	275	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	179	226	----	----	----	
conductivity	----	E100	2.0	µS/cm	333	2550	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	172	47.1	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	463	464	----	----	----	
pH	----	E108	0.10	pH units	7.87	7.70	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	280	1410	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	9.4	----	----	----	
turbidity	----	E121	0.10	NTU	0.27	5.48	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0070	0.556	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	2.33	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.16	663	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.095	0.393	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.666	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0167	0.240	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0711	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0034	<0.0010	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0030	0.0184	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	16.7	<1.50 <sup>DLDS</sup>	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	0.85	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW3-SH_ WG_2021-10-1 1_N	CM_MW3-DP_ WG_2021-10-1 1_N	---	---	---
Client sampling date / time					28-Oct-2021 11:50	28-Oct-2021 12:00	---	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2105325-001 Result	CG2105325-002 Result	-----	-----	-----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	3.96	23.3	----	----	----	
cation sum	----	EC101	0.10	meq/L	3.64	24.6	----	----	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	91.9	106	----	----	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	4.21	2.71	----	----	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0118	0.0096	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	0.00035	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0816	0.772	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.040 <sup>DLA</sup>	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000100 <sup>DLA</sup>	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.021	0.469	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0068	<0.0100 <sup>DLA</sup>	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	48.4	11.8	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00024	<0.00020 <sup>DLA</sup>	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.20 <sup>DLA</sup>	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00058	0.00048	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.054	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000068	<0.000100 <sup>DLA</sup>	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0080	1.34	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	12.4	4.29	----	----	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00261	0.0185	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000815	0.000750	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.718	2.16	----	----	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.254	<0.100 <sup>DLA</sup>	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.58	3.29	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.27	541	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW3-SH_WG_2021-10-1_1_N	CM_MW3-DP_WG_2021-10-1_1_N	----	----	----
Client sampling date / time					28-Oct-2021 11:50	28-Oct-2021 12:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105325-001	CG2105325-002	-----	-----	-----	
					Result	Result	----	----	----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.269	1.09	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	5.98	<1.00 <sup>DLA</sup>	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000020 <sup>DLA</sup>	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00020 <sup>DLA</sup>	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00060 <sup>DLA</sup>	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000220	0.000162	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00100 <sup>DLA</sup>	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0021	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105478**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q4\_MW\_AG\_11032021  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 04-Nov-2021 08:54  
**Date Analysis Commenced** : 04-Nov-2021  
**Issue Date** : 19-Nov-2021 10:16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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- Analytical Results

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### Signatories

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<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



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µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLIS	Detection Limit Adjusted due to insufficient sample.
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					CM_MW_AG1A_WG_2021-10-11_N	CM_MW_AG1B_WG_2021-10-11_N	CM_NNP2_WS_2021-10-11_N	CM_TRP_WS_2021-10-11_N	----
Client sampling date / time					03-Nov-2021 14:55	03-Nov-2021 13:45	03-Nov-2021	03-Nov-2021	----
Analyte	CAS Number	Method	LOR	Unit	CG2105478-001	CG2105478-002	CG2105478-003	CG2105478-004	-----
					Result	Result	Result	Result	----
<b>Physical Tests</b>									
acidity (as CaCO3)	----	E283	2.0	mg/L	6.7	14.3	13.1	2.4	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	504	615	620	<1.0	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	615	750	756	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	504	615	620	<1.0	----
conductivity	----	E100	2.0	µS/cm	835	1010	1020	<2.0	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	512	662	678	<0.50	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	463	478	468	488	----
pH	----	E108	0.10	pH units	7.94	7.70	7.70	5.09	----
solids, total dissolved [TDS]	----	E162	10	mg/L	484	596	614	<10	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	16.3	2.5	2.0	<1.5 <sup>DLIS</sup>	----
turbidity	----	E121	0.10	NTU	85.5	1.36	1.08	<0.10	----
<b>Anions and Nutrients</b>									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0404	<0.0050	<0.0050	0.0124 <sup>RRV</sup>	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.053	<0.250 <sup>DLDS</sup>	<0.250 <sup>DLDS</sup>	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.64	0.70	0.66	<0.10	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.079	<0.100 <sup>DLDS</sup>	<0.100 <sup>DLDS</sup>	<0.020	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.642	0.100	0.070	0.587 <sup>RRV</sup>	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.473	0.443	<0.0050	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0010	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	0.0038	0.0038	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0053	0.0038	0.0045	<0.0020	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	9.14	21.4	22.9	<0.30	----
<b>Organic / Inorganic Carbon</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.01	1.52	1.34	<0.50	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.70	1.45	1.23	<0.50	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW_AG1A _WG_2021-10- 11_N	CM_MW_AG1B _WG_2021-10- 11_N	CM_NNP2_WS_ 2021-10-11_N	CM_TRP_WS_2 021-10-11_N	----
Client sampling date / time					03-Nov-2021 14:55	03-Nov-2021 13:45	03-Nov-2021	03-Nov-2021	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105478-001 Result	CG2105478-002 Result	CG2105478-003 Result	CG2105478-004 Result	----- ----	
<b>Ion Balance</b>										
anion sum	----	EC101	0.10	meq/L	10.4	12.8	12.9	<0.10	----	
cation sum	----	EC101	0.10	meq/L	11.0	13.4	13.7	<0.10	----	
ion balance (cations/anions ratio)	----	EC101	0.010	%	106	105	106	100 <sup>RRV</sup>	----	
ion balance (cation-anion difference)	----	EC101	0.010	%	2.80	2.29	3.01	<0.010	----	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0012	0.0010	0.0011	<0.0010	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00163	0.00025	0.00024	<0.00010	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	1.87	0.271	0.259	<0.00010	----	
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.026	0.021	0.022	<0.010	----	
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0560	0.0582	<0.0050	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	152	176	182	<0.050	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00031	0.00036	<0.00010	----	
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.14	<0.10	<0.10	<0.10	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00022	0.00023	<0.00020	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	7.10	<0.010	<0.010	<0.010	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0220	0.0030	0.0031	<0.0010	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	32.3	54.0	54.4	<0.0050	----	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.139	0.00064	0.00066	<0.00010	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00104	0.000180	0.000190	<0.000050	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00095	0.00096	<0.00050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.13	1.16	1.14	<0.050	----	
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	0.936	1.05	<0.050	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.13	5.28	5.14	<0.050	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	9.75	2.73	2.68	<0.050	----	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW_AG1A _WG_2021-10- 11_N	CM_MW_AG1B _WG_2021-10- 11_N	CM_NNP2_WS_ 2021-10-11_N	CM_TRP_WS_2 021-10-11_N	----
Client sampling date / time					03-Nov-2021 14:55	03-Nov-2021 13:45	03-Nov-2021	03-Nov-2021	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105478-001	CG2105478-002	CG2105478-003	CG2105478-004	-----	
					Result	Result	Result	Result	----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.825	0.360	0.358	<0.00020	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.32	6.46 <sup>RRV</sup>	7.05	<0.50	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000031	0.000032	<0.000010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000867	0.000625	0.000641	<0.000010	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0012	0.0011	<0.0010	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105478</b>	Page	: 1 of 18
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Milica Pasic
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 04-Nov-2021 08:54
PO	: VPO00741264	Issue Date	: 19-Nov-2021 10:16
C-O-C number	: COC_WG_Q4_MW_AG_11032021		
Sampler	: SH/DS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1A_WG_2021-10-11_N	E298	03-Nov-2021	17-Nov-2021	----	----		17-Nov-2021	28 days	14 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1B_WG_2021-10-11_N	E298	03-Nov-2021	17-Nov-2021	----	----		17-Nov-2021	28 days	14 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WS_2021-10-11_N	E298	03-Nov-2021	17-Nov-2021	----	----		17-Nov-2021	28 days	14 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WS_2021-10-11_N	E298	03-Nov-2021	17-Nov-2021	----	----		17-Nov-2021	28 days	14 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_MW_AG1A_WG_2021-10-11_N	E235.Br-L	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_MW_AG1B_WG_2021-10-11_N	E235.Br-L	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
<b>HDPE</b> CM_NNP2_WS_2021-10-11_N	E235.Br-L	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE CM_TRP_WS_2021-10-11_N	E235.Br-L	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW_AG1A_WG_2021-10-11_N	E235.Cl-L	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_MW_AG1B_WG_2021-10-11_N	E235.Cl-L	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_NNP2_WS_2021-10-11_N	E235.Cl-L	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
HDPE CM_TRP_WS_2021-10-11_N	E235.Cl-L	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW_AG1A_WG_2021-10-11_N	E378-U	03-Nov-2021	----	----	----		04-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW_AG1B_WG_2021-10-11_N	E378-U	03-Nov-2021	----	----	----		04-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_NNP2_WS_2021-10-11_N	E378-U	03-Nov-2021	----	----	----		04-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_TRP_WS_2021-10-11_N	E378-U	03-Nov-2021	----	----	----		04-Nov-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW_AG1A_WG_2021-10-11_N	E235.F	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW_AG1B_WG_2021-10-11_N	E235.F	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_NNP2_WS_2021-10-11_N	E235.F	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_TRP_WS_2021-10-11_N	E235.F	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW_AG1A_WG_2021-10-11_N	E235.NO3-L	03-Nov-2021	----	----	----		05-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW_AG1B_WG_2021-10-11_N	E235.NO3-L	03-Nov-2021	----	----	----		05-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_NNP2_WS_2021-10-11_N	E235.NO3-L	03-Nov-2021	----	----	----		05-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_TRP_WS_2021-10-11_N	E235.NO3-L	03-Nov-2021	----	----	----		05-Nov-2021	3 days	2 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW_AG1A_WG_2021-10-11_N	E235.NO2-L	03-Nov-2021	----	----	----		05-Nov-2021	3 days	2 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_MW_AG1B_WG_2021-10-11_N	E235.NO2-L	03-Nov-2021	----	----	----		05-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_NNP2_WS_2021-10-11_N	E235.NO2-L	03-Nov-2021	----	----	----		05-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE CM_TRP_WS_2021-10-11_N	E235.NO2-L	03-Nov-2021	----	----	----		05-Nov-2021	3 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW_AG1A_WG_2021-10-11_N	E235.SO4	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_MW_AG1B_WG_2021-10-11_N	E235.SO4	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_NNP2_WS_2021-10-11_N	E235.SO4	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE CM_TRP_WS_2021-10-11_N	E235.SO4	03-Nov-2021	----	----	----		05-Nov-2021	28 days	2 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
Amber glass total (sulfuric acid) CM_MW_AG1A_WG_2021-10-11_N	E318	03-Nov-2021	09-Nov-2021	----	----		16-Nov-2021	28 days	13 days	✓
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>										
Amber glass total (sulfuric acid) CM_MW_AG1B_WG_2021-10-11_N	E318	03-Nov-2021	09-Nov-2021	----	----		16-Nov-2021	28 days	13 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WS_2021-10-11_N	E318	03-Nov-2021	09-Nov-2021	----	----		16-Nov-2021	28 days	13 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WS_2021-10-11_N	E318	03-Nov-2021	09-Nov-2021	----	----		16-Nov-2021	28 days	13 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1A_WG_2021-10-11_N	E372-U	03-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1B_WG_2021-10-11_N	E372-U	03-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WS_2021-10-11_N	E372-U	03-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WS_2021-10-11_N	E372-U	03-Nov-2021	09-Nov-2021	----	----		09-Nov-2021	28 days	6 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW_AG1A_WG_2021-10-11_N	E421.Cr-L	03-Nov-2021	10-Nov-2021	----	----		10-Nov-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW_AG1B_WG_2021-10-11_N	E421.Cr-L	03-Nov-2021	10-Nov-2021	----	----		10-Nov-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNP2_WS_2021-10-11_N	E421.Cr-L	03-Nov-2021	10-Nov-2021	----	----		10-Nov-2021	180 days	7 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_TRP_WS_2021-10-11_N	E421.Cr-L	03-Nov-2021	10-Nov-2021	----	----		10-Nov-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW_AG1A_WG_2021-10-11_N	E509	03-Nov-2021	11-Nov-2021	----	----		11-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW_AG1B_WG_2021-10-11_N	E509	03-Nov-2021	11-Nov-2021	----	----		11-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_NNP2_WS_2021-10-11_N	E509	03-Nov-2021	11-Nov-2021	----	----		11-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_TRP_WS_2021-10-11_N	E509	03-Nov-2021	11-Nov-2021	----	----		11-Nov-2021	28 days	8 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW_AG1A_WG_2021-10-11_N	E421	03-Nov-2021	10-Nov-2021	----	----		10-Nov-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW_AG1B_WG_2021-10-11_N	E421	03-Nov-2021	10-Nov-2021	----	----		10-Nov-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_NNP2_WS_2021-10-11_N	E421	03-Nov-2021	10-Nov-2021	----	----		10-Nov-2021	180 days	7 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_TRP_WS_2021-10-11_N	E421	03-Nov-2021	10-Nov-2021	----	----		10-Nov-2021	180 days	7 days	✓	





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW_AG1A_WG_2021-10-11_N	E358-L	03-Nov-2021	09-Nov-2021	----	----		13-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW_AG1B_WG_2021-10-11_N	E358-L	03-Nov-2021	09-Nov-2021	----	----		13-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_NNP2_WS_2021-10-11_N	E358-L	03-Nov-2021	09-Nov-2021	----	----		13-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_TRP_WS_2021-10-11_N	E358-L	03-Nov-2021	09-Nov-2021	----	----		13-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1A_WG_2021-10-11_N	E355-L	03-Nov-2021	09-Nov-2021	----	----		13-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW_AG1B_WG_2021-10-11_N	E355-L	03-Nov-2021	09-Nov-2021	----	----		13-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_NNP2_WS_2021-10-11_N	E355-L	03-Nov-2021	09-Nov-2021	----	----		13-Nov-2021	28 days	10 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_TRP_WS_2021-10-11_N	E355-L	03-Nov-2021	09-Nov-2021	----	----		13-Nov-2021	28 days	10 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW_AG1A_WG_2021-10-11_N	E283	03-Nov-2021	----	----	----		08-Nov-2021	14 days	5 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : Acidity by Titration</b>											
HDPE CM_MW_AG1B_WG_2021-10-11_N	E283	03-Nov-2021	----	----	----		08-Nov-2021	14 days	5 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE CM_NNP2_WS_2021-10-11_N	E283	03-Nov-2021	----	----	----		08-Nov-2021	14 days	5 days	✔	
<b>Physical Tests : Acidity by Titration</b>											
HDPE CM_TRP_WS_2021-10-11_N	E283	03-Nov-2021	----	----	----		08-Nov-2021	14 days	5 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW_AG1A_WG_2021-10-11_N	E290	03-Nov-2021	----	----	----		08-Nov-2021	14 days	5 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_MW_AG1B_WG_2021-10-11_N	E290	03-Nov-2021	----	----	----		08-Nov-2021	14 days	5 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_NNP2_WS_2021-10-11_N	E290	03-Nov-2021	----	----	----		08-Nov-2021	14 days	5 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
HDPE CM_TRP_WS_2021-10-11_N	E290	03-Nov-2021	----	----	----		08-Nov-2021	14 days	5 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW_AG1A_WG_2021-10-11_N	E100	03-Nov-2021	----	----	----		08-Nov-2021	28 days	5 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_MW_AG1B_WG_2021-10-11_N	E100	03-Nov-2021	----	----	----		08-Nov-2021	28 days	5 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_NNP2_WS_2021-10-11_N	E100	03-Nov-2021	----	----	----		08-Nov-2021	28 days	5 days		✓
<b>Physical Tests : Conductivity in Water</b>											
HDPE CM_TRP_WS_2021-10-11_N	E100	03-Nov-2021	----	----	----		08-Nov-2021	28 days	5 days		✓
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW_AG1A_WG_2021-10-11_N	E125	03-Nov-2021	----	----	----		10-Nov-2021	0.25 hrs	171 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_NNP2_WS_2021-10-11_N	E125	03-Nov-2021	----	----	----		10-Nov-2021	0.25 hrs	171 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_TRP_WS_2021-10-11_N	E125	03-Nov-2021	----	----	----		10-Nov-2021	0.25 hrs	171 hrs		* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>											
HDPE CM_MW_AG1B_WG_2021-10-11_N	E125	03-Nov-2021	----	----	----		10-Nov-2021	0.25 hrs	172 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_MW_AG1A_WG_2021-10-11_N	E108	03-Nov-2021	----	----	----		08-Nov-2021	0.25 hrs	118 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_NNP2_WS_2021-10-11_N	E108	03-Nov-2021	----	----	----		08-Nov-2021	0.25 hrs	118 hrs		* EHTR-FM
<b>Physical Tests : pH by Meter</b>											
HDPE CM_TRP_WS_2021-10-11_N	E108	03-Nov-2021	----	----	----		08-Nov-2021	0.25 hrs	118 hrs		* EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW_AG1B_WG_2021-10-11_N	E108	03-Nov-2021	----	----	----		08-Nov-2021	0.25 hrs	119 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW_AG1A_WG_2021-10-11_N	E162	03-Nov-2021	----	----	----		09-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW_AG1B_WG_2021-10-11_N	E162	03-Nov-2021	----	----	----		09-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_NNP2_WS_2021-10-11_N	E162	03-Nov-2021	----	----	----		09-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_TRP_WS_2021-10-11_N	E162	03-Nov-2021	----	----	----		09-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE CM_MW_AG1A_WG_2021-10-11_N	E160-L	03-Nov-2021	----	----	----		09-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE CM_MW_AG1B_WG_2021-10-11_N	E160-L	03-Nov-2021	----	----	----		09-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE CM_NNP2_WS_2021-10-11_N	E160-L	03-Nov-2021	----	----	----		09-Nov-2021	7 days	6 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE CM_TRP_WS_2021-10-11_N	E160-L	03-Nov-2021	----	----	----		09-Nov-2021	7 days	6 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE CM_MW_AG1A_WG_2021-10-11_N	E121	03-Nov-2021	----	----	----		06-Nov-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE CM_MW_AG1B_WG_2021-10-11_N	E121	03-Nov-2021	----	----	----		06-Nov-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE CM_NNP2_WS_2021-10-11_N	E121	03-Nov-2021	----	----	----		06-Nov-2021	3 days	3 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
HDPE CM_TRP_WS_2021-10-11_N	E121	03-Nov-2021	----	----	----		06-Nov-2021	3 days	3 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	340535	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	340381	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	346538	1	10	10.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	338675	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	338676	1	20	5.0	5.0	✓
Conductivity in Water	E100	340379	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	341953	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	342852	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	341952	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	341806	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	338234	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	338673	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	338677	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	338678	1	20	5.0	5.0	✓
ORP by Electrode	E125	342628	1	10	10.0	5.0	✓
pH by Meter	E108	340380	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	338674	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	340985	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	341772	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	341812	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339739	1	17	5.8	5.0	✓
Turbidity by Nephelometry	E121	339369	2	35	5.7	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	340535	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	340381	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	346538	1	10	10.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	338675	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	338676	1	20	5.0	5.0	✓
Conductivity in Water	E100	340379	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	341953	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	342852	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	341952	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	341806	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	338234	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	338673	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	338677	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	338678	1	20	5.0	5.0	✓



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	342628	1	10	10.0	5.0	✔
pH by Meter	E108	340380	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	338674	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	340985	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	341772	1	13	7.6	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	341812	1	8	12.5	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339739	1	17	5.8	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	340975	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	339369	2	35	5.7	5.0	✔
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	340535	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	340381	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	346538	1	10	10.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	338675	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	338676	1	20	5.0	5.0	✔
Conductivity in Water	E100	340379	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	341953	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	342852	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	341952	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	341806	1	16	6.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	338234	1	13	7.6	5.0	✔
Fluoride in Water by IC	E235.F	338673	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	338677	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	338678	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	338674	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	340985	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	341772	1	13	7.6	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	341812	1	8	12.5	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339739	1	17	5.8	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	340975	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	339369	2	35	5.7	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	346538	1	10	10.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	338675	1	20	5.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	338676	1	20	5.0	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	341953	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	342852	1	20	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	341952	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	341806	1	16	6.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	338234	1	13	7.6	5.0	✔





Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	338673	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	338677	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	338678	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	338674	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	341772	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	341812	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	339739	1	17	5.8	5.0	✓





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105478**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_Q4\_MW\_AG\_11032021  
**Sampler** : SH/DS  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 04-Nov-2021 08:54  
**Date Analysis Commenced** : 04-Nov-2021  
**Issue Date** : 19-Nov-2021 10:16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
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Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 14  
Work Order : CG2105478  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 339369)</b>											
CG2105456-001	Anonymous	turbidity	----	E121	0.10	NTU	1.17	1.14	0.03	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 339370)</b>											
CG2105478-002	CM_MW_AG1B_WG_2021-10-11_N	turbidity	----	E121	0.10	NTU	1.36	1.40	2.60%	15%	----
<b>Physical Tests (QC Lot: 340379)</b>											
CG2105472-008	Anonymous	conductivity	----	E100	2.0	µS/cm	4030	3990	0.998%	10%	----
<b>Physical Tests (QC Lot: 340380)</b>											
CG2105472-008	Anonymous	pH	----	E108	0.10	pH units	7.70	7.67	0.390%	4%	----
<b>Physical Tests (QC Lot: 340381)</b>											
CG2105472-008	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	563	561	0.427%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	563	561	0.427%	20%	----
<b>Physical Tests (QC Lot: 340535)</b>											
CG2105476-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	409	420	2.56%	20%	----
<b>Physical Tests (QC Lot: 340985)</b>											
CG2105465-010	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 342628)</b>											
CG2105477-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	458	461	0.653%	15%	----
<b>Anions and Nutrients (QC Lot: 338234)</b>											
CG2105476-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 338673)</b>											
CG2105470-002	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.112	0.115	0.003	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 338674)</b>											
CG2105470-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	521	521	0.00830%	20%	----
<b>Anions and Nutrients (QC Lot: 338675)</b>											
CG2105470-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 338676)</b>											
CG2105470-002	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	3.12	3.03	0.09	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 338677)</b>											
CG2105470-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	2.72	2.72	0.199%	20%	----
<b>Anions and Nutrients (QC Lot: 338678)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 338678) - continued</b>											
CG2105470-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0113	0.0089	0.0024	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 339739)</b>											
CG2105472-012	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 341772)</b>											
CG2105477-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.530	0.533	0.555%	20%	----
<b>Anions and Nutrients (QC Lot: 346538)</b>											
CG2105477-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 341806)</b>											
CG2105472-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.90	0.98	0.08	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 341812)</b>											
CG2105477-003	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 341952)</b>											
CG2105461-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0025	0.0022	0.0003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00017	0.00017	0.000004	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0305	0.0305	0.124%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.020	0.019	0.0009	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0694 µg/L	0.0000722	3.98%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	139	135	3.27%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0318	0.0320	0.527%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.058	0.059	0.0007	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000072	0.000072	0.0000002	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0144	0.0138	4.10%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	57.0	57.6	0.969%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00970	0.00978	0.839%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00200	0.00193	3.43%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00061	0.00061	0.000005	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.65	1.67	1.51%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	8.37 µg/L	0.00794	5.28%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.47	4.42	1.14%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	9.29	9.15	1.48%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 341952) - continued</b>											
CG2105461-001	Anonymous	strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.391	0.381	2.65%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	101	97.6	3.05%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00209	0.00204	2.11%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0099	0.0094	0.0006	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 341953)</b>											
CG2105461-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 342852)</b>											
CG2105465-011	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----





## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 339369)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 339370)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Physical Tests (QCLot: 340379)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 340381)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 340535)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 340975)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 340985)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 338234)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 338673)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 338674)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 338675)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 338676)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 338677)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 338678)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 339739)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 341772)</b>						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 341772) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 346538)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 341806)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 341812)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 341952)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 341952) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
<b>Dissolved Metals (QCLot: 341953)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 342852)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 339369)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 339370)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	108	85.0	115	---
<b>Physical Tests (QCLot: 340379)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	102	90.0	110	---
<b>Physical Tests (QCLot: 340380)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 340381)</b>									
alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 340535)</b>									
acidity (as CaCO <sub>3</sub> )	---	E283	2	mg/L	50 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 340975)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	97.6	85.0	115	---
<b>Physical Tests (QCLot: 340985)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	98.4	85.0	115	---
<b>Physical Tests (QCLot: 342628)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 338234)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	107	80.0	120	---
<b>Anions and Nutrients (QCLot: 338673)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.2	90.0	110	---
<b>Anions and Nutrients (QCLot: 338674)</b>									
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	109	90.0	110	---
<b>Anions and Nutrients (QCLot: 338675)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.7	85.0	115	---
<b>Anions and Nutrients (QCLot: 338676)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 338677)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 338678)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 339739)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 339739) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 341772)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 346538)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 341806)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	102	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 341812)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	92.9	80.0	120	----
<b>Dissolved Metals (QCLot: 341952)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.6	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.2	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.2	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.7	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	94.1	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	92.3	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.7	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.1	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.4	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	82.7	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	92.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	106	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 341952) - continued</b>									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	89.7	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.5	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.0	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	97.1	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	93.5	80.0	120	----
<b>Dissolved Metals (QCLot: 341953)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	95.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.2	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 338234)</b>										
CG2105476-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 338673)</b>										
CG2105477-003	Anonymous	fluoride	16984-48-8	E235.F	0.937 mg/L	1 mg/L	93.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 338674)</b>										
CG2105477-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 338675)</b>										
CG2105477-003	Anonymous	bromide	24959-67-9	E235.Br-L	0.514 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 338676)</b>										
CG2105477-003	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 338677)</b>										
CG2105477-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 338678)</b>										
CG2105477-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.500 mg/L	0.5 mg/L	100.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 339739)</b>										
CG2105476-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0569 mg/L	0.0676 mg/L	84.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 341772)</b>										
CG2105477-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.61 mg/L	2.5 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 346538)</b>										
CG2105477-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 341806)</b>										
CG2105472-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	25.3 mg/L	23.9 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 341812)</b>										
CG2105477-003	Anonymous	carbon, total organic [TOC]	----	E355-L	22.6 mg/L	23.9 mg/L	94.7	70.0	130	----
<b>Dissolved Metals (QCLot: 341952)</b>										
CG2105461-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.194 mg/L	0.2 mg/L	97.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 341952) - continued</b>										
CG2105461-002	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00840 mg/L	0.01 mg/L	84.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.092 mg/L	0.1 mg/L	92.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00433 mg/L	0.004 mg/L	108	70.0	130	----
		calcium, dissolved	7440-70-2	E421	4.17 mg/L	4 mg/L	104	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0178 mg/L	0.02 mg/L	89.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0178 mg/L	0.02 mg/L	88.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	0.912 mg/L	1 mg/L	91.2	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0194 mg/L	0.02 mg/L	97.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0380 mg/L	0.04 mg/L	95.1	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.14 mg/L	4 mg/L	104	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.16 mg/L	10 mg/L	91.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00359 mg/L	0.004 mg/L	89.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.0228 mg/L	0.02 mg/L	114	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00354 mg/L	0.004 mg/L	88.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00382 mg/L	0.004 mg/L	95.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0997 mg/L	0.1 mg/L	99.7	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.378 mg/L	0.4 mg/L	94.4	70.0	130	----
<b>Dissolved Metals (QCLot: 341953)</b>										
CG2105461-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
<b>Dissolved Metals (QCLot: 342852)</b>										
CG2105477-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000985 mg/L	0.0001 mg/L	98.5	70.0	130	----



Page : 14 of 14  
Work Order : CG2105478  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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COC ID: **COC\_WG\_Q4\_MW\_AG\_11032021**      TURNAROUND TIME: **REGULAR**      RUSH: **NO**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Victoria Sharpe			Lab Contact	Milica Papić			Email 1:	Victoria.Sharpe@teck.com	X	X	
Email	Victoria.Sharpe@teck.com			Email	Milica.Papic@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		X	
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	
								Email 4:	don.sacino@teck.com	X	X	
	City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:	shelby.holden@teck.com	X	X
			Country	Canada	Postal Code	T1Y 7B5	Country	Canada				
					Phone Number	403 407 1800			PO number	00741264		

Environmental Division  
Calgary  
Work Order Reference  
**CG2105478**



Telephone : + 1 403 407 1800

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None				
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	PH	F	N	F	F	N			
CM_MW_AG1A_WG_2021-10-11_N	CM_MW_AG1A	WG	No	11/3/2021	14:55	G	5	ALS_Package-DOC	H2SO4			HCL	HNO3	NONE			
CM_MW_AG1B_WG_2021-10-11_N	CM_MW_AG1B	WG	No	11/3/2021	13:45	G	5	ALS_Package-TKN/TOC									
CM_NNP2_WS_2021-10-11_N	CM_NNP2	WG	No	11/3/2021	-	G	5	HG-D-CVAF-VA									
CM_TRP_WS_2021-10-11_N	CM_TRP	WG	No	11/3/2021	-	G	5	TECKCOAL-MET-D-VA									
								TECKCOAL-ROUTINE-VA									

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO <sub>3</sub> , hydroxide as OH and carbonate as CO <sub>3</sub> rather than bicarbonate as CaCO <sub>3</sub> , Carbonate as CaCO <sub>3</sub> and hydroxide as CaCO <sub>3</sub> .			RM	8:54
				70
<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) X	Sampler's Name	SH/DS	Mobile #	250-425-7529
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	11/3/2021 14:00:00 PM
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

## CERTIFICATE OF ANALYSIS

**Work Order** : **CG2105888**  
**Client** : **Teck Coal Limited**  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_MW5\_Post-DW\_20211122  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Pasic  
**Address** : 2559 29th Street NE  
 Calgary AB Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Nov-2021 08:50  
**Date Analysis Commenced** : 23-Nov-2021  
**Issue Date** : 29-Nov-2021 18:17

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW5-DP_ WG_2021-11-2 2_N	CM_MW5-SH_ WG_2021-11-2 2_N	----	----	----
Client sampling date / time					22-Nov-2021 13:30	22-Nov-2021 13:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105888-001 Result	CG2105888-002 Result	-----	-----	-----	
<b>Physical Tests</b>										
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	5.8	----	----	----	
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	448	288	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	546	351	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----	
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	448	288	----	----	----	
conductivity	----	E100	2.0	µS/cm	747	1080	----	----	----	
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	296	625	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	449	459	----	----	----	
pH	----	E108	0.10	pH units	7.84	7.68	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	419	807	----	----	----	
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	3.5	1.1	----	----	----	
turbidity	----	E121	0.10	NTU	15.9	0.11	----	----	----	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.620	<0.0050	----	----	----	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.250 <sup>DLDS</sup>	----	----	----	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	11.9	10.2	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.314	0.196	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.659	0.212	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0050	1.86	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0050 <sup>DLDS</sup>	----	----	----	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0053	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0031	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	0.57	364	----	----	----	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	0.62	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	0.56	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID				
					CM_MW5-DP_WG_2021-11-2_2_N	CM_MW5-SH_WG_2021-11-2_2_N	---	---	---
Client sampling date / time					22-Nov-2021 13:30	22-Nov-2021 13:30	---	---	---
Analyte	CAS Number	Method	LOR	Unit	CG2105888-001	CG2105888-002	-----	-----	-----
					Result	Result	---	---	---
<b>Ion Balance</b>									
anion sum	----	EC101	0.10	meq/L	9.32	13.8	---	---	---
cation sum	----	EC101	0.10	meq/L	8.88	13.3	---	---	---
ion balance (cations/anions ratio)	----	EC101	0.010	%	95.3	96.4	---	---	---
ion balance (cation-anion difference)	----	EC101	0.010	%	2.42	1.84	---	---	---
<b>Dissolved Metals</b>									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	---	---	---
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00025	---	---	---
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00025	---	---	---
barium, dissolved	7440-39-3	E421	0.00010	mg/L	1.06	0.0780	---	---	---
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	---	---	---
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.127	0.044	---	---	---
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0392	---	---	---
calcium, dissolved	7440-70-2	E421	0.050	mg/L	77.3	146	---	---	---
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00025	---	---	---
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	---	---	---
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00134	---	---	---
iron, dissolved	7439-89-6	E421	0.010	mg/L	1.20	<0.010	---	---	---
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	---	---	---
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0679	0.0250	---	---	---
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	25.0	63.2	---	---	---
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0412	<0.00010	---	---	---
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	---	---	---
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000610	0.00132	---	---	---
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00129	---	---	---
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.24	2.10	---	---	---
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.119	13.6	---	---	---
silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.98	2.43	---	---	---
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	---	---	---
sodium, dissolved	17341-25-2	E421	0.050	mg/L	64.3	17.6	---	---	---



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW5-DP_ WG_2021-11-2 2_N	CM_MW5-SH_ WG_2021-11-2 2_N	----	----	----
Client sampling date / time					22-Nov-2021 13:30	22-Nov-2021 13:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	CG2105888-001 Result	CG2105888-002 Result	-----	-----	-----	
<b>Dissolved Metals</b>										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.88	0.448	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.54	125	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000047	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000059	0.00276	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0022	0.0050	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>CG2105888</b>	Page	: 1 of 13
Client	: <b>Teck Coal Limited</b>	Laboratory	: Calgary - Environmental
Contact	: Victoria Sharpe	Account Manager	: Milica Pasic
Address	: Coal Mountain Operations PO Box 3000 2261 Corbin Road Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 23-Nov-2021 08:50
PO	: VPO00741264	Issue Date	: 29-Nov-2021 18:17
C-O-C number	: COC_WG_MW5_Post-DW_20211122		
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-DP_WG_2021-11-22_N	E298	22-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-SH_WG_2021-11-22_N	E298	22-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW5-DP_WG_2021-11-22_N	E235.Br-L	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW5-SH_WG_2021-11-22_N	E235.Br-L	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW5-DP_WG_2021-11-22_N	E235.Cl-L	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Chloride in Water by IC (Low Level)</b>											
<b>HDPE</b> CM_MW5-SH_WG_2021-11-22_N	E235.Cl-L	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
<b>HDPE</b> CM_MW5-DP_WG_2021-11-22_N	E378-U	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)</b>											
HDPE CM_MW5-SH_WG_2021-11-22_N	E378-U	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW5-DP_WG_2021-11-22_N	E235.F	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE CM_MW5-SH_WG_2021-11-22_N	E235.F	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW5-DP_WG_2021-11-22_N	E235.NO3-L	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE CM_MW5-SH_WG_2021-11-22_N	E235.NO3-L	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW5-DP_WG_2021-11-22_N	E235.NO2-L	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE CM_MW5-SH_WG_2021-11-22_N	E235.NO2-L	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW5-DP_WG_2021-11-22_N	E235.SO4	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE CM_MW5-SH_WG_2021-11-22_N	E235.SO4	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-DP_WG_2021-11-22_N	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-SH_WG_2021-11-22_N	E318	22-Nov-2021	26-Nov-2021	----	----		29-Nov-2021	28 days	7 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-DP_WG_2021-11-22_N	E372-U	22-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-SH_WG_2021-11-22_N	E372-U	22-Nov-2021	24-Nov-2021	----	----		24-Nov-2021	28 days	2 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW5-DP_WG_2021-11-22_N	E421.Cr-L	22-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW5-SH_WG_2021-11-22_N	E421.Cr-L	22-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW5-DP_WG_2021-11-22_N	E509	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
<b>Glass vial dissolved (hydrochloric acid)</b> CM_MW5-SH_WG_2021-11-22_N	E509	22-Nov-2021	25-Nov-2021	----	----		25-Nov-2021	28 days	3 days	✓	
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW5-DP_WG_2021-11-22_N	E421	22-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>											
<b>HDPE dissolved (nitric acid)</b> CM_MW5-SH_WG_2021-11-22_N	E421	22-Nov-2021	26-Nov-2021	----	----		26-Nov-2021	180 days	4 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW5-DP_WG_2021-11-22_N	E358-L	22-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (sulfuric acid)</b> CM_MW5-SH_WG_2021-11-22_N	E358-L	22-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-DP_WG_2021-11-22_N	E355-L	22-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> CM_MW5-SH_WG_2021-11-22_N	E355-L	22-Nov-2021	23-Nov-2021	----	----		23-Nov-2021	28 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW5-DP_WG_2021-11-22_N	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Acidity by Titration</b>											
<b>HDPE</b> CM_MW5-SH_WG_2021-11-22_N	E283	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW5-DP_WG_2021-11-22_N	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE</b> CM_MW5-SH_WG_2021-11-22_N	E290	22-Nov-2021	----	----	----		23-Nov-2021	14 days	1 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW5-DP_WG_2021-11-22_N	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓
<b>Physical Tests : Conductivity in Water</b>										
HDPE CM_MW5-SH_WG_2021-11-22_N	E100	22-Nov-2021	----	----	----		23-Nov-2021	28 days	1 days	✓
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW5-DP_WG_2021-11-22_N	E125	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	20 hrs	* EHTR-FM
<b>Physical Tests : ORP by Electrode</b>										
HDPE CM_MW5-SH_WG_2021-11-22_N	E125	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	20 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW5-DP_WG_2021-11-22_N	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	20 hrs	* EHTR-FM
<b>Physical Tests : pH by Meter</b>										
HDPE CM_MW5-SH_WG_2021-11-22_N	E108	22-Nov-2021	----	----	----		23-Nov-2021	0.25 hrs	20 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW5-DP_WG_2021-11-22_N	E162	22-Nov-2021	----	----	----		23-Nov-2021	7 days	1 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE CM_MW5-SH_WG_2021-11-22_N	E162	22-Nov-2021	----	----	----		23-Nov-2021	7 days	1 days	✓
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
HDPE [TSS-WB] CM_MW5-DP_WG_2021-11-22_N	E160-L	22-Nov-2021	----	----	----		23-Nov-2021	7 days	1 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry (Low Level)</b>										
<b>HDPE [TSS-WB]</b> CM_MW5-SH_WG_2021-11-22_N	E160-L	22-Nov-2021	----	----	----		23-Nov-2021	7 days	1 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW5-DP_WG_2021-11-22_N	E121	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓
<b>Physical Tests : Turbidity by Nephelometry</b>										
<b>HDPE</b> CM_MW5-SH_WG_2021-11-22_N	E121	22-Nov-2021	----	----	----		23-Nov-2021	3 days	1 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity by Titration	E283	350527	1	19	5.2	5.0	✓
Alkalinity Species by Titration	E290	350518	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	350548	1	9	11.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	350577	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	350578	1	19	5.2	5.0	✓
Conductivity in Water	E100	350520	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353613	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352931	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353614	1	4	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350514	1	3	33.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	350763	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	350575	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	350579	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	350580	1	20	5.0	5.0	✓
ORP by Electrode	E125	350568	1	9	11.1	5.0	✓
pH by Meter	E108	350519	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	350576	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	350557	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353734	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350513	1	2	50.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	350783	1	2	50.0	5.0	✓
Turbidity by Nephelometry	E121	350567	1	10	10.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Acidity by Titration	E283	350527	1	19	5.2	5.0	✓
Alkalinity Species by Titration	E290	350518	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	350548	1	9	11.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	350577	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	350578	1	19	5.2	5.0	✓
Conductivity in Water	E100	350520	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353613	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352931	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353614	1	4	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350514	1	3	33.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	350763	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	350575	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	350579	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	350580	1	20	5.0	5.0	✓





Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
ORP by Electrode	E125	350568	1	9	11.1	5.0	✓
pH by Meter	E108	350519	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	350576	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	350557	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353734	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350513	1	2	50.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	350783	1	2	50.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	350556	1	11	9.0	5.0	✓
Turbidity by Nephelometry	E121	350567	1	10	10.0	5.0	✓
<b>Method Blanks (MB)</b>							
Acidity by Titration	E283	350527	1	19	5.2	5.0	✓
Alkalinity Species by Titration	E290	350518	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	350548	1	9	11.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	350577	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	350578	1	19	5.2	5.0	✓
Conductivity in Water	E100	350520	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353613	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352931	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353614	1	4	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350514	1	3	33.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	350763	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	350575	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	350579	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	350580	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	350576	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	350557	1	3	33.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353734	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350513	1	2	50.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	350783	1	2	50.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	350556	1	11	9.0	5.0	✓
Turbidity by Nephelometry	E121	350567	1	10	10.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	350548	1	9	11.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	350577	1	19	5.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	350578	1	19	5.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	353613	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	352931	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	353614	1	4	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	350514	1	3	33.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	350763	1	20	5.0	5.0	✓





Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	350575	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	350579	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	350580	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	350576	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	353734	1	13	7.6	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	350513	1	2	50.0	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	350783	1	2	50.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter.  Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100  Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318  Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355  Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

## QUALITY CONTROL REPORT

**Work Order** : **CG2105888**

**Page** : 1 of 14

**Client** : Teck Coal Limited  
**Contact** : Victoria Sharpe  
**Address** : Coal Mountain Operations PO Box 3000 2261 Corbin Road  
 Sparwood BC Canada V0B 2G0  
**Telephone** : ----  
**Project** : COAL MOUNTAIN OPERATIONS  
**PO** : VPO00741264  
**C-O-C number** : COC\_WG\_MW5\_Post-DW\_20211122  
**Sampler** : ----  
**Site** : ----  
**Quote number** : Teck Coal Master Quote  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Laboratory** : Calgary - Environmental  
**Account Manager** : Milica Papic  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 23-Nov-2021 08:50  
**Date Analysis Commenced** : 23-Nov-2021  
**Issue Date** : 29-Nov-2021 18:17

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 14  
Work Order : CG2105888  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.



### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 350518)</b>											
CG2105864-005	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	275	278	0.941%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	275	278	0.941%	20%	----
<b>Physical Tests (QC Lot: 350519)</b>											
CG2105864-005	Anonymous	pH	----	E108	0.10	pH units	8.11	8.10	0.123%	4%	----
<b>Physical Tests (QC Lot: 350520)</b>											
CG2105864-005	Anonymous	conductivity	----	E100	2.0	µS/cm	2240	2190	2.26%	10%	----
<b>Physical Tests (QC Lot: 350527)</b>											
CG2105877-005	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	16.4	16.2	0.2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 350557)</b>											
CG2105886-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1230	1220	0.857%	20%	----
<b>Physical Tests (QC Lot: 350567)</b>											
CG2105888-001	CM_MW5-DP_WG_2021-1 1-22_N	turbidity	----	E121	0.10	NTU	15.9	16.0	1.00%	15%	----
<b>Physical Tests (QC Lot: 350568)</b>											
CG2105807-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	453	451	0.332%	15%	----
<b>Anions and Nutrients (QC Lot: 350548)</b>											
CG2105807-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.125	mg/L	3.60	4.04	11.5%	20%	----
<b>Anions and Nutrients (QC Lot: 350575)</b>											
CG2105885-001	Anonymous	fluoride	16984-48-8	E235.F	0.400	mg/L	<0.400	<0.400	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 350576)</b>											
CG2105885-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	6.00	mg/L	1320	1330	0.506%	20%	----
<b>Anions and Nutrients (QC Lot: 350577)</b>											
CG2105885-001	Anonymous	bromide	24959-67-9	E235.Br-L	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 350578)</b>											
CG2105885-001	Anonymous	chloride	16887-00-6	E235.Cl-L	2.00	mg/L	15.9	15.9	0.03	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 350579)</b>											
CG2105885-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.100	mg/L	275	276	0.431%	20%	----
<b>Anions and Nutrients (QC Lot: 350580)</b>											
CG2105885-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 350763)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 350763) - continued</b>											
CG2105885-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0016	0.0011	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 350783)</b>											
CG2105888-001	CM_MW5-DP_WG_2021-1 1-22_N	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0029	0.0009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 353734)</b>											
VA21C6102-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.428	0.433	0.005	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 350513)</b>											
CG2105888-001	CM_MW5-DP_WG_2021-1 1-22_N	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 350514)</b>											
CG2105888-001	CM_MW5-DP_WG_2021-1 1-22_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 352931)</b>											
CG2105885-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353613)</b>											
CG2105888-001	CM_MW5-DP_WG_2021-1 1-22_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 353614)</b>											
CG2105888-001	CM_MW5-DP_WG_2021-1 1-22_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	1.06	1.18	11.0%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.127	0.136	6.21%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	77.3	79.6	2.91%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	1.20	1.27	6.23%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0679	0.0701	3.27%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	25.0	26.7	6.50%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0412	0.0448	8.30%	20%	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000610	0.000614	0.731%	20%	----		
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----		
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.24	3.57	9.68%	20%	----		





Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 353614) - continued</b>											
CG2105888-001	CM_MW5-DP_WG_2021-1 1-22_N	selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.119 µg/L	0.000088	0.000031	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.98	6.12	2.20%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	64.3	69.0	7.01%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.88	1.93	2.61%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.54	<0.50	0.04	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000059	0.000060	0.0000008	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0022	0.0025	0.0002	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 350518)</b>						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 350520)</b>						
conductivity	----	E100	1	µS/cm	1.2	----
<b>Physical Tests (QCLot: 350527)</b>						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
<b>Physical Tests (QCLot: 350556)</b>						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 350557)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 350567)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Anions and Nutrients (QCLot: 350548)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 350575)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 350576)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 350577)</b>						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 350578)</b>						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 350579)</b>						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 350580)</b>						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 350763)</b>						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 350783)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 353734)</b>						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 353734) - continued</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Organic / Inorganic Carbon (QCLot: 350513)</b>						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 350514)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Dissolved Metals (QCLot: 352931)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 353613)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
<b>Dissolved Metals (QCLot: 353614)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Dissolved Metals (QCLot: 353614) - continued</b>						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 350518)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	110	85.0	115	---
<b>Physical Tests (QCLot: 350519)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.6	101	---
<b>Physical Tests (QCLot: 350520)</b>									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	---
<b>Physical Tests (QCLot: 350527)</b>									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	96.7	85.0	115	---
<b>Physical Tests (QCLot: 350556)</b>									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	90.9	85.0	115	---
<b>Physical Tests (QCLot: 350557)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	93.8	85.0	115	---
<b>Physical Tests (QCLot: 350567)</b>									
turbidity	---	E121	0.1	NTU	200 NTU	101	85.0	115	---
<b>Physical Tests (QCLot: 350568)</b>									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	102	95.4	104	---
<b>Anions and Nutrients (QCLot: 350548)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	---
<b>Anions and Nutrients (QCLot: 350575)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 350576)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 350577)</b>									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	---
<b>Anions and Nutrients (QCLot: 350578)</b>									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 350579)</b>									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 350580)</b>									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 350763)</b>									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	95.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 350783)</b>									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 350783) - continued</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	94.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 353734)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 350513)</b>									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	106	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 350514)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	111	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	104	80.0	120	----
<b>Dissolved Metals (QCLot: 353613)</b>									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
<b>Dissolved Metals (QCLot: 353614)</b>									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	113	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	105	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	84.7	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	106	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.1	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.7	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	114	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.1	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 353614) - continued</b>									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.4	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	113	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 350548)</b>										
CG2105807-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 350575)</b>										
CG2105887-014	Anonymous	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 350576)</b>										
CG2105887-014	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 350577)</b>										
CG2105887-014	Anonymous	bromide	24959-67-9	E235.Br-L	0.538 mg/L	0.5 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 350578)</b>										
CG2105887-014	Anonymous	chloride	16887-00-6	E235.Cl-L	106 mg/L	100 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 350579)</b>										
CG2105887-014	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.67 mg/L	2.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 350580)</b>										
CG2105887-014	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.534 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 350763)</b>										
CG2105886-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0507 mg/L	0.05 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 350783)</b>										
CG2105888-002	CM_MW5-SH_WG_2021-11-22_N	phosphorus, total	7723-14-0	E372-U	0.0534 mg/L	0.0676 mg/L	79.0	70.0	130	----
<b>Anions and Nutrients (QCLot: 353734)</b>										
VA21C6102-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.49 mg/L	2.5 mg/L	99.7	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 350513)</b>										
CG2105888-001	CM_MW5-DP_WG_2021-11-22_N	carbon, total organic [TOC]	----	E355-L	29.2 mg/L	23.9 mg/L	122	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 350514)</b>										
CG2105888-001	CM_MW5-DP_WG_2021-11-22_N	carbon, dissolved organic [DOC]	----	E358-L	27.6 mg/L	23.9 mg/L	115	70.0	130	----
<b>Dissolved Metals (QCLot: 352931)</b>										
CG2105886-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.000104 mg/L	0.0001 mg/L	104	70.0	130	----
<b>Dissolved Metals (QCLot: 353613)</b>										





Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 353613) - continued</b>										
CG2105888-002	CM_MW5-SH_WG_2021-11-22_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0372 mg/L	0.04 mg/L	93.1	70.0	130	----
<b>Dissolved Metals (QCLot: 353614)</b>										
CG2105888-002	CM_MW5-SH_WG_2021-11-22_N	aluminum, dissolved	7429-90-5	E421	0.193 mg/L	0.2 mg/L	96.4	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0215 mg/L	0.02 mg/L	107	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00785 mg/L	0.01 mg/L	78.5	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.115 mg/L	0.1 mg/L	115	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00372 mg/L	0.004 mg/L	93.1	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0180 mg/L	0.02 mg/L	90.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0175 mg/L	0.02 mg/L	87.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0354 mg/L	0.04 mg/L	88.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.81 mg/L	4 mg/L	95.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0493 mg/L	0.04 mg/L	123	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.12 mg/L	10 mg/L	91.2	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00333 mg/L	0.004 mg/L	83.3	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00363 mg/L	0.004 mg/L	90.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00379 mg/L	0.004 mg/L	94.7	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0976 mg/L	0.1 mg/L	97.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.382 mg/L	0.4 mg/L	95.6	70.0	130	----

Page : 14 of 14  
Work Order : CG2105888  
Client : Teck Coal Limited  
Project : COAL MOUNTAIN OPERATIONS

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<b>COC ID:</b> COC_WG_MW5_Post-DW_20211122		<b>TURNAROUND TIME:</b>		<b>PRIORITY:</b>		<b>RUSH:</b> Yes	
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>	
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary		Report Format / Distribution
Project Manager	Victoria Sharpe			Lab Contact	Milica Papic		Excel PDF EDD
Email	Victoria.Sharpe@teck.com			Email	Milica.Papic@alstglobal.com		Email 1: Victoria.Sharpe@teck.com X X X
Address	PO Box 3000			Address	2559 29th St. NE		Email 2: teckcoal@equisonline.com X X X
City	Sparwood	Province	BC	City	Calgary	Province	AB
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada
Phone Number	1-250-425-7522			Phone Number	403 407 1800		PO number 741264

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p li	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA										
CM_MW5-DP_WG_2021-11-22_N	CM_MW5-DP	WG	No	11/22/2021	13:30	G	5	1	1	1	1	1										
CM_MW5-SH_WG_2021-11-22_N	CM_MW5-SH	WG	No	11/22/2021	13:30	G	5	1	1	1	1	1										

Environmental Division  
Calgary  
Work Order Reference  
**CG2105888**

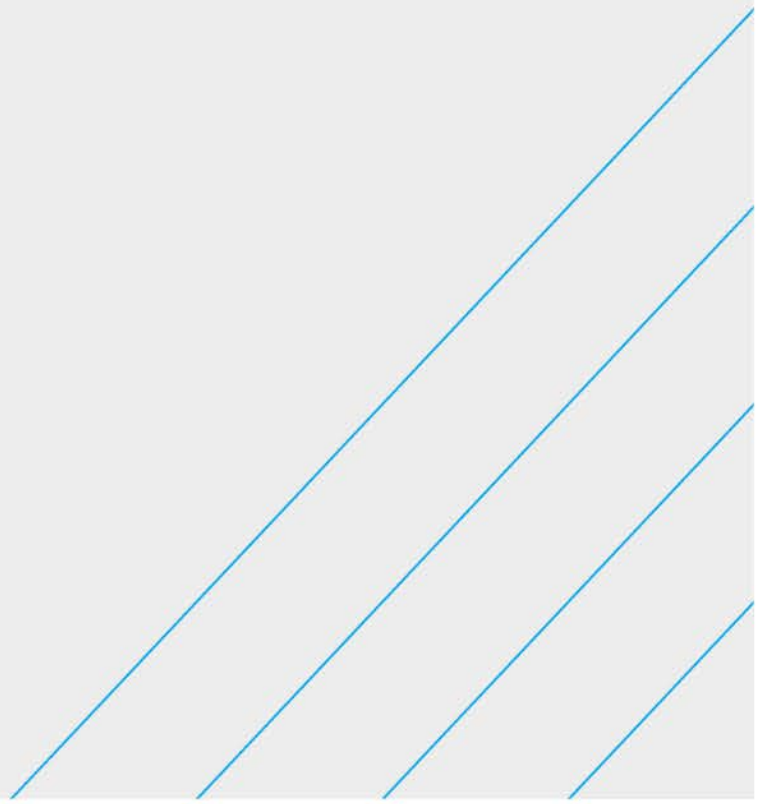


Telephone : +1 403 407 1800

<b>LAB INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
			<i>Dr</i>	11/23/2021

<b>SERVICE REQUEST (rush - subject to availability)</b>			
Regular (default)	<b>Sampler's Name</b>	<b>Mobile #</b>	250-425-7522
Priority (2-3 business days) - 50% surcharge X	<b>Sampler's Signature</b>	<b>Date/Time</b>	November 22, 2021
Emergency (1 Business Day) - 100% surcharge	<i>Shelby Holden</i>		
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

# Conflict of Interest Forms and Declaration of Competency Forms for the 2021 SSGMP and RGMP Report



## Conflict of Interest Disclosure Statement

A qualified professional <sup>1</sup> providing services to either the Ministry of Environment and Climate Change Strategy (“ministry”), or to a regulated person for the purpose of obtaining an authorization from the ministry, or pursuant to a requirement imposed under the *Environmental Management Act*, the *Integrated Pest Management Act* or the *Park Act* has a real or perceived conflict of interest when the qualified professional, or their relatives, close associates or personal friends have a financial or other interest in the outcome of the work being performed.

A real or perceived conflict of interest occurs when a qualified professional has

- a) an ownership interest in the regulated person’s business;
- b) an opportunity to influence a decision that leads to financial benefits from the regulated person or their business other than a standard fee for service (e.g. bonuses, stock options, other profit sharing arrangements);
- c) a personal or professional interest in a specific outcome;
- d) the promise of a long term or ongoing business relationship with the regulated person, that is contingent upon a specific outcome of work;
- e) a spouse or other family member who will benefit from a specific outcome; or
- f) any other interest that could be perceived as a threat to the independence or objectivity of the qualified professional in performing a duty or function.

Qualified professionals who work under ministry legislation must take care in the conduct of their work that potential conflicts of interest within their control are avoided or mitigated. Precise rules in conflict of interest are not possible and professionals must rely on guidance of their professional associations, their common sense, conscience and sense of personal integrity.

### Declaration

I, Sheila Duchek Print Name, as a member of EGBC  
declare

#### **Select one of the following:**

- Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this Report/Project.

I further declare that should a conflict of interest arise in the future during the course of this work, I will fully disclose the circumstances in writing and without delay to Douglas Hill, Regional Operations Director - Mines, erring on the side of caution.

Real or perceived conflict of interest

Description and nature of conflict(s):

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I will maintain my objectivity, conducting my work in accordance with my Code of Ethics and standards of practice.

In addition, I will take the following steps to mitigate the real or perceived conflict(s) I have disclosed, to ensure the public interest remains paramount:

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---

---

Further, I acknowledge that this disclosure may be interpreted as a threat to my independence and will be considered by the statutory decision maker accordingly.

This conflict of interest disclosure statement is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

Signature:

X  \_\_\_\_\_

Print name: Sheila Duchek

Witnessed by:

X  \_\_\_\_\_

Print name: Ron Salomonson

Date: March 30, 2022

<sup>1</sup>Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who

- a) is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and
- b) through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.

## Declaration of Competency

The Ministry of Environment and Climate Change Strategy relies on the work, advice, recommendations and in some cases decision making of qualified professionals<sup>1</sup>, under government's professional reliance regime. With this comes an assumption that professionals who undertake work in relation to ministry legislation, regulations and codes of practice have the knowledge, experience and objectivity necessary to fulfill this role.


1. Name of Qualified Professional Sheila Duchek, M.Sc., P.Geo.  
Title Senior Hydrogeologist
2. Are you a registered member of a professional association in B.C.?  Yes  No  
Engineers and Geoscientists  
Name of Association: British Columbia Registration # 31347
3. Brief description of professional services:  
Environmental consulting for the 2021 Annual Report for the Elk Valley Regional and Site-Specific Groundwater Monitoring Programs for Teck Coal Mines

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## Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature:   
**X** \_\_\_\_\_  
Print Name: Sheila Duchek

Witnessed   
**X** \_\_\_\_\_  
Print Name: Ron Salomonson

Date signed: March 30, 2022

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Conflict of Interest Disclosure Statement

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- b) an opportunity to influence a decision that leads to financial benefits from the regulated person or their business other than a standard fee for service (e.g. bonuses, stock options, other profit sharing arrangements);
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- d) the promise of a long term or ongoing business relationship with the regulated person, that is contingent upon a specific outcome of work;
- e) a spouse or other family member who will benefit from a specific outcome; or
- f) any other interest that could be perceived as a threat to the independence or objectivity of the qualified professional in performing a duty or function.

Qualified professionals who work under ministry legislation must take care in the conduct of their work that potential conflicts of interest within their control are avoided or mitigated. Precise rules in conflict of interest are not possible and professionals must rely on guidance of their professional associations, their common sense, conscience and sense of personal integrity.

Declaration

I Marie Goddard, as a member of EGBC declare

**Select one of the following:**

- Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this Report/Project.

I further declare that should a conflict of interest arise in the future during the course of this work, I will fully disclose the circumstances in writing and without delay to Douglas Hill, Regional Operations Director - Mines, erring on the side of caution.





Real or perceived conflict of interest

Description and nature of conflict(s):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I will maintain my objectivity, conducting my work in accordance with my Code of Ethics and standards of practice.

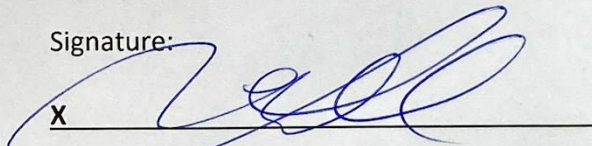
In addition, I will take the following steps to mitigate the real or perceived conflict(s) I have disclosed, to ensure the public interest remains paramount:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Further, I acknowledge that this disclosure may be interpreted as a threat to my independence and will be considered by the statutory decision maker accordingly.

This conflict of interest disclosure statement is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

Signature:

X   
\_\_\_\_\_

Print name: Marie Goddard

Date: March 30, 2022

Witnessed by:

X   
\_\_\_\_\_

Print name: ALEX VAN DER WAL

<sup>1</sup>Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who  
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b) through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.





Declaration of Competency

The Ministry of Environment and Climate Change Strategy relies on the work, advice, recommendations and in some cases decision making of qualified professionals<sup>1</sup>, under government's professional reliance regime. With this comes an assumption that professionals who undertake work in relation to ministry legislation, regulations and codes of practice have the knowledge, experience and objectivity necessary to fulfill this role.

1. Name of Qualified Professional Marie Goddard
Title Professional Geoscientist

2. Are you a registered member of a professional association in B.C.? [X] Yes [ ] No
Name of Association: EGBC Registration # 31399

3. Brief description of professional services:
Environmental consulting for the 2021 Annual Report for the Elk Valley Regional and Site-Specific Groundwater Monitoring Programs for Teck Coal Mines

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Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature: [Handwritten Signature]
Print Name: Marie Goddard

Witnessed by: [Handwritten Signature]
Print Name: ALEX VAN DEN WAL

Date signed: March 30, 2022

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1. Name of Qualified Professional Stefan Humphries
Title Senior Hydrogeologist

2. Are you a registered member of a professional association in B.C.? [X] Yes [ ] No
Name of Association: EGBC Registration # 31909

3. Brief description of professional services:
Environmental consulting for the 2021 Annual Report for the Elk Valley Regional and Site-Specific Groundwater Monitoring Programs for Teck Coal Mines

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Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature: [Handwritten Signature]
X [Handwritten Signature]
Print Name: Stefan Humphries
Date signed: March 30/22

Witnessed by: [Handwritten Signature]
X [Handwritten Signature]
Print Name: Ronald Salomonson, Jr.

1 Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who
a) is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and
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### Declaration

I Stefan Humphries Print First and Last Name, as a member of EGBC  
declare

#### **Select one of the following:**

- Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this Report/Project.

I further declare that should a conflict of interest arise in the future during the course of this work, I will fully disclose the circumstances in writing and without delay to Douglas Hill, Regional Operations Director - Mines, erring on the side of caution.





Real or perceived conflict of interest

Description and nature of conflict(s):

My wife is an employee with Teck Metals, Inc.

I will maintain my objectivity, conducting my work in accordance with my Code of Ethics and standards of practice.

In addition, I will take the following steps to mitigate the real or perceived conflict(s) I have disclosed, to ensure the public interest remains paramount:

I involve other professionals in all of the work completed for Teck Coal, which is a different business unit than Teck Metals. I do not discuss projects with my wife

Further, I acknowledge that this disclosure may be interpreted as a threat to my independence and will be considered by the statutory decision maker accordingly.

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Signature:

X

Print name:

Stefan Humphries

Date:

March 30/22

Witnessed by:

X

Print name:

Ronald Salomonson, Jr.

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- e) a spouse or other family member who will benefit from a specific outcome; or
- f) any other interest that could be perceived as a threat to the independence or objectivity of the qualified professional in performing a duty or function.

Qualified professionals who work under ministry legislation must take care in the conduct of their work that potential conflicts of interest within their control are avoided or mitigated. Precise rules in conflict of interest are not possible and professionals must rely on guidance of their professional associations, their common sense, conscience and sense of personal integrity.

### Declaration

I Greg Potter, as a member of EGBC  
declare

#### **Select one of the following:**

Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this Report/Project.

I further declare that should a conflict of interest arise in the future during the course of this work, I will fully disclose the circumstances in writing and without delay to Douglas Hill, Regional Operations Director - Mines, erring on the side of caution.

Real or perceived conflict of interest

Description and nature of conflict(s):

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I will maintain my objectivity, conducting my work in accordance with my Code of Ethics and standards of practice.

In addition, I will take the following steps to mitigate the real or perceived conflict(s) I have disclosed, to ensure the public interest remains paramount:

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Further, I acknowledge that this disclosure may be interpreted as a threat to my independence and will be considered by the statutory decision maker accordingly.

This conflict of interest disclosure statement is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

Signature:

X 

Print name: Greg Potter

Date: March 30, 2022

Witnessed by:

X 

Print name: Ronald Salomonson, Jr.

<sup>1</sup>Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who

- a) is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and
- b) through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.

## Declaration of Competency

The Ministry of Environment and Climate Change Strategy relies on the work, advice, recommendations and in some cases decision making of qualified professionals<sup>1</sup>, under government's professional reliance regime. With this comes an assumption that professionals who undertake work in relation to ministry legislation, regulations and codes of practice have the knowledge, experience and objectivity necessary to fulfill this role.

1. Name of Qualified Professional Greg Potter  
Title Director, Hydrogeology and Earth Sciences
2. Are you a registered member of a professional association in B.C.?  Yes  No  
Name of Association: EGBC Registration # 168694
3. Brief description of professional services:  
Environmental consulting for the 2021 Annual Report for the Elk Valley Regional and Site-Specific Groundwater Monitoring Programs for Teck Coal Mines

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## Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature:

**X**

Print Name: Greg Potter

Date signed: March 30, 2022

Witnessed by:

**X**

Print Name: Ronald Salomonson, Jr.

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## Conflict of Interest Disclosure Statement

A qualified professional<sup>1</sup> providing services to either the Ministry of Environment and Climate Change Strategy ("ministry"), or to a regulated person for the purpose of obtaining an authorization from the ministry, or pursuant to a requirement imposed under the *Environmental Management Act*, the *Integrated Pest Management Act* or the *Park Act* has a real or perceived conflict of interest when the qualified professional, or their relatives, close associates or personal friends have a financial or other interest in the outcome of the work being performed.

A real or perceived conflict of interest occurs when a qualified professional has

- a) an ownership interest in the regulated person's business;
- b) an opportunity to influence a decision that leads to financial benefits from the regulated person or their business other than a standard fee for service (e.g. bonuses, stock options, other profit sharing arrangements);
- c) a personal or professional interest in a specific outcome;
- d) the promise of a long term or ongoing business relationship with the regulated person, that is contingent upon a specific outcome of work;
- e) a spouse or other family member who will benefit from a specific outcome; or
- f) any other interest that could be perceived as a threat to the independence or objectivity of the qualified professional in performing a duty or function.

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### Declaration

I William Wilnot, as a member of EGBC  
declare

#### **Select one of the following:**

- Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this Report/Project.

I further declare that should a conflict of interest arise in the future during the course of this work, I will fully disclose the circumstances in writing and without delay to Douglas Hill, Regional Operations Director - Mines, erring on the side of caution.





Real or perceived conflict of interest

Description and nature of conflict(s):

During final compilation of this report I was offered and accepted a position with Teck Coal Limited

I will maintain my objectivity, conducting my work in accordance with my Code of Ethics and standards of practice.

In addition, I will take the following steps to mitigate the real or perceived conflict(s) I have disclosed, to ensure the public interest remains paramount:

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Further, I acknowledge that this disclosure may be interpreted as a threat to my independence and will be considered by the statutory decision maker accordingly.

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Signature:

X

Print name: William Wilmot

Date: March 30/22

Witnessed by:

X

Print name: Jennifer Wilmot

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- b) through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.





Declaration of Competency

The Ministry of Environment and Climate Change Strategy relies on the work, advice, recommendations and in some cases decision making of qualified professionals<sup>1</sup>, under government's professional reliance regime. With this comes an assumption that professionals who undertake work in relation to ministry legislation, regulations and codes of practice have the knowledge, experience and objectivity necessary to fulfill this role.

1. Name of Qualified Professional William Wilmot
Title Senior Project Hydrogeologist

2. Are you a registered member of a professional association in B.C.? [X] Yes [ ] No

Name of Association: EGBC Registration # 158648

3. Brief description of professional services:

Environmental consulting for the 2021 Annual Report for the Elk Valley Regional and Site-Specific Groundwater Monitoring Programs for Teck Coal Mines

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Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature: [Handwritten Signature]

Print Name: William Wilmot

Date signed: March 29/22

Witnessed by: [Handwritten Signature]

Print Name: Jennifer Wilmot

1 Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who a) is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and b) through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.





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1. Name of Qualified Professional ANDREI ZAWADZKI  
Title Project Specialist (Hydrogeology)
2. Are you a registered member of a professional association in B.C.?  Yes  No  
Name of Association: ENGINEERS AND GEOSCIENTISTS BC Registration # 32048
3. Brief description of professional services:  
Environmental consulting for the 2021 Annual Report for the Elk Valley Regional and Site-Specific Groundwater Monitoring Programs for Teck Coal Mines

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## Declaration

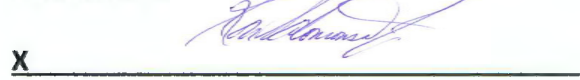
I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature:

X 

Print Name: ANDREI ZAWADZKI

Witnessed by

X 

Print Name: Ronald Salomonson, Jr.

Date signed: March 30, 2022

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### Declaration

I ANDREI ZAWADZKI, as a member of EGBC  
declare

**Select one of the following:**

Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this Report/Project.

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Real or perceived conflict of interest

Description and nature of conflict(s):

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Signature:

X 

Print name: ANDREI ZAWADZKI

Date: MARCH 30, 2022

Witnessed I

X 

Print name: Ronald Salomonson, Jr.

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